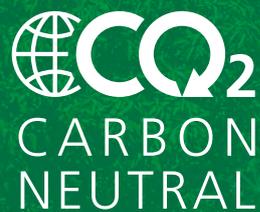
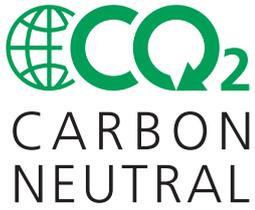


HEIDELBERGCEMENT

**Leading the way to
carbon neutrality**

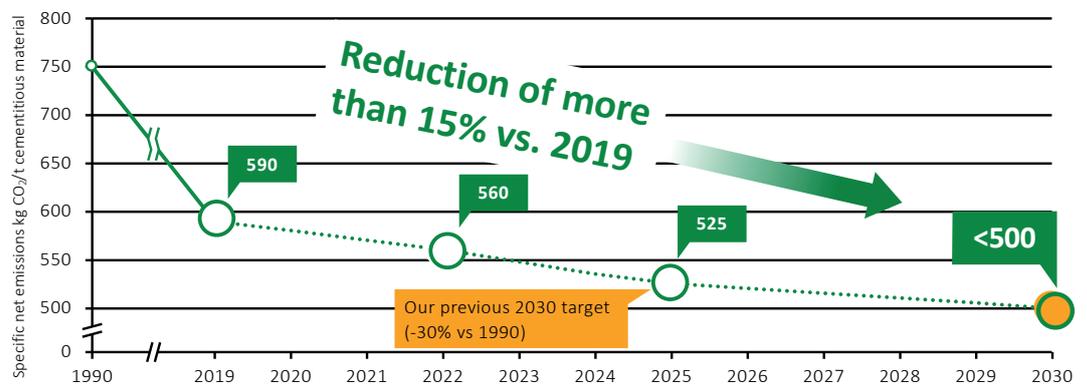




Sustainability is an integral part of Heidelberg-Cement and will be at the center of our strategy going forward. Our focus is on climate protection: as an energy-intensive company, we are committed to fulfilling our share of the global responsibility to keep the rise in worldwide temperature well below 2 degrees Celsius, as set out in the Paris Agreement.

Reducing our carbon footprint and increasing energy efficiency are central tasks for Heidelberg-Cement's management teams on all levels. A large part of our investments and research efforts have been and will continue to be directed towards achieving this goal. This is how we contribute to a **sustainably built future** for the world in which we operate. **We want to be the industry leader on the path to carbon neutrality.**

We will significantly reduce our carbon footprint by 2030



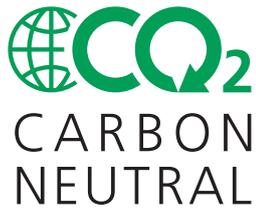
We have a strong track record in reducing CO₂ emissions, and are further accelerating our efforts. By 2019, we had already achieved a 22% reduction of our specific net CO₂ emissions per tonne of cementitious material compared with 1990. Our 2030 target of a 30% reduction has therefore been brought forward to 2025, with a new, challenging goal of less than 500 kg CO₂ per tonne of cementitious material set for 2030, which is a reduction of -33% – all underpinned by a clear roadmap.

Our CO₂ reduction strategy is based on solid measures at plant and product levels, the implementation of which is well underway. The achievement of our sustainability goals is also embedded in the management incentive programs of HeidelbergCement.

Our most important emission reduction measures for the next ten years are the following:

-  Increased use of **alternative raw materials and fuels**
-  **Substitution of the CO₂-intensive clinker in cement** by secondary cementitious materials that have a significantly lower CO₂ footprint
-  Major investments in **plant efficiency** and CO₂ reduction at plant level
-  Increased share of sustainable **low-carbon concrete products**

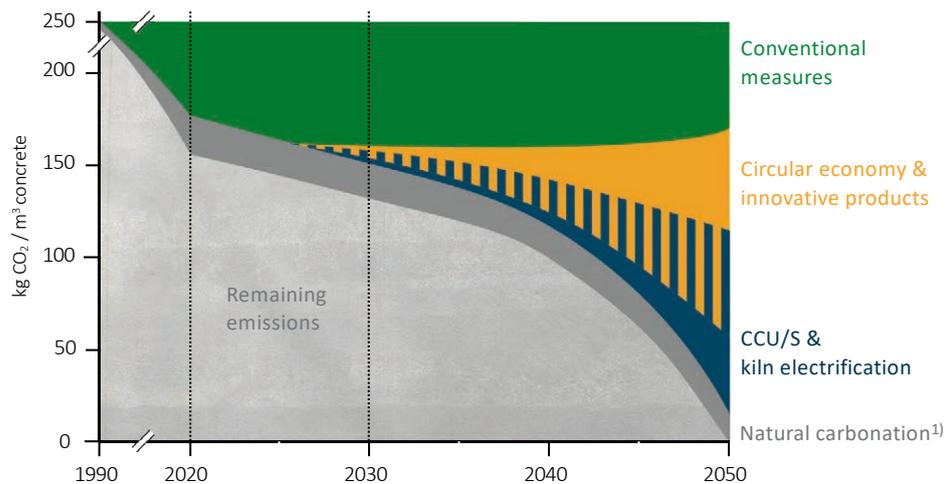
Beyond 2030: our path to carbon neutrality in concrete



Our Sustainability Commitments 2030 define the key topics and core principles of our corporate sustainability strategy for the next ten years. They are complemented by our **commitment to offer carbon-neutral concrete across our product portfolio by 2050** at the latest.

For this, we rely on a combination of measures – most importantly, the increased use of alter-

native fuels, alternative secondary cementitious materials (including recycled materials), and carbon capture and usage or, for a limited period of time, storage (CCU/S). HeidelbergCement has established an internal interdisciplinary CO₂ management task force of international experts from different fields, who are working intensively to push our agenda even further and show results as early as possible.



1) Natural carbonation is the absorption of CO₂ from the atmosphere during the lifetime of a concrete construction

Two key levers to reach our target



A considerable proportion of emissions generated in the process of cement manufacturing is unavoidable, which significantly contributes to the footprint of the end product concrete. We must therefore develop new technologies – other than those already mentioned – that enable CO₂ savings on a large scale. By investing in **different carbon capture technologies**, we aim to trap CO₂ in its purest form to either utilise or safely store it until it can be used in large quantities.

Cement and concrete companies can also support the **circular economy** through resource efficiency, co-processing of waste materials and concrete recycling, including its forced carbonation. We test a variety of materials for CO₂ absorption and the possibility of using them to produce marketable building products. Among them are natural minerals like olivine and basalt, and industrial waste products such as blast furnace slag and cement fines from recycled concrete.

CCU/S

CO₂

- Carbon capture & usage (to be used for the manufacture of fuels, carbonates, polymers and chemicals, animal feed)
- Carbon capture & storage

Circular economy & innovative products



- Use of recycled materials
- Low-carbon clinker types
- Low-carbon cement types
- Alternative cementitious materials

A comprehensive approach to carbon neutrality in concrete



We are committed to reaching carbon neutrality of our whole product portfolio on concrete level by 2050. We are convinced that concrete has the potential to become **the most sustainable and versatile building product**, when considered across its entire life cycle, from production to recycling. A large part of our investments and research efforts in upcoming years will be directed towards achieving this goal.

We will work on all levels not only to minimise emissions, but also to capture and use or store the remaining carbon dioxide. With our multi-dimensional approach to reduce CO₂ emissions, we focus on **levers we can pull** already now to reduce emissions intensity while building partnerships and coalitions to **advance breakthrough technologies** that allow reductions on a larger commercial scale in the longer term.

Our approach to reduce CO₂ emissions

Reducing Intensity

Medium-term: 2020-2030

-  **Reduction of CO₂ content in clinker**
 - Further improve energy efficiency
 - Increase use of alternative fuels, raw materials, and new binder concepts
-  **Reduction of CO₂ content in cement and concrete**
 - Use clinker with lower CO₂ content and secondary cementitious materials
 - Optimise concrete mixes through new cement types

Long-term: 2030-2050

-  **Continued R&D into improving processes and energy efficiency**
-  **Alternative cementitious materials**
-  **Increasing variety of low-carbon / zero-carbon products**
-  **Hydrogen as a fuel & kiln electrification**

Mitigating remaining emissions

-  **Projects for CO₂ capture and usage**
 - Process-integrated CO₂ capture
 - Recarbonation of recycled concrete
 - Use of CO₂ in circular economy (e.g. chemical products)

-  **Long-term R&D efforts** to support new technologies, e.g. process-integrated CO₂ capture, recarbonisation of recycled concrete
-  **Rollout of new technologies in industrial scale**

An adequate political framework is the prerequisite for successful decarbonisation.

In times of climate change and resource scarcity, we also aim to **stimulate the demand for sustainable building technologies and products** such as 3D printing and concrete. HeidelbergCement will offer an increasing variety of green and sustainable products along the

value chain to fulfil the market demands. We want to push the boundaries to strengthen innovation and deepen partnerships with our customers and all other stakeholders. Together, we craft material solutions for the future.



Definition

Carbon-neutral concrete

Carbon-neutral concrete includes all direct CO₂ emissions associated with concrete production and lifetime servicing, as well as all abatement options, such as natural or engineered recarbonation, the use of supplementary cementitious

materials (SCM) or of carbon-free energy sources, as well as electrification and CCU/S technologies. Neutrality is achieved over the entire life cycle of concrete, including demolition and recycling.