

Decarbonizing Industries with C3
Steel, Cement and Concrete

Industry's State and Future

The steel, cement, and concrete industries are foundational to global infrastructure. Together, they account for approximately 15-20% of global CO₂ emissions. Demand for these materials is projected to increase by 12-30% by 2050, with regulation and markets demanding change:

- **Regulation:** Systems like the EU ETS enforce stringent emission caps, with carbon pricing gaining traction globally.
- **Markets:** Investors, developers, and end-users increasingly prioritize sustainable materials to meet ESG criteria and certifications such as LEED and BREEAM.

Abatement Challenges

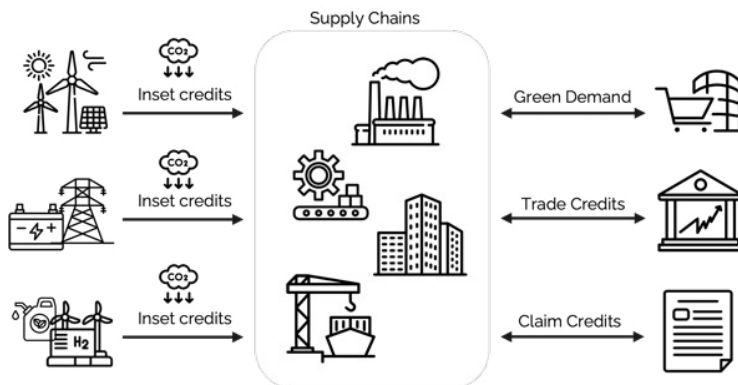
- **CapEx:** Shifting to low-carbon technologies like hydrogen-based steelmaking, carbon capture and storage for cement, or alternative concrete binders, require billions in investment.
- **OpEx:** Sustainable inputs such as green hydrogen, calcined clay, or slag often cost 2-3 times more than conventional materials, driving up production expenses.
- **Infrastructure:** Scaling these technologies demands significant upgrades, from hydrogen supply chains to CCS facilities and sustainable material networks.
- **Compliance:** Meeting regulatory mandates means either reducing emissions directly or buying costly carbon allowances, both of which strain budgets.

Impact on Compliance Costs

- **EU ETS Costs:** With carbon prices potentially reaching €100-200 per ton of CO₂, annual costs could rise by millions per facility, adding €50-100 per ton of steel or cement produced.
- **Emerging Carbon Taxes:** Regions like Asia may introduce taxes of €50-100 per ton of material, further inflating costs.
- **Market Risks:** Failure to decarbonize risks losing access to premium markets, especially in EMEA and NAMER, where sustainability is a prerequisite for contracts.

C3 as a Financial Instrument

Carbon3 (C3) offers a practical solution by certifying incremental emission reductions—such as hydrogen in steel, CCS in cement or low-carbon concrete—as tradable "inset credits." These credits can be sold, creating a revenue stream to offset decarbonization costs and incentivize sustainable practices.



Financial and Strategic Benefits

For Producers

- **Revenue Generation:** Selling inset credits can recover 10-25% of the costs tied to low-carbon technologies. For instance, steelmakers could offset hydrogen expenses, while cement and concrete producers mitigate CCS or binder costs.
- **Cost Savings:** Improved energy efficiency and optimized processes cut operational expenses and reduce carbon tax liabilities.
- **Competitive Advantage:** Low-carbon producers gain an edge with ESG-focused clients, secure premium contracts, and avoid future penalties.

For Value Chain Stakeholders

- **Technology Providers:** Use C3 to fund R&D for innovations like H₂ production or CCS systems.
- **Material Suppliers:** Meet rising demand for sustainable feedstock such as green hydrogen, calcined clay, or fly ash.
- **Developers:** Access greener materials to comply with building standards and boost project appeal.

C3 enables value chain stakeholders to directly tackle Scope 1-3 emissions, avoid escalating penalties, and reinvest earnings into sustainability. By transforming emission reductions into financial assets, C3 bridges the gap between regulatory demands and economic viability, ensuring these industries keep thriving.

Visit carbon3.net to learn more and get in touch.