SCALE BLENDED CEMENT BY 20 PERCENTAGE POINTS TO REDUCE ANNUAL GLOBAL CO_2 EMISSIONS BY ALMOST 2%

Concrete is essential to our lives

- From constructing homes, roads, water infrastructure and flood protection, to building the wind farms and grids the energy transition depends on, concrete is a foundation for economic and social development.
- Most of the buildings and infrastructure that will exist in 2050 have yet to be built – so changes made to concrete's ingredients today can avoid locking in global emissions for decades.
- Concrete is the second most consumed commodity after water and, alongside cement, is responsible for 7-8% of global CO_2 emissions.[1]
- Demand will continue to grow, with the global balance of construction activity shifting to Africa and Asia. Without action to further decarbonise cement and concrete, annual emissions could increase from around 2.4 $GtCO_2$ today, to around 3.7 $GtCO_2$ by 2050.[2]

Blended cement is a proven and scalable solution

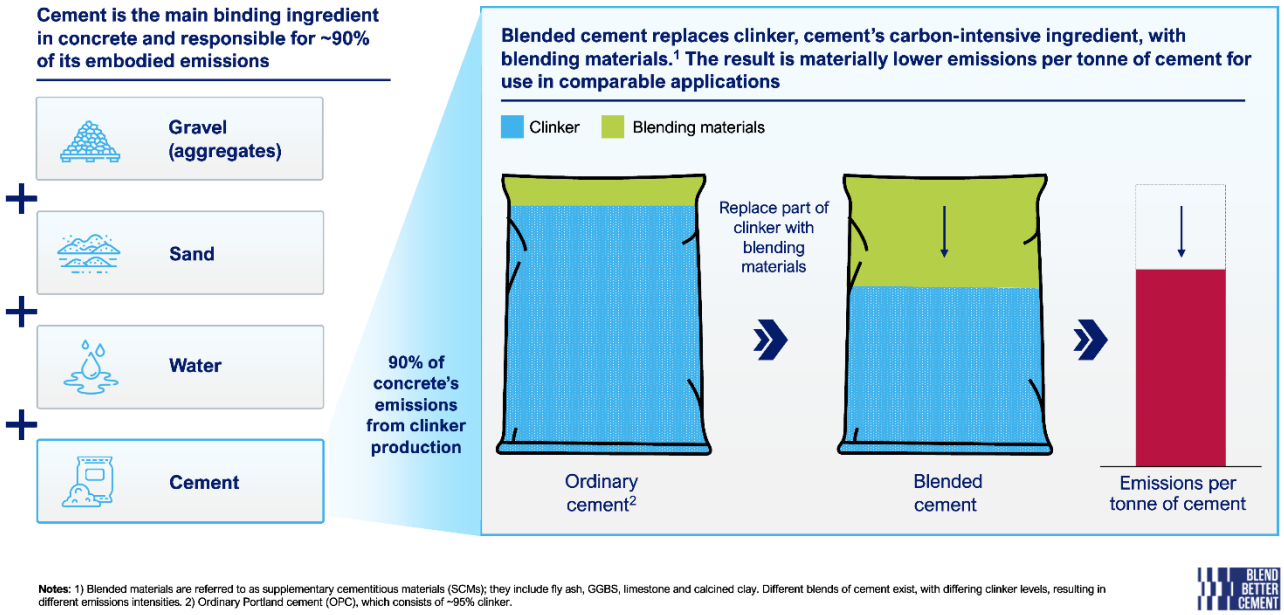
- Around 90% of cement's emissions come from the production of clinker, a carbon-intensive ingredient that has traditionally given cement its binding properties. Clinker is made by heating limestone at high temperatures, with CO_2 emissions deriving from the fuel used and from the chemical reaction itself.
- Reducing the amount of clinker in cement by substituting with blending materials, such as fly ash, GGBS, limestone and calcined clay, can materially lower the emissions per tonne of cement [Exhibit 1].[3] It is one of the most effective near-term strategies to decarbonise cement and concrete, alongside other solutions that support more sustainable construction.
- Blended cement is ready to scale today. It is a proven solution, used in landmark projects including the Shard, the One World Trade Center and the Burj Khalifa. Blended cement was used by the Romans, who built the Pantheon with volcanic ash. Blending levels of 40-50% have been used commercially for 50 years in certain markets.
- Blending materials are readily available across the world and can enable countries to build domestic industries and supply chains – unlocking green industrialisation and reducing reliance on imports and foreign currency.
- Blended cement can deliver in comparable applications and at a comparable cost. It builds long-lasting infrastructure, is particularly suited to coastal applications, and requires significantly less energy due to lower, or zero, kiln heat requirements.

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[1] UNIDO, *Decarbonizing Cement and Concrete*, https://decarbonization.unido.org/cement-and-concrete/
[2] IEA (2025), *Cement production, energy demand and emissions*; Mission Possible Partnership (2022), *Making Net-Zero Cement and Concrete Possible.*
[3] Blending materials are typically referred to as Supplementary Cementitious Materials (SCMs).

Exhibit 1

BLENDED CEMENT CAN MATERIALLY LOWER EMISSIONS



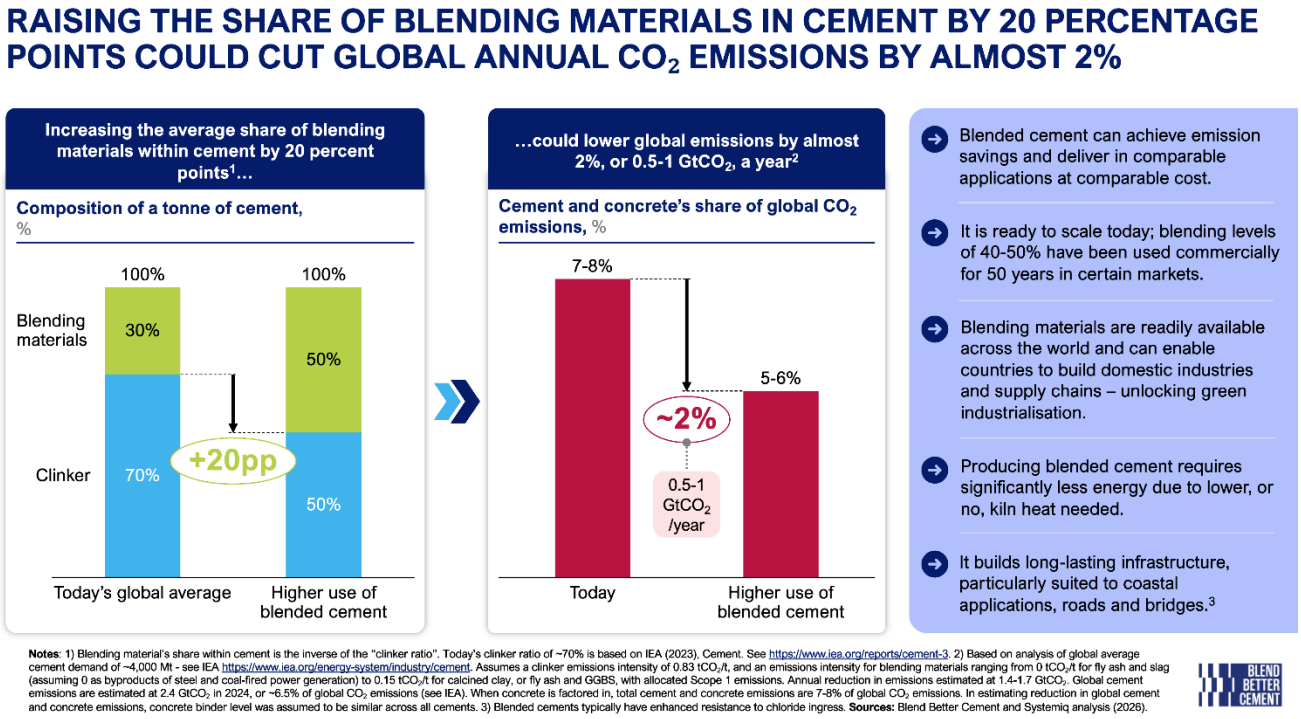
Potential to reduce global emissions by 2% a year

- On average globally today, a tonne of cement consists of ~70% clinker and 30% blending materials.[4]
- Analysis suggests that if, on average, blending materials accounted for 50% of a tonne of cement – a 20 percentage point increase from today – global emissions would fall by almost 2% a year, or 0.5-1 $GtCO_2$ [Exhibit 2].[5] This would lower cement and concrete's share of global emissions from 7-8% to 5-6%.
- Barriers to scaling blended cement include economic, financial, institutional, behavioural elements necessitating coordinated system level change. This requires governments to:
    - **Prioritise low-carbon procurement:** Commit to procuring low-carbon cement and concrete in all major government-funded projects.
    - **Build supply:** Work with industry to remove barriers to sourcing and using blending materials, promoting both decarbonisation and circularity in the construction sector.
    - **Unlock public and private demand:** Send a clear signal to the market by joining other national governments in supporting the Intergovernmental Council for Buildings and Climate (ICBC)'s Call to Action on Blended Cement.
    - **Review and update standards**: Ensure regulations and building codes reflect current international best practice and state-of-the-art technologies to provide safe routes to market for cements with higher levels of blending materials.

[4] IEA (2023), Cement.
[5] Analysis based on global annual cement demand of 4,000 Mt and emissions intensity of 0.083 tCO_2/t for clinker, and 0 – 0.15 tCO_2/t for SCMs. Increasing the global average share of SCMs within cement from 30% to 50% implies a decrease in annual global emissions of 0.5 – 1 $GtCO_2$.

- The Blend Better Cement campaign, led by the UNEP-hosted Global Alliance for Buildings and Construction (GlobalABC) and Intergovernmental Council for Buildings and Climate (ICBC), the Global Cement and Concrete Association (GCCA), the Cement and Concrete Breakthrough Agenda, the LC3 Project, Climate Group and Systemiq, aims to drive global recognition of the benefits of blended cement as a fast, scalable and competitive solution to cut cement and concrete emissions.
- Momentum is building ahead of COP31, with 14 countries acknowledging a UNEP-backed Call to Action on Blended Cement, including Türkiye, the UK, France, Brazil, Germany, and 5 African countries, Ghana, Kenya, Tanzania, Uganda, and Ethiopia.

Exhibit 2



Notes: 1) Blending material's share within cement is the inverse of the "clinker ratio". Today's clinker ratio of ~70% is based on IEA (2023), Cement. See https://www.iea.org/reports/cement-3. 2) Based on analysis of global average cement demand of ~4,000 Mt - see IEA https://www.iea.org/energy-system/industry/cement. Assumes a clinker emissions intensity of 0.83 tCO_2/t, and an emissions intensity for blending materials ranging from 0 tCO_2/t for fly ash and slag (assuming 0 as byproducts of steel and coal-fired power generation) to 0.15 tCO_2/t for calcined clay, or fly ash and GGBS, with allocated Scope 1 emissions. Annual reduction in emissions estimated at 1.4-1.7 $GtCO_2$. Global cement emissions are estimated at 2.4 $GtCO_2$ in 2024, or ~6.5% of global CO_2 emissions (see IEA). When concrete is factored in, total cement and concrete emissions are 7-8% of global CO_2 emissions. In estimating reduction in global cement and concrete emissions, concrete binder level was assumed to be similar across all cements. 3) Blended cements typically have enhanced resistance to chloride ingress. **Sources:** Blend Better Cement and Systemiq analysis (2026).