



The metal industry has a wide range of possibilities to make metallic materials more climate-friendly.

Virtually nothing works in modern societies without metals. 1.7 billion tonnes of steel and 94 million tonnes of aluminium alone are produced every year. However, the production of metals from ores is very energy-intensive and results in high CO₂ emissions that contribute to climate change. These industrial CO₂ emissions must be reduced.

Growing demand for metallic materials and a declining carbon budget: In order to reconcile these scenarios, the next step is to analyse how the metal industry's CO₂ emissions can be reduced.

Greater sustainability in production and processing

In order to reduce CO₂ emissions during production, the industry should increase the percentage of recycled scrap metal since melting metals consumes less energy than extracting them from ore.

This applies in particular to waste material that is generated in the metal industry itself because it is produced in large quantities and can be separated into relatively pure metal fractions.

Furthermore, CO₂-neutral processes must be used more often in the production of metals and their alloys. As an example, the respective ores can be electrolytically reduced directly to the corresponding metals using electricity generated from renewable sources. Metals can also be extracted in whole or in part with the help of renewably produced hydrogen.

Companies can also save a lot of energy, and therefore CO₂, when processing metals, above all by minimising the considerable losses that occur in all stages of processing. For example, 40 percent of molten aluminium is lost before it is even turned into sheet metal.



The city as a mine: sorting and recycling

In order to increase the percentage of recycled metal, better sorting of scrap is necessary because an alloy only fulfils its task if it does not contain too many impurities. Recycling companies therefore need sophisticated techniques to identify, separate, clean and crush alloys. Before these processes are perfected and competitive, researchers could develop alloys for the metal industry whose properties are barely or not at all affected by impurities. Improving the potential of recycling is a task to which metallurgists are now increasingly devoting themselves.

Sustainable alloy design for recycling-friendly materials

Researchers are already investigating alloys for various applications whose properties are not significantly affected by impurities. If the number of alloys that differ chemically is reduced, then it will be easier to separate and recycle scrap metal.



Durability thanks to corrosion protection and repeated use

The ecological footprint of the metal industry can be drastically reduced simply by making alloys and the components that are made from them more durable, which simply means fewer metals need to be produced to replace them. Corrosion protection in particular would have a huge impact here.

However, not all metal parts and components are discarded or replaced because they are worn or corroded. In many cases, they have to be discarded for economic reasons. Using the parts elsewhere without first melting them down and then manufacturing the same part again would also save a lot of energy.



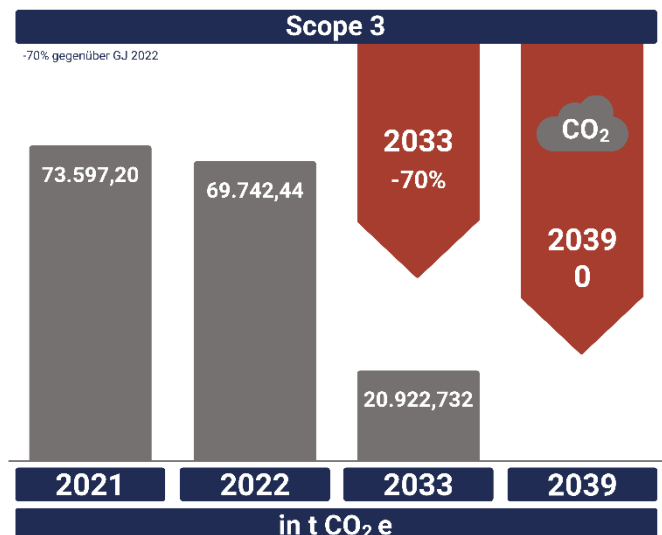
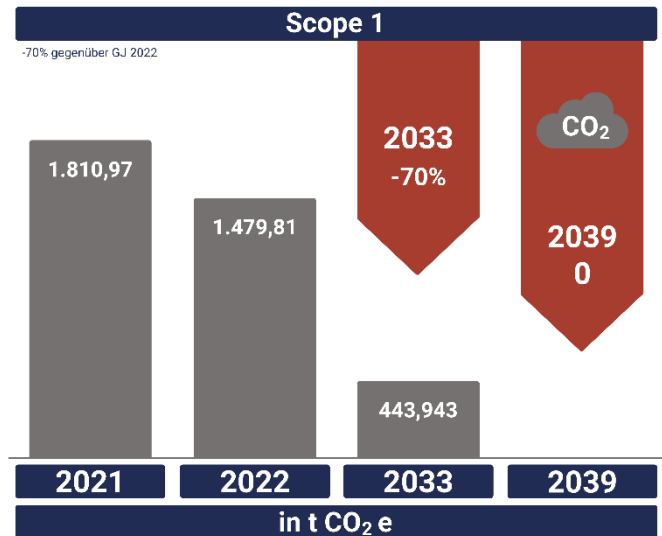
Energy efficiency thanks to lightweight construction and improved temperature resistance

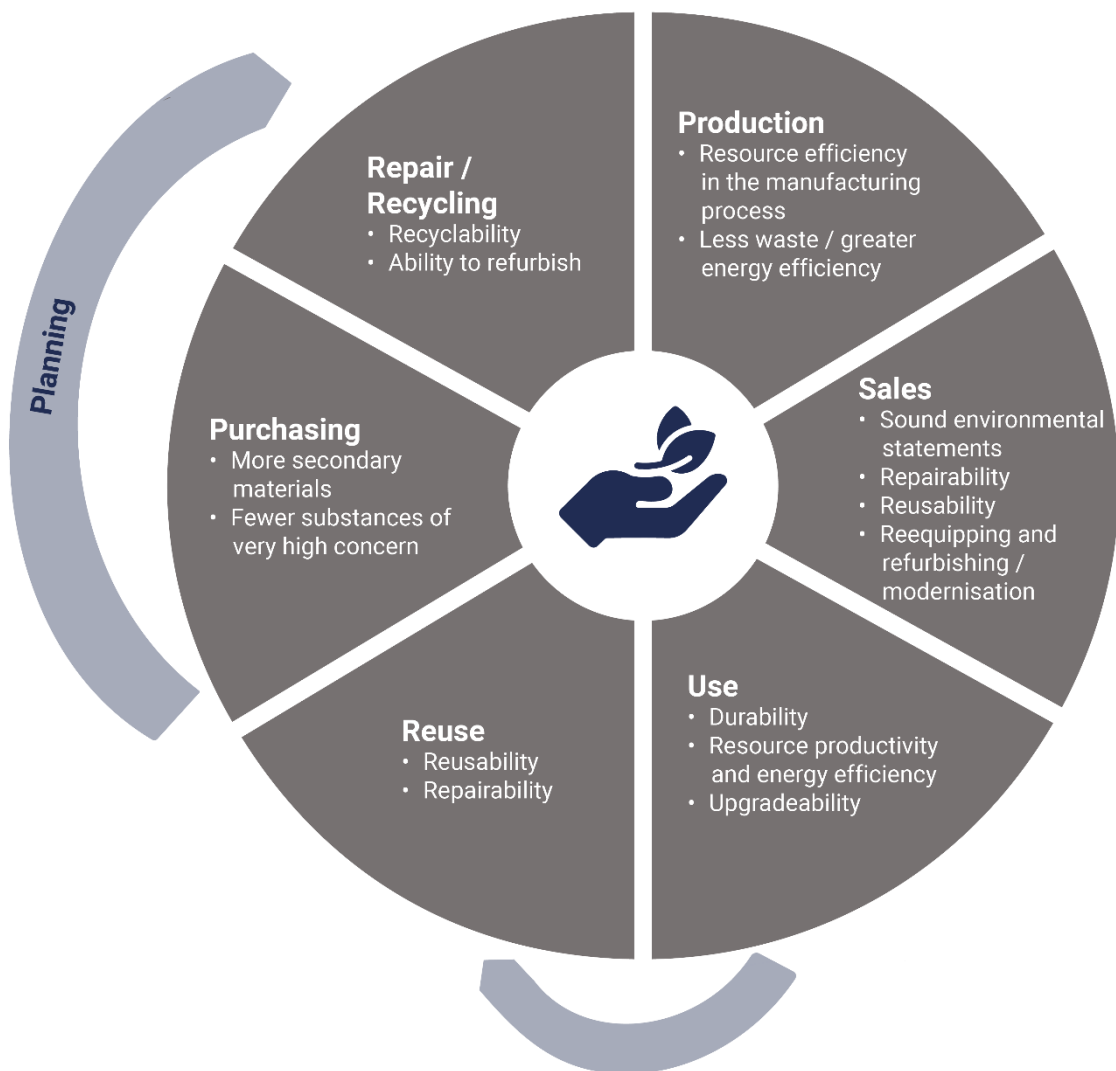
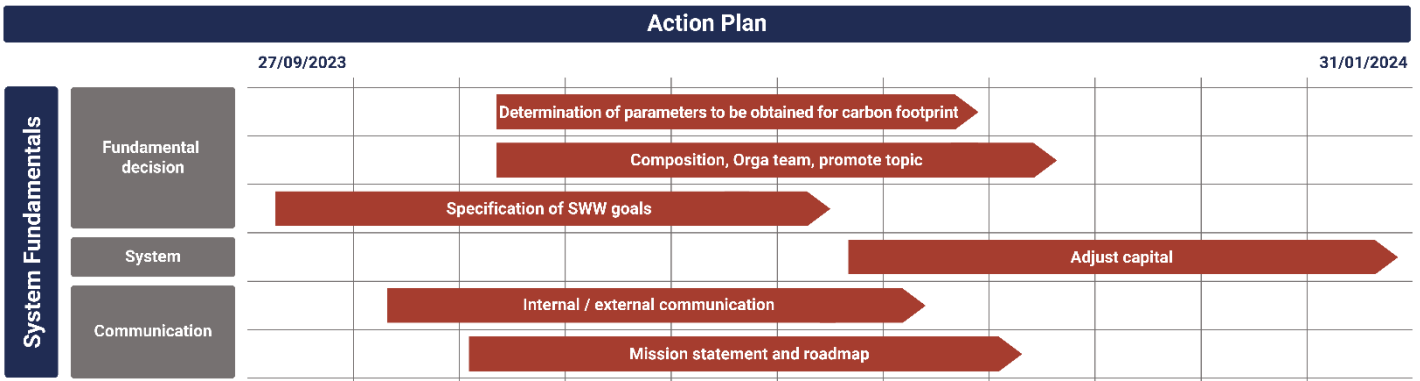
It is not only possible to improve the environmental footprint of the metallic products themselves during use, for example by using them for as long as possible, it is also possible to save energy in their respective areas of application if the design of the materials and components is optimised accordingly. Lighter car bodies lead to lower fuel consumption, and turbines that can operate at higher temperatures generate electricity more efficiently. The development of new alloys by metallurgists can improve the strength, density and temperature resistance of materials.

The Standard-Metallwerke Climate Strategy

The climate strategy of the Standard-Metallwerke GmbH focuses on avoiding, reducing and, if unavoidable, offsetting CO₂ emissions. The strategy is based on the objectives of the Environmental, Energy and Climate Policy. In Scope 2, the company has been climate neutral since 2020 because the electricity it uses comes from renewable sources.

- Our goal: CO₂-neutral business operations by 2035 and a CO₂-neutral supply chain by 2039
- Keep Scope 2 CO₂ neutral in the following years
- Our approach: Continuous reduction of emissions from business operations, cooperation with suppliers and a portfolio that helps customers protect the climate





In addition to measures in our own business operations such as electrifying the fleet, switching to green electricity and optimising buildings, measures in the supply chain and extended value chain play an essential role in achieving the target.

A report is submitted to the Executive Board at least once a year as part of the management reporting process.



Measures for emissions reduction in Scope 1

- Investment in energy-efficient technologies and systems to minimise energy consumption
- Use of renewable energies such as solar energy or wind power to reduce CO2 emissions
- Implementation of processes to reduce and recycle waste in order to optimise the use of raw materials
- Monitoring and regular maintenance of systems to minimise energy losses

Measures for emissions reduction in Scope 3

In Scope 3, there is a particular focus on reducing emissions produced in the supply chain. These emissions are to be reduced by 70% by 2033 and completely by 2039.

- Optimisation of the supply chain to minimise the transport of materials and products
- Promotion of sustainable transport solutions such as electric vehicles or the use of public transport
- Work with suppliers to improve their sustainability standards and reduce their emissions
- Promotion of the circular economy and reuse of materials to minimise resource consumption

Measures (avoid, create, compensate)

