HSBC Global Research

Energy Transition

8 September 2023

ESG – Under the Hood

Cement: Behind on decarbonisation

Free to View
ESG & Equities - EM Asia

- Cement companies need to do more to reduce their carbon footprint and address other issues, including biodiversity
- Those with more aggressive sustainability strategies can preserve and build more shareholder value, in our view

This is the sixth in our series looking at a single sector and related company-level ESG issues and detailing how we integrate those into our financials and valuations.

Manufacturing cement results in significant amounts of greenhouse gas (GHGs) emissions, mainly CO_2. In our global building materials coverage universe, reported 2022 scope 1 (direct) and 2 (indirect) CO_2 emissions totalled over 900m tonnes, with over three-quarters from companies based in Asia. We expect the cost of these emissions to be reflected in their financials through a combination of higher product prices and operating costs over the medium to long term, as cap and trade schemes and carbon border adjustment mechanisms (CBAM) are implemented.

How does ESG impact our cement coverage? Our sustainability analytical framework integrates ESG issues into our financials and valuations. The cement industry is one of the largest carbon-emitting sectors after electric utilities and steel. Like utilities, we expect that cement producers with large carbon footprints have a growing long-term tail risk related to carbon pricing, while those adopting aggressive decarbonisation strategies may be rewarded with higher valuations and a broader shareholder base, as investors better understand the strategies and timelines to achieve net zero emissions (NZE). CBAM and other equalisation initiatives aimed at more quickly balancing the cost of carbon globally may represent material risks to operations and shareholder value in the medium to long term, in our view.

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Integrating ESG: Our analytical approach

Stages of ESG integration

Identify ESG issues relevant to a sector (locally, regionally, globally)

1 Identify issues

Understand how the issues affect / are affected by various sectors

Determine whether the ESG issue is a risk / opportunity for the company

2 Apply to company

Consider how well the company has addressed the issue over varying time horizons

Make adjustments to valuations, ratings, and target prices accordingly

3 Integrate into financials

Adjust cash flows (revenues, costs), weight average cost of capital or multiple

How is ESG "priced in" to stock valuation?

Corporate performance

Business perspective – over time, the operational performance of a business improves because it manages various ESG issues well

Stock valuation

Investor perspective – investors (and analysts) consider how well the business is dealing with ESG-related risks and opportunities and how this relates to the current market value

Reputation perception

General public perspective – a shock (usually negative) which may arise as a result of a publicly reported negative ESG-related incident such as an environmental violation or a major governance failing

How do ESG issues affect companies?

ESG matters can be morphed into business opportunities which generate new streams of income.

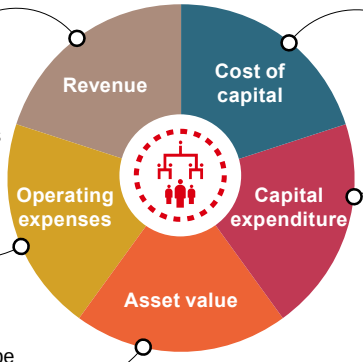
Example: Decarbonisation provides more business opportunities for the renewable energy value chain.

ESG issues can impact the operating cost of companies through efficiency enhancement and regulations.

Example: Increase in insurance costs for food delivery companies due to growing awareness of workers' rights and tightening regulations.

ESG factors may affect anticipated cash flows from company assets and thus the net present value.

Example: Fossil fuel assets of energy companies may be stranded or impaired long-term through energy transition.



Investors may require higher risk premiums for companies with poor ESG disclosures and practices. Green projects can enjoy more favourable rates in financing.

Example: Some central banks are providing lower-interest-rate loans to fund green projects.

The transition to a sustainable economy is likely to bring changes in capital expenditure for development and investment in more sustainable activities.

Example: Technology companies allocate capital, which enables them (and others) to be more sustainable.

Source: HSBC

ESG – Under the hood

- Improving the sustainability of the industrial sector, including decarbonisation, are problems in search of solutions
- Certain sectors have made progress and, in all cases, innovation, technology and strategic planning can be key potential drivers
- The cement industry's large carbon footprint is a valuation constraint, but a "strong" ESG effort can boost valuation multiples

How ESG is shaking up the cement industry

The HSBC building materials team has published a number of reports that include extensive analysis of sustainability challenges and opportunities in the building materials industries, including cement. This historical analysis highlights how the timeline for integration of ESG issues into the financial operating models extends over the short/medium and long term.

Corporate management teams have focused on social and governance factors as a way to offset the cement industry's large environmental footprint. A sector report in 2021 presented a relatively optimistic view of the potential for progress by the industry. It presented extensive data sets on long-term industry trajectories with regard to key metrics, including carbon output, carbon intensity of production, fuel use, fuel alternatives, lower clinker-to-cement ratios and other operational adjustments that could contribute to decarbonisation. Also, there was extensive analysis of the social and governance issues, which were cited as important, given the challenges on the environmental front.

A more recent sector report was optimistic about the potential progress to the 2030 decarbonisation targets, particularly by employing lower clinker-to-cement ratios and utilising alternative fuels. However, the analysis was more sanguine about the industry's ability to achieve NZE by 2050, given the requirement to pass through significantly higher costs into prices. The report concluded "Achieving carbon neutrality by 2050 does not seem economically viable at present: cement prices would have to double in Europe and rise 60% in the US to justify the investment."

In the full report, we update the specific sustainability efforts by four key cement companies in our Asian and European coverage: Conch Cement, Heidelberg Materials, Taiwan Cement, and UltraTech Cement. Contact *AskResearch@hsbc.com* for more information.

Cement industry background

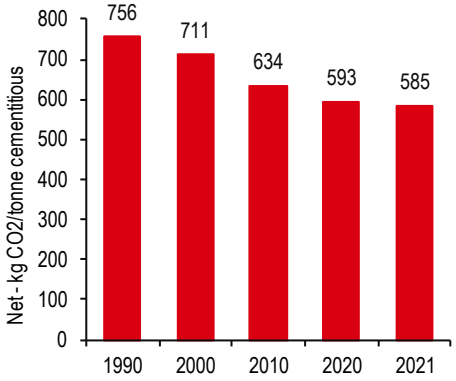
Cement demand to grow at a c7% CAGR in 2023-28e

Cement is the most active ingredient in concrete, which is the second most widely used material by humans after water. Global cement demand has tripled in the past two decades and is one of the prime industrial contributors of global CO_2 emissions. Global cement volumes are expected to grow from 3.86bn tonnes in 2023 to 5.48bn tonnes in 2028e, which is a CAGR of c7.2%.[1] This is on the expectation that lower demand growth in China is expected to be more than offset by the higher demand growth in many other countries (IEA).

Carbon neutrality by 2050 seems challenging

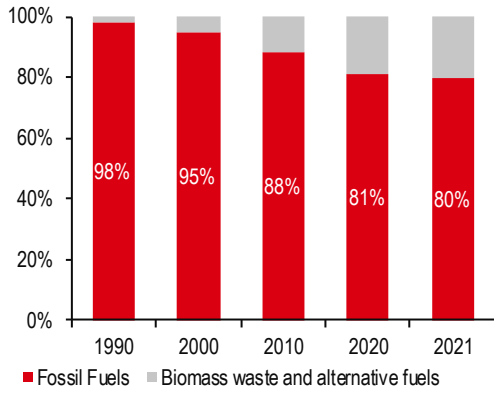
Cement is responsible for 7-8% of global CO_2 emissions. Reducing these emissions is essential to meeting internationally agreed climate targets, as there are few viable substitute materials. The majority of CO_2 emissions intensity (60%) can be reduced through optimisation of the clinker-to-cement ratio to 50% from 61% currently, and by a total shift to alternative fuels (from 20% as of 2021). However, the balance of CO_2 intensity (40%) will likely require the development of Carbon Capture and Storage (CCS) and Carbon Capture, Utilisation and Storage (CCUS) technologies. Since these technologies are currently only economically feasible in specific locations and with government subsidies, the probability that the cement sector can achieve carbon neutrality by 2050 appears low.

Ex 1: Carbon emissions intensity of the cement industry



Source: GNR (Getting the Numbers Right) GCCA in numbers

Ex 2: % Fossil fuel substitution over the years



Source: GNR (Getting the Numbers Right) GCCA in numbers

GCCA pledged to achieve industry (excluding China) net zero by 2050

The companies in the industry have realised the need to reduce GHG emissions and carbon intensity has been reduced by 20% as compared to 1990. **The members of Global Cement & Concrete Association (GCCA), constituting most of the global cement production excluding those in China, have pledged to reach net zero by 2050.** According to the GCCA, carbon emissions in the cement industry decreased by c23% and the usage of alternative fuels was 10x in 2021 as compared to 1990 levels.

Cut emissions per tonne of cement… by lowering the clinker-to-cement ratio and increasing the use of alternative fuels

By 2030, the GCCA's member companies plan to reduce the emissions per tonne of cement by 20% and increase the use of alternative fuels to 22% of global cement kiln energy. Five key policies listed by the GCCA for transitioning to net zero concrete are: 1) using carbon pricing mechanisms to avoid carbon leakage (where production is transferred to other countries with laxer emission constraints), 2) encouraging circular technologies (which are easier to recycle, repair and reuse) in the cement and concrete value chain, 3) adopting policies that encourage the adoption of low-carbon cement and concrete products, 4) supporting CCUS technology, and 5) boosting the supply and affordability of renewable energy, etc.

[1] Cement market size & share analysis, Growth trends and forecasts (2023-2028), Mordor Intelligence

Construction and maintenance of buildings are responsible for 30-40% of solid waste generation.[2] Construction and demolition waste (CDW) would involve the cost of landfill and carbon. Considering that the carbon price in the EU Emissions Trading System (EU ETS) is EUR100 per mt of CO_2 in 2030 and the cost of landfill exceeds EUR100bn, CDW would cost EUR210bn by 2050. Assuming that no additional profit is generated from traditional approaches to cement production and EUR210bn is at risk, companies need to look for options, such as circular technologies, which can help reduce both costs and carbon dioxide emissions.

Adoption of circularity can create financial value pool of about EUR110bn by 2050

Increased investment in circular technologies can create additional profit of EUR110bn by 2050,[3] thus mitigating c50% of the value at risk. The primary circular technology driver is the materials and minerals category, which considers the recirculation of waste material originated from CDW and other industries, with an EUR80bn contribution. The next value driver is energy, which includes alternative fuels generated from waste material, as well as the heat and energy generated during cement production, with EUR24bn contribution. The carbon dioxide category, which includes reusing the carbon dioxide emissions generated during any industrial process using recarbonation of CDW, mineralisation of waste and CCS, is expected to contribute only EUR6bn. However, the challenges associated with adopting circularity need to be resolved. The challenges include the requirement for industry to adapt and build new supply chains and technology coupled with the need for supportive regulations and industry-wide standards.

The cement industry can adversely impact human health, vegetation, biodiversity and ecosystem dynamics through its detrimental effects on air quality, soil, flora and fauna. A study published in Nature Climate Change estimates the climate and health damages from global concrete and cement industry to be approximately three-fourths of the industry's current value.[4]

Emissions from cement plants contain heavy metals, CO_2, NOx, SO_2, VOCs, Particulate Matter (PM), and dust. PM is composed of sulphates, nitrates, ammonia, sodium chloride, black carbon, mineral dust and water. PM is mostly cytotoxic and carcinogenic and cause diseases, such as cardiovascular diseases, respiratory diseases and cancers. $PM_{2.5}$ emissions are atmospheric aerosol particles having diameters less than or equal to 2.5µm. 91% of the population was exposed to $PM_{2.5}$ concentrations more than the annual average guidance of 10µg/m^3 by World Health Organisation (WHO). Globally, 4.2m people died prematurely in 2019 due to exposure to fine PM.[5]

4.2m

Premature deaths a year are caused by exposure to PM across the globe.

[2] The circular economy in the construction and demolition waste sector—a review and an integrative model approach, Santiago Gassó Domingo, Luis Alberto López Ruiz, Xavier Roca Ramón, Journal of Cleaner Production, March 2020, Volume 248
[3] The circular cement value chain: Sustainable and profitable, Sarah Heincke, Jukka Maksimainen, Daniel Pacthod, Sebastian Reiter, Humayun Tai, and Michel Van Hoey, McKinsey's Basic Materials Practice, February 2023
[4] Climate and health damages from global concrete production, Sabbie A. Miller & Frances C. Moore, Nature Climate Change, volume 10, pages 439-443 (2020)
[5] World Health Organization, Ambient (ourdoor) air pollution, 10 December 2022

Biodiversity – seeking a positive impact

Biodiversity disclosure is evolving quickly

How do companies report their biodiversity impact? Our latest ESG sentiment survey indicated that biodiversity issues are rising up the priority list of investors. Regulators are also stepping up their interest in biodiversity. For instance, the EU has proposed requiring all large and listed companies to disclose policies, measurable targets, action plans, and performance indicators for biodiversity management. However, the absence of a standardised measurement approach remains a challenge for companies to report their impact and dependency on biodiversity. Corporates should identify and understand how their business could affect the state of different biodiversity components, which can be measured across different aspects – ecosystems (extent and condition), species (population size and extinction risk), and genes (genetic diversity).

Industry organisations, including in cement, are providing leadership

Industry associations are critical in helping to establish and progress sustainability and biodiversity strategies. The GCCA released a biodiversity policy in 2021. The policy proposes actions throughout cement, concrete and mining of aggregate companies to help drive the sector towards the goal of having a net positive impact on biodiversity. Member companies aim to cause minimal impact on biodiversity and restore the nature of the area they manage.[6]

Cement industry has significant adverse impact on biodiversity

Concrete production involves the extraction of materials and often adversely impact biodiversity. Land clearance, noise and vibrations, the alteration of hydro-geological systems as well as pollution and waste associated with extraction and production activities affect biodiversity. Some of the direct impact on biodiversity from quarrying operations include pollution of land, water and air, changes in water quality, a reduction in overall water quality, disturbance to wildlife due to noise and vibrations, habitat changes due to land clearance, management and rehabilitation activities. Since quarries are often situated near urban areas and on land having low biodiversity values, the cement sector needs to improve biodiversity on quarrying sites.[7]

A number of initiatives that can help deliver a positive impact on biodiversity

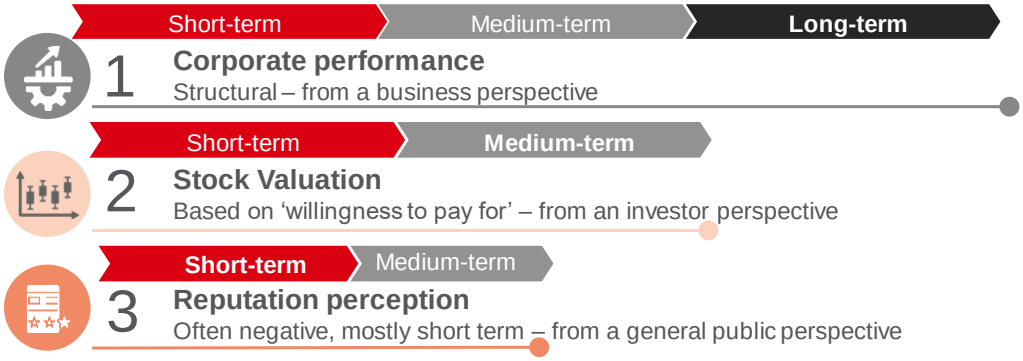
Cement plants target a net positive impact on biodiversity: Cement producers can enhance the biodiversity during extraction and completion of operations by rehabilitating quarries and ensure more enhanced, thriving and connected habitats. This can help the companies deliver a net positive impact on biodiversity and other components of natural capital like water storage, etc. Additionally, the impact on biodiversity can be reduced by using nature-based solutions for building structures like green walls and roofs, wildlife overpasses, aquatic ecosystems, etc.[8]

Time horizon for the ESG impact on share price and valuation

In our evaluations of how risks and opportunities can be transmitted into company financials, we consider the impact of ESG/sustainability issues on three key areas: corporate performance, stock valuations and reputation perception. In the full report on the cement sector, we are particularly focused on factors influencing corporate performance and valuation. We observe that ESG risks and opportunities are transmitting into corporate performance over all three time periods below, but that there are considerable long-term tail risks related to carbon pricing and stranded assets and the negative impact of operations on the environment and biodiversity.

[6] Global Cement and Concrete Association, GCCA announces new biodiversity policy towards the achievement of Net Positive Impact, 25 January 2021
[7] Biodiversity management in the cement and aggregates sector: Regulatory tools, Sarah Lucas, Maria Ana Borges, Vanja Westerberg, Lothar Guendling, IUCN, Jan 2014
[8] Global Cement and Concrete Association, Biodiversity

Ex 3: ESG and the sustainability risk and opportunity transmission



Source: HSBC

Corporate performance – negatively impacted by higher environmental costs: All cement plants face high risks to corporate performance, given the size of their environmental footprints and the potential cost of decarbonisation. We attempt to quantify the potential range of outcomes for both the GHG footprint, as well as the usage of water and disposal of wastewater.

Cement sector valuations – negatively impacted by risks related to regulatory and operating constraints: Our European team observed that as of 3Q22, sector valuations had derated by 30% compared with 2017. This was primarily a result of increasing clarity on incremental costs related to decarbonisation that have compressed valuations.

Reputation perception – generally a negative overhang: Cement manufacturing companies have reputational risks, which are skewed toward negative outcomes in the short and medium term. The sector is the second largest GHG emitter within the industrial sector, after iron and steel. While resource consumption, emissions, water consumption and waste (including dust, kiln sludge and packaging materials) are visible issues and cloud the industry's reputation, there have also been other major reputational issues, which may impact share prices. Additional issues include: a) deforestation, b) land use issues, and c) impact of construction and operation of cement plants on the environment. When industrial accidents or other corporate reputational issues do emerge, they are often negative in context and can have an immediate knock-on effect on share prices.

This is a Free to View version of a report with the same title published on 8 September 2023. Please contact your HSBC representative or email AskResearch@hsbc.com for more information. The full note details ESG share price drivers; environmental, social and governance opportunities and risks; scope 3 emissions and decarbonisation strategies; and the decarbonisation efforts of Conch Cement, Heidelberg Materials, Taiwan Cement and UltraTech Cement.

Disclosure appendix

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