Mercedes-Benz Group

# 360° ENVIRONMENTAL CHECK MERCEDES-BENZ EQB


Life cycle COMPACT


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# 360° environmental check of Mercedes-Benz EQB at a glance

The EQB is the versatile electric SUV, serving as the electric counterpart to the GLB. The spacious interior is combined with efficient electric mobility and sets another milestone with a range suitable for everyday use on the way to a balanced $CO_2$-neutral new vehicle fleet by 2039.

Sustainability and climate protection are key pillars of the business strategy of the Mercedes-Benz Group. With our Ambition 2039, we have already set the course towards net carbon-neutrality[1] for our new vehicle fleet in 2019. Market conditions, infrastructure, and customer requirements determine the course of the transformation. The company aims to reduce $CO_2$ emissions per car in the new vehicle fleet by up to 50 % over the next decade across all stages of the value chain and throughout the entire life cycle. To achieve this goal, the key levers include: electrifying the vehicle fleet, charging with green energy, improving battery technology, an extensive use of recycled materials and renewable energy in production. By 2030, it is planned to cover more than 70 percent of the energy demand in our own Mercedes-Benz Cars production plants with renewable energies. This is to be achieved by expanding solar and wind energy at our own sites and by concluding further corresponding power purchase agreements.

In the life cycle of an electric vehicle, charging with electricity from renewable sources is an essential factor in reducing $CO_2$ emissions. Via MB.CHARGE Public[2] Mercedes-Benz makes it possible for its customers to charge with electricity from renewable sources. “Green Charging” is an integral part of MB.CHARGE Public in Europe, Canada, and the USA. If electricity from renewable energy sources is not yet available at the respective charging station, “Green Charging” uses renewable energy certificates. These ensure that an equivalent amount of electricity from renewable energies is fed into the grid for charging processes. In this brochure we briefly summarize the results of the Mercedes-Benz EQB Environmental Life Cycle Analysis for you.

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

[1] Net carbon-neutral means that carbon emissions that are not avoided or reduced at Mercedes-Benz are compensated for by certified offsetting projects

[2] 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.

# The EQB: Electric mobility in the family pack

The Mercedes-Benz EQB represents a new dimension of electric mobility in the compact SUV segment. As a versatile family and leisure vehicle, it combines spacious interior space with efficient e-mobility as the electric counterpart to the GLB. The EQB thus offers maximum suitability for everyday use and an electric alternative for modern mobility.

Production of the EQB started at the Mercedes-Benz plant in Kecskemet, Hungary, in 2021. The battery factories in Kamenz, Germany, and Jawor, Poland, supply the batteries for the EQB models. The battery of the EQB 250+ (WLTP: Combined electrical consumption: 17.5 – 15.2 kWh/100 km; combined $CO_2$emissions: 0 g/km, $CO_2$class: A)[3] has a usable energy content of approx. 70.5 kWh and thus enables a range of up to 535 km according to WLTP.

All EQB models have an electric drivetrain (eATS) on the front axle. The 4MATIC all-wheel drive variants also have an eATS on the rear axle. The EQB 250+ uses a permanently excited synchronous machine (PSM) on the front axle, while the 4MATIC variants have PSM on the rear axle and asynchronous machines on the front axle. This design offers high power density, efficiency and power consistency. The EQB offers several variants of energy recovery by means of recuperation, in which the high-voltage battery is charged in overrun or braking mode. The deceleration can be selected manually behind the steering wheel. The ECO Assist optimizes recuperation depending on the situation. The system also brakes recuperatively if it detects deceleration from vehicles in front. This means that the driver does not need to press the brake pedal - pure one-pedal driving.

[3] The specified values were determined according to the prescribed measurement procedure WLTP (Worldwide Harmonized Light Vehicles Test Procedure). The energy consumption and $CO_2$ emissions of a car depend not only on the efficient use of the fuel or energy source by the car, but also on the driving style and other non-technical factors. For models with EQ technology or EQ Hybrid technology, the certified electrical consumption is usually determined with maximum AC charging power using a Mode 3 cable. It is therefore recommended that vehicles with an HV battery are preferably charged at a wallbox or an AC charging station with a Mode 3 cable in order to achieve shorter charging times and better recharge efficiency.

The charging

# MB.CHARGE Public: Integrated digital charging service

With the Digital Extra MB.CHARGE Public[4] (previously Mercedes me Charge), Mercedes-Benz bundles all public charging services and offers numerous benefits exclusively for customers of the brand.

Via MB.CHARGE Public, customers with Mercedes-Benz electric vehicles and plug-in hybrids in 35 countries on four continents have easy access to one of the largest charging networks in the world. 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. Around 45,000 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. “Green Charging” is an integral part of MB.CHARGE Public in Europe, Canada, and the USA. If electricity from renewable energy sources is not yet available at the respective charging station, “Green Charging” uses renewable energy certificates. These ensure that an equivalent amount of electricity from renewable energies is fed into the grid for charging processes. These are exclusively renewable energy certificates from certified wind and solar power plants[5] that are less than six years old[6]. “Green Charging” is also an integral part of the Mercedes-Benz Charging Network. The Mercedes-Benz Group wants to enable all drivers of electric vehicles to charge with green electricity. This is preferably handled via green power supply contracts, wherever possible, or through the use of renewable energy certificates.

[4] 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.
[5] EKOenergy in Europe, Green-e in North America
[6] Ensured in all countries except the UK and Poland

The facts

# The Mercedes-Benz EQB 250+ 360° environmental check

Early in the development stage of a new model, Mercedes-Benz starts looking at environmental performance over the car's entire life cycle. On the following pages you can read about how the EQB 250+ variant fares in the key areas of the comprehensive Life Cycle Assessment (LCA): consumption of resources and emissions.


[7] The specified values were determined according to the prescribed measurement procedure WLTP (Worldwide Harmonized Light Vehicles Test Procedure). The energy consumption and $CO_2$ emissions of a car depend not only on the efficient use of the fuel or energy source by the car, but also on the driving style and other non-technical factors. For models with EQ technology or EQ Hybrid technology, the certified electrical consumption is usually determined with maximum AC charging power using a Mode 3 cable. It is therefore recommended that vehicles with an HV battery are preferably charged at a wallbox or an AC charging station with a Mode 3 cable in order to achieve shorter charging times and better recharge efficiency.

**Fully electric drive:**
Locally $CO_2$ emission-free driving.

**Efficient drive with long range (figures according to WLTP)[7]:**
Electrical consumption combined 17.5 – 15.2 kWh/100 km,
$CO_2$ emissions combined 0 g/km,
$CO_2$ class: A,
464 – 535 kilometers battery-electric range.

The resources: what is needed to produce a car

# Achieve more with less

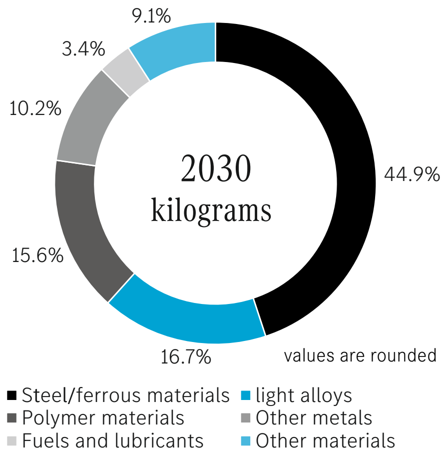
When it comes to the overall life cycle assessment, the EQB 250+ benefits from locally $CO_2$ emission-free operation and the high efficiency of the electric powertrain.

**Material resources**

In the EQB 250+, steel and iron materials represent the largest material fraction at 44.9 %. They are followed by light metals at 16.7 %, polymer materials at 15.6 %, and other metals (non-ferrous and special metals) at 10.2 %. Operating fluids account for approximately 3.4 %. The remaining materials (process polymers, electrical/electronic components, etc.) make up 9.1 %.

The electric drive components of the EQB 250+ lead to higher material and energy consumption in car production. The relevance of passenger car production is therefore increasing compared to conventional combustion engines.

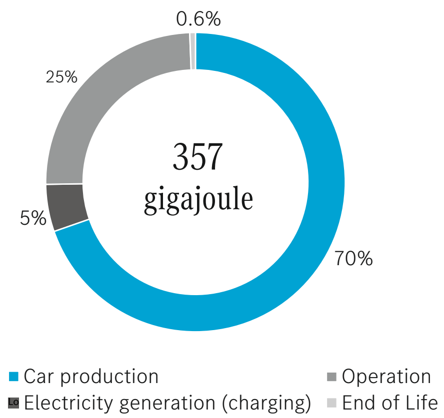
**Mercedes-Benz EQB 250+**



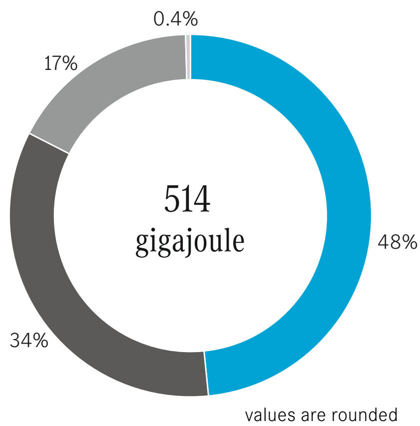

**Energy resources**

Only a consideration of the entire life cycle (material manufacture, production, driving over 160,000 kilometers and end of life[8]) provides a comprehensive picture. This is because the EQB 250+ benefits from the high efficiency of the electric drivetrain during the utilization phase.

**Electricity from hydro power**




**EU electricity mix**




Two scenarios for traction current generation were examined for the EQB 250+ Lifecycle. In the standard EU electricity mix[9] scenario, the average EU electricity mix is used for traction current. In the regenerative scenario, regenerative energy from hydropower is used in the vehicle.

Higher energy efficiency can be achieved when using electricity generated from renewable sources: over the entire life cycle of the EQB 250+, the analysis shows a primary energy demand of 357 GJ, of which 189 GJ come from fossil sources and 168 GJ from renewable sources. In the EU electricity mix scenario, however, the primary energy demand is significantly higher. Over the full life cycle, the total primary energy demand amounts to 514 GJ.

The materials used are not lost at the end of the vehicle's life. The valuable materials contained in high-voltage batteries can also be recovered to a large extent through targeted recycling[8].

[8] No consideration of recycling credits for end-of-life accounting
[9] The LCA software and database (version: SP2024.2) by Sphera Solutions GmbH was used to carry out the life cycle assessment.

The emissions: The $CO_2$ footprint in the life cycle

# It depends on the electricity mix

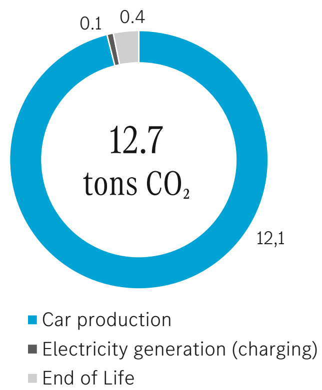
It is of decisive importance for the $CO_2$ balance, whether the power is produced from the renewable sources wind or hydro power, or whether the electricity mix forms the basis.

**$CO_2$ emissions**

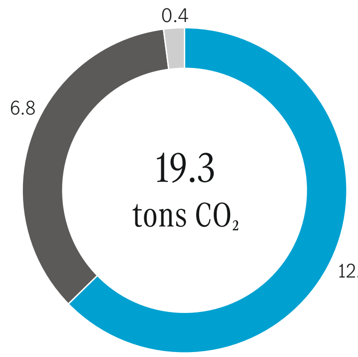
The analysis of emissions in the individual phases of life makes this clear: With the electrification of vehicles, further life cycle phases are gaining in importance: The production of the high-voltage battery and the generation of electricity to charge the battery.

In the production of the EQB 250+, around half of the $CO_2$ emissions are caused by the lithium-ion high-voltage battery and the battery peripherals. Furthermore, the vehicle body shell, the wheels and the electric drivetrain (eATS) contribute significantly to the $CO_2$ emissions of car production. $CO_2$ emissions result primarily from the provision of energy for material production. This results in comparatively high values for components that have a large mass and are therefore material-intensive to manufacture.

**Electricity from hydro power**




**EU electricity mix**




values are rounded

In addition to vehicle production, the choice of charging current in the usage phase is a decisive factor for the overall $CO_2$ footprint.

In the electricity mix scenario, the EQB 250+ emits a total of 19.3 tons of $CO_2$ over its life cycle (car production, driving over 160,000 km and end of life[8]). Of this, 12.1 tons are attributable to car production and 6.8 tons to the generation of charging current (EU electricity mix). If renewable energy (electricity from hydropower) is used for the European charging current, lifecycle $CO_2$ emissions can be reduced by around a third (12.7 tons).

Lithium-ion battery

# Powerful cell chemistry meets intelligent software

Battery development is a decisive factor in Mercedes-Benz's electrification strategy. After all, the battery is the heart of an electric car and makes a decisive contribution to the range and therefore the driving characteristics of the electric vehicle.

Depending on the motorization of the EQB, the lithium-ion battery consists of five to seven modules and has a usable energy content of between 66.5 and 70.5 kWh.

The EQB 250+ battery generation represents a major step forward in terms of the sustainability of cell chemistry: The optimized active material consists of nickel, cobalt and manganese in a ratio of 8:1:1. This reduces the cobalt content to ten percent.

Mercedes-Benz takes a holistic approach to the battery life cycle: Re-Use, Remanufacture, Recycle. When the traction batteries of the Mercedes-EQ fleet reach the end of their life on the road, there is still a long way to go. The company focuses in particular on 2nd life and spare parts storage applications. Only then is material recycling carried out.

The battery certificate stands for the long service life of the high-voltage batteries. It is valid up to a term of eight years or up to a mileage of 160,000 kilometers with a defined residual capacity, depending on which condition occurs first.

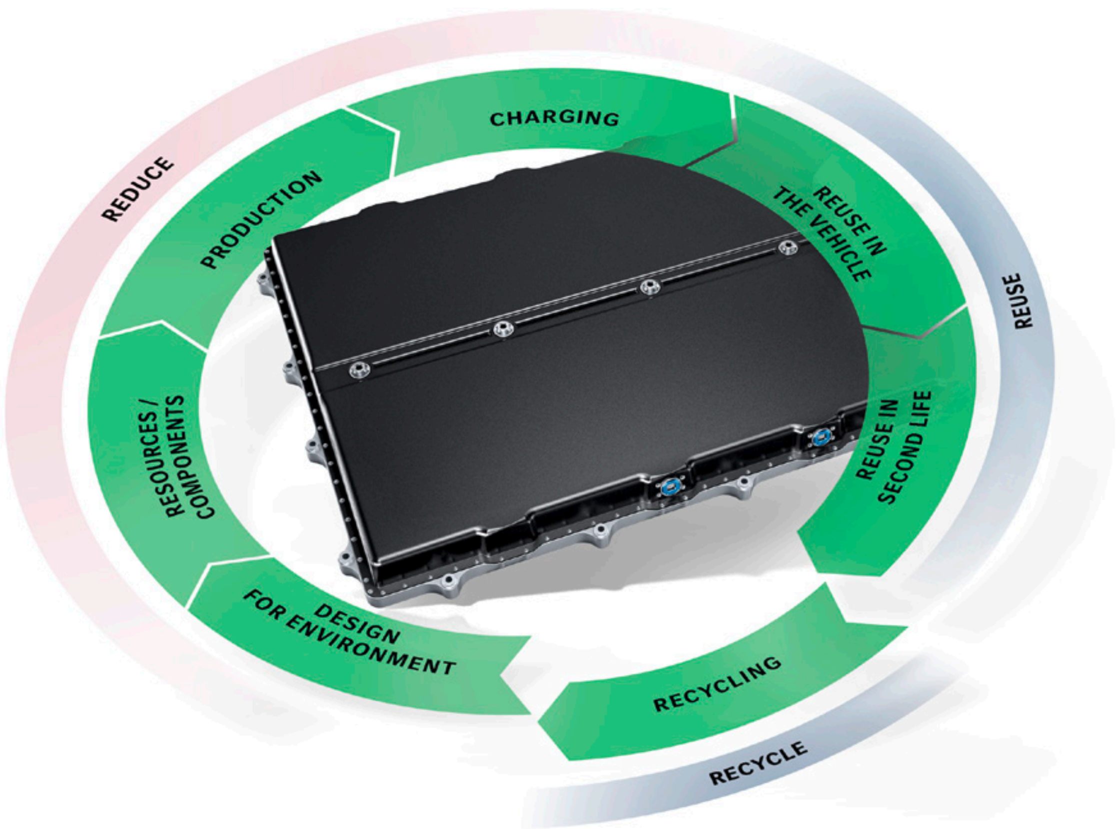
Holistic approach to battery value creation

# Battery recycling plant in Kuppenheim

Mercedes-Benz opened its own battery recycling plant with an integrated mechanical-hydrometallurgical process at the Kuppenheim site in southern Germany in 2024.

With a view to the future return of lithium-ion battery systems from electric vehicles, Mercedes-Benz has set up its own battery recycling plant based on hydrometallurgy in Germany.

The Mercedes-Benz battery recycling plant in Kuppenheim covers all steps from dismantling at module level, shredding and drying through to processing the material streams in battery quality. The process design of hydrometallurgy with recovery rates of more than 96 percent should enable a genuine circular economy for battery materials. Mercedes-Benz is collaborating with the technology partner Primobius (joint venture of the German plant and mechanical engineering company SMS group and the Australian process technology developer Neometals). The entire battery recycling process chain is also being considered as part of the higher-level scientific research project.



Facts and figures

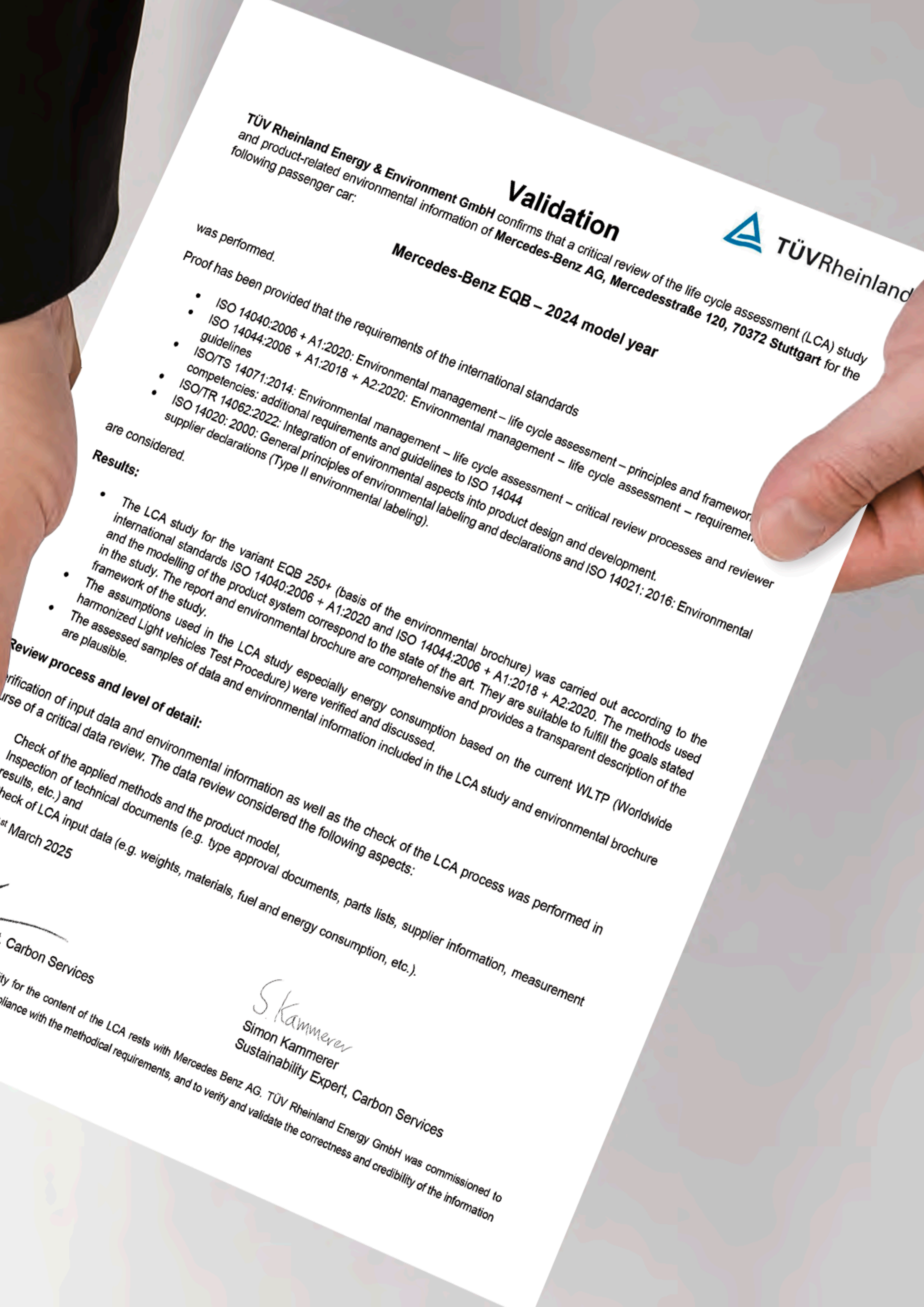
# LCA results


**Input parameters**

| **Material resources** | **EQB 250+ (EU electricity mix)** | **EQB 250+ (electricity from hydropower)** | **Delta EQB 250+: EU electricity mix to electricity from hydropower** |
|---|---|---|---|
| Bauxite [kg] | 1,439 | 1,437 | -0.1 % |
| Dolomite [kg] | 54 | 51 | -6 % |
| Iron [kg]* | 821 | 843 | 3 % |
| Non-ferrous metals (Cu, Pb, Zn) [kg]* | 256 | 255 | -0.1 % |
| * as elementary resources | | | |
| **Energy resources** | | | |
| **ADP fossil** [GJ]** | **253** | **170** | **-33 %** |
| Primary energy [GJ] | 514 | 357 | -31 % |
| Proportionately | | | |
| Lignite [GJ] | 28 | 10 | -63 % |
| Natural gas [GJ] | 114 | 69 | -39 % |
| Crude oil [GJ] | 45 | 39 | -12 % |
| Hard coal [GJ] | 66 | 51 | -23 % |
| Uranium [GJ] | 88 | 19 | -78 % |
| Other fossil resources [GJ] | 0.3 | 0.04 | -84 % |
| Renewable energy resources [GJ] | 173 | 168 | -3 % |
| ** CML 2001, as of August 2016 | | | |
| ADP = abiotic depletion potential | | | |

**Output parameters**

| **Emissions to air** | **EQB 250+ (EU electricity mix)** | **EQB 250+ (electricity from hydropower)** | **Delta EQB 250+: EU electricity mix to electricity from hydropower** |
|---|---|---|---|
| **GWP** [t $CO_2$-equiv.]** | **20.9** | **13.8** | **-34 %** |
| **AP** [kg $SO_2$-equiv.]** | **117** | **103** | **-12 %** |
| **EP** [kg phosphate-equiv.]** | **6.4** | **4.7** | **-27 %** |
| **POCP** [kg ethene-equiv.]** | **7.5** | **6.4** | **-14 %** |
| $CO_2$ [t] | 19.3 | 12.7 | -34 % |
| CO [kg] | 33 | 27 | -19 % |
| NMVOC [kg] | 5.5 | 4.3 | -22 % |
| $CH_4$ [kg] | 49 | 32 | -34 % |
| $NO_X$ [kg] | 31 | 23 | -25 % |
| $SO_2$ [kg] | 78 | 73 | -7 % |
| **Emissions to water** | | | |
| BOD (biological oxygen demand) [kg] | 0.14 | 0.13 | -11 % |
| Hydrocarbons [kg] | 0.4 | 0.4 | -6 % |
| $NO_3^-$ [kg] | 3.3 | 1.4 | -58 % |
| $PO_4^{3-}$ [kg] | 0.30 | 0.22 | -26 % |
| $SO_4^{2-}$ [kg] | 88 | 75 | -14 % |
| ** CML 2001, as of August 2016 | | | |
| AP = acidification potential, EP = eutrophication potential, GWP = global warming potential, POCP = photochemical ozone creation potential | | | |



TÜVRheinland

# Validation

**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 EQB – 2024 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 framewor
- ISO 14044:2006 + A1:2018 + A2:2020: Environmental management – life cycle assessment – requiremen guidelines
- ISO/TS 14071:2014: Environmental management – life cycle assessment – critical review processes and reviewer competencies: additional requirements and guidelines to ISO 14044
- ISO/TR 14062:2022: Integration of environmental aspects into product design and development.
- ISO 14020: 2000: 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 EQB 250+ (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 used and the modelling of the product system correspond to the state of the art. They 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:**

rification of input data and environmental information as well as the check of the LCA process was performed in urse 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
- heck of LCA input data (e.g. weights, materials, fuel and energy consumption, etc.).

st March 2025

Carbon Services

S. Kammerer
Simon Kammerer
Sustainability Expert, Carbon Services

ity for the content of the LCA rests with Mercedes Benz AG. TÜV Rheinland Energy GmbH was commissioned to liance with the methodical requirements, and to verify and validate the correctness and credibility of the information

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/sustainability/environment-climate/decarbonisation/environmental-check/

As of: March 2025

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