

Climate solutions in cement production: *An avoided emissions case study*

Specialty chemicals company Sika® is reducing the carbon emissions of cement production.

→ ~10% emissions

per tonne of cement produced using the SikaGrind® additive, which can enable a lower clinker content and reduced energy consumption.



Up to
43 kt CO₂ eq.
avoided per year.

256 kt CO₂ eq.
was avoided
roughly from 2018
to 2023.

Capturing avoided emissions

— assessment details

- **Functional unit:** 1 tonne of cement produced.
- **Impact – emissions avoided:** 79 kg CO₂ eq. / tonne of cement produced.
- **Time period:** Year-on-year, 2018–2023.
- **Scope:** SikaGrind® sales to a cement plant in Peru.
- **System boundaries:** The life cycle emissions of cement and SikaGrind®, including use phase emissions.

Use this document to support your understanding of avoided emissions calculations and disclosure as outlined in the WBCSD Guidance on Avoided Emissions:



The reference scenario

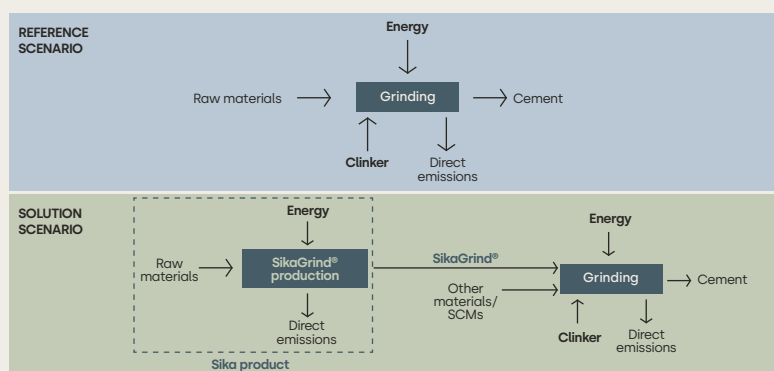
- A cement plant in Peru produces standard cement without using quality improvers or other additives during the final grinding process.
- The finely ground particles collect and stick to the mill machinery, reducing grinding efficiency. This decreases the production rate and increases energy consumption.
- Clinker is required, which is a material with significant carbon emissions. Alternatives to clinker such as granulated blast-furnace slag or fly ash – known as supplementary cementitious materials (SCMs) – reduce cement's strength.
- The cement industry accounts for approximately 7% of global greenhouse gas emissions, primarily due to the chemical reactions involved in clinker

The low-carbon scenario

- The estimated dosage of SikaGrind® that the Peruvian cement plant uses is 0.5 kg/ton of cement. This results in:
 - Improved grinding and separation efficiency, leading to lower energy consumption;
 - A 10–20% increase in cement strength, which means larger amounts of clinker can be replaced with SCMs.
- The plant's annual cement production is 0.54 Mt, requiring approximately 270 tonnes of SikaGrind® per year.



How it works



The solution reduces the cement producers' Scope 1+2 emissions (energy consumption during grinding), and Scope 3 emissions (raw materials).

WBCSD Avoided Emissions Eligibility Gates

- ☒ Gate 1: Climate Action Credibility ☒ Gate 2: Climate Science Alignment ☒ Gate 3: Contribution Legitimacy

What share of Sika revenue does this solution represent?

The solution is part of Sika's Concrete target market, which accounts for approximately 10% of the company's total sales. Between 2018 and 2023, SikaGrind®-285 accounted for around 50% of total SikaGrind® product sales in Peru.

Social and environmental side effects

While SikaGrind® can increase cement production efficiency, this does not necessarily lead to higher output. In many regions, existing cement production capacity already exceeds demand, limiting the need for additional production.

Third-party verification

The calculation is based on the data from the following EPDs: Slag Cement EPD, [CEM I EPD](#).