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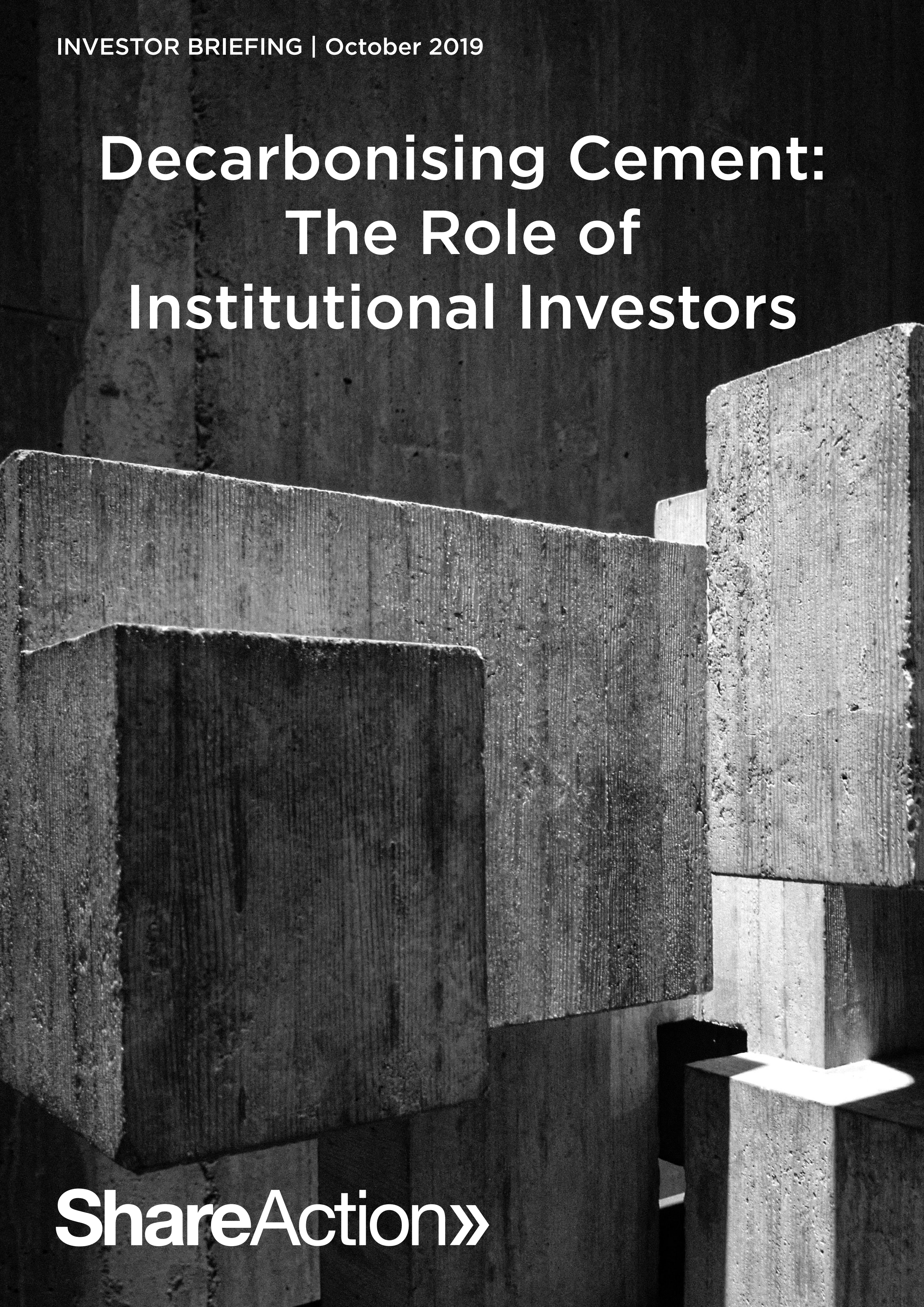
Decarbonising Cement: The Role of Institutional Investors



ShareAction»

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About ShareAction

ShareAction is a UK registered charity working globally to lay the tracks for responsible investment across the investment system. Its vision is a world where ordinary savers and institutional investors work together to ensure our communities and environment are safe and sustainable for all.

In particular, ShareAction encourages institutional investors to be active owners and responsible providers of financial capital to investee companies, while engaging meaningfully with the individual savers whose money they manage. Since 2005, ShareAction has ranked the largest UK asset owners and asset managers on their responsible investment performance.

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Executive Summary

Concrete, and therefore cement, is everywhere. From houses to hospitals, cement forms the very foundation of our industrialised societies. Yet this seemingly innocuous substance has a carbon footprint equivalent to the third largest country on earth – accounting for 8% of global emissions.[1] This report outlines why cement is so carbon-intensive, how the industry can decarbonise, and why institutional investors need to act.

Key Points

- Limiting global temperature rises to 1.75°C above pre-industrial levels will require the cement industry to cut absolute emissions by 60% by 2050,[2] while limiting temperature rises to 1.5°C will require net-zero emissions by 2050.[3]
- Over the same time period, cement production is forecast to rise by up to 23%.[4] Cutting absolute emissions against this backdrop will be challenging[5]. Since 2000, CO_2 emissions per tonne of cement have fallen, yet absolute emissions have risen 70% as production has more than doubled.[9, 17, 68]
- Carbon emissions are embedded in clinker production, the key component of limestone based cement. Higher rates of clinker substitution, alternative fuel usage, and gains in energy efficiency have all helped reduce carbon intensity in the past decades, but to reduce absolute emissions, improvements in these areas must accelerate.
- Even with large gains in these areas, full decarbonisation of the cement industry will remain acutely challenging. Technical constraints, high costs, and the availability of raw materials are a few of the obstacles facing low-carbon cement. As a result, in order to remove residual emissions, carbon capture and storage (CCS) remains central to decarbonisation pathways, despite significant uncertainty about the technology's viability.
- A business-as-usual approach presents risks to both companies and investors. Laggards are exposed to changes in climate policy, while efforts to cut embodied emissions in real estate and government procurement could boost demand for low-carbon cement.

Investor Response

- Given the sector's significant contribution to global emissions, a failure to decarbonise would increase climate-related risks not just in cement, but across the portfolios of asset owners.
- Investors have started to take action. The Investor Decarbonisation Initiative has called on cement companies to set science-based targets (SBTs),[6] and in June 2019, the Institutional Investors Group on Climate Change (IIGCC) outlined investor expectations for net-zero emission targets in the cement sector.[7]
- Investors must follow up with robust engagement and if needed, vote against companies at annual general meetings (AGM) and table shareholder resolutions at climate laggards. To date, just one climate-related shareholder resolution has been filed at a cement company.
- Bondholders also have a crucial role to play. The largest ten cement companies, which account for 40% of global production,[8] use the bond market for external financing.
- Should cement companies fail to align with investor expectations or show no willingness to improve, investors should not partake in new bond or equity issuances by climate laggards. Doing so will reduce the negative impact of investment portfolios, mitigate climate-related risks and incentivise companies to act.

Background

This section examines the drivers of cement demand and emissions, as well as possible decarbonisation pathways.

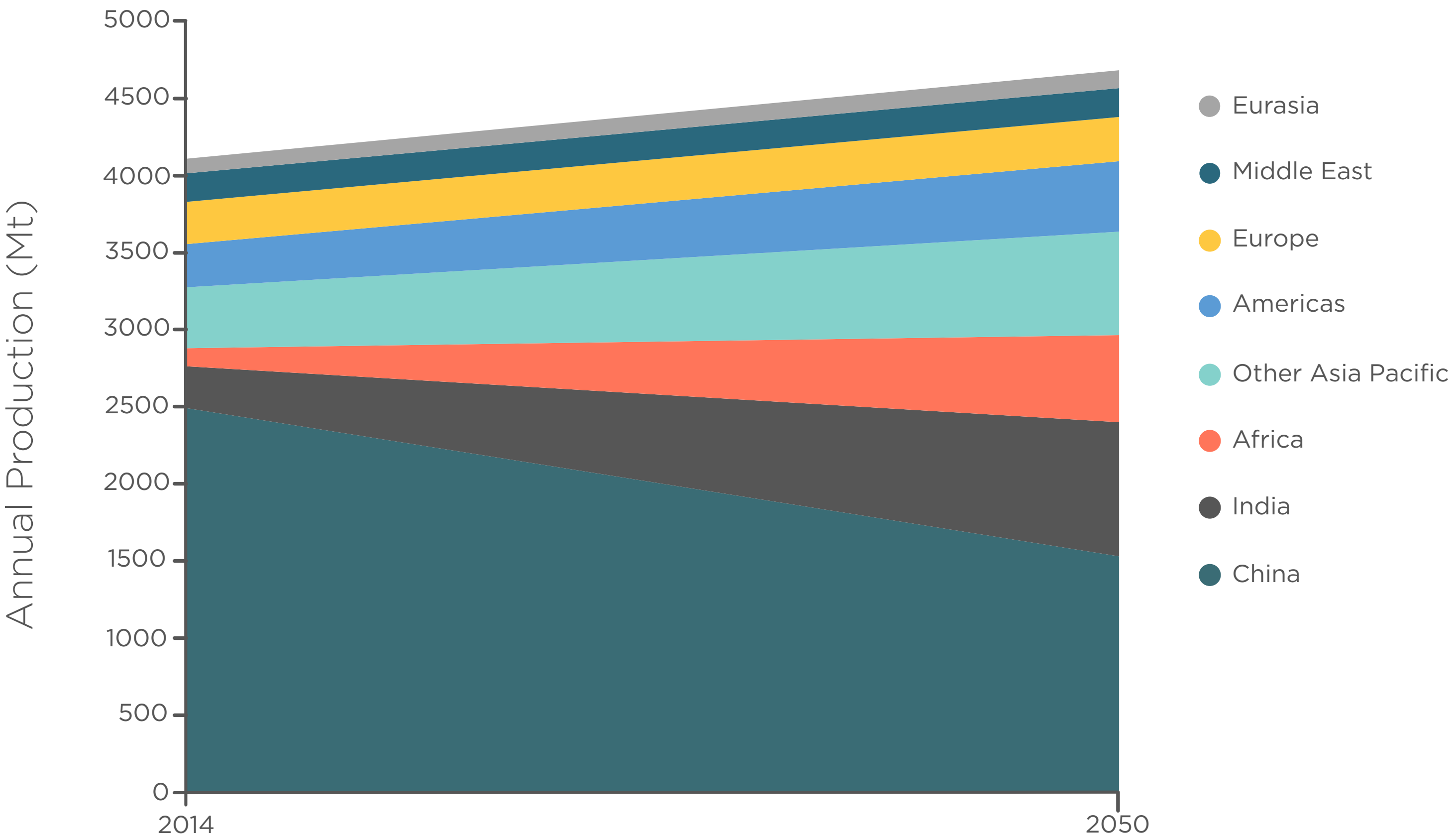
Growing Demand, Growing Emissions

In 2016, 4.2 billion tonnes of cement were produced worldwide, generating 2.2 billion tonnes of CO_2.[1, 9, 10] In 2018, production fell to 4.1 billion tonnes; however, this figure is forecast to rise to 5 billion by 2050.[9, 5] Achieving alignment with the Paris Agreement against this backdrop of rising demand will require deep cuts in the carbon intensity of cement.

In 2018, 58% of global production occurred in China, of which a small fraction was exported.[9, 11] In developing countries, rapid urbanisation and population growth are set to drive cement demand in the coming decades.[12] The global infrastructure deficit is another structural driver, with $94trn of infrastructure investment needed from 2016 to 2040, mainly in developing countries.[13]

The positive relationship between economic growth and demand for cement is clear, but it is not always linear. Once GDP per capita reaches a certain threshold, demand can stabilise or even fall.[14] For example, in China, production is forecast to fall as the economy transitions towards higher quality growth led by the service sector,[15] while countries in the earlier stages of development, such as Africa and India, are forecast to increase their share of global production by 2050 (Figure 1).

Figure 1: Global Annual Cement Production

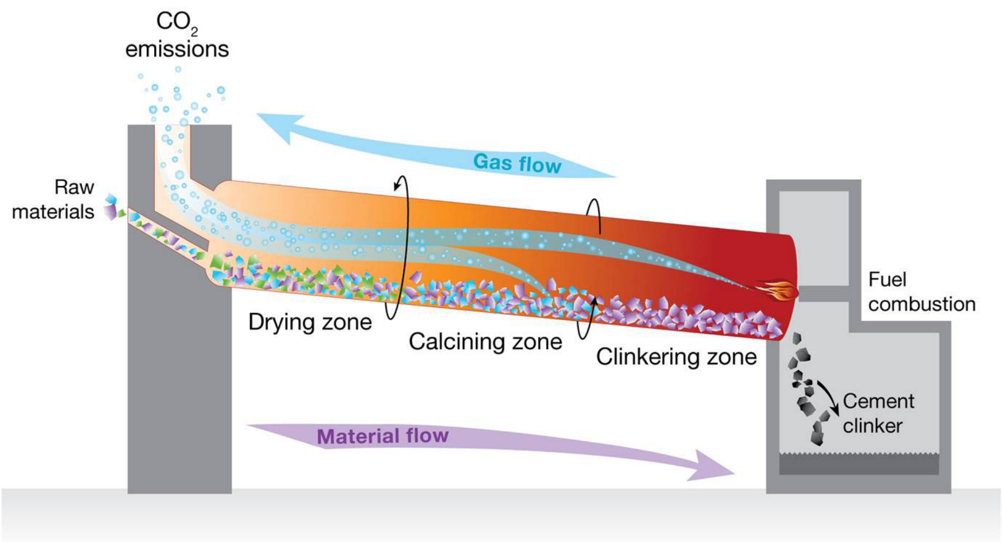


Source: IEA (2017), IEA-CSI (2018)

Cement Production

To identify how emissions can be reduced, cement production can be broken down into steps, with each having its own contribution to overall emissions.

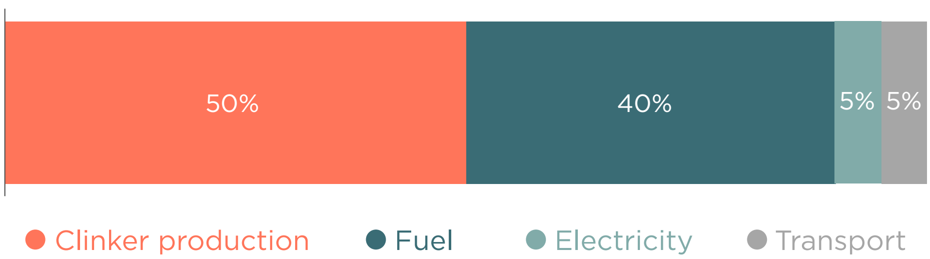
Figure 2: Cement Production



Source: Reproduced from CO2CRC

1. Raw materials are quarried, with limestone the primary input (>80%)
2. Other raw materials such as iron ore and clay are added to the mix which is then crushed.
3. This is preheated to over 900°C to ensure quick and efficient chemical reactions.
4. The mix is heated to temperatures as high as 1,450°C in the kiln, where through calcination, limestone decomposes into lime and CO2 and is turned into clinker.
5. Clinker is cooled and mixed with gypsum (4-5% content) to form Portland cement (PC). Blended cement can be formed by adding other materials, such as fly ash, limestone and slag.

Figure 3: CO_2 Emissions from Cement Production



Source: World Business Council for Sustainable Development

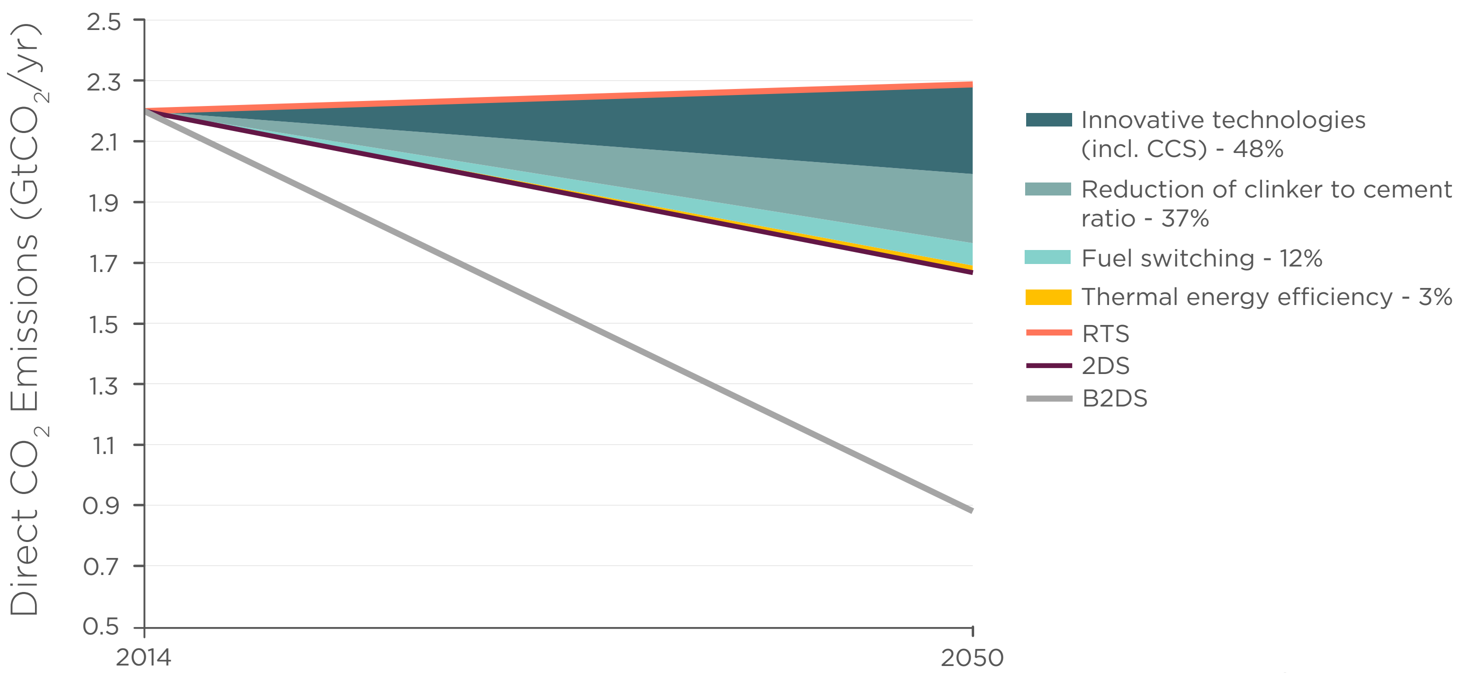
As shown in Figure 2, CO_2 emissions are generated both from fuel combustion and the production of clinker,[16] accounting for 40% and 50% of total emissions respectively (Figure 3). The transportation of raw materials and cement also adds to total emission, as does electricity used in the production.

Decarbonisation Pathways

Decarbonisation pathways can be used to understand how the industry can cut emissions even as production rises. In 2018, the International Energy Agency (IEA) and the Cement Sustainability Initiative (CSI) modelled different decarbonisation pathways for the cement industry.[17] In their baseline Reference Technology Scenario (RTS), emissions rise 4% and cement production rises 12% from 2014 to 2050. The RTS incorporates nationally determined contributions (NDCs) made as part of the Paris Agreement and is, therefore, more ambitious than a "business-as-usual" scenario.

In addition, a 2 Degrees Scenario (2DS) is modelled, giving a 50% chance of limiting global temperature rises to 2°C. To achieve this, the IEA looks at four different mechanisms: reducing the clinker-to-cement ratio, fuel switching, improvements in energy efficiency, and the use of innovative technologies. Innovative technologies include carbon capture and storage (CCS) and account for 48% of emission reductions in the 2DS relative to the RTS (Figure 4). These four mechanisms will be examined in more detail in this report.

Figure 4: Emissions Reduction Pathways



Source: IEA

A Beyond 2 Degrees Scenario (B2DS) is also modelled, with a 50% chance of limiting global warming to 1.75°C. Alignment with the 2DS would require the cement industry to cut absolute emissions by 24% by 2050, while the B2DS would require a cut of 60%.[2] Transformative change will be necessary in both scenarios, yet neither go far enough to limit global warming to 1.5°C. To achieve this, net-zero emissions by 2050 are needed, meaning deeper and more rapid cuts in each of the four areas outlined by the IEA. Focusing just on the EU cement sector, Material Economics modelled a series of net-zero pathways utilising circular business models, CCS and electrification.[18]

Decarbonising Cement

This section explores the mechanisms by which the cement industry can reduce emissions. This includes reductions in the clinker ratio, the use of alternative building materials, the use of alternative fuels, the adoption of emerging technologies, and improvements in energy efficiency.

Clinker Ratio

Central to the cement-making process is the production of clinker. As described previously, to produce clinker limestone ($CaCO_3$) is broken down into lime (CaO) in the kiln.[19] The “process” CO_2 emissions released as a by-product of this chemical reaction account for 50% of the overall emissions.[16] As a result, a reduction in the clinker-to-cement ratio reduces carbon intensity.

$$CaCO_3 + \text{heat} \rightarrow CaO + CO_2$$

Different types of cement differ in their clinker content. The most common variant, Portland cement (PC), has a cement-to-clinker ratio in the region of 0.95.[20] In blended cement, clinker is mixed with substitute industrial waste products such as fly ash, produced when coal is burnt, and granulated blast-furnace slag (GBFS), produced in iron and steel making. Depending on the quality of the substitutes, clinker ratios can be brought as low as 0.3.[21] The lower clinker content of blended cement results in reduced emissions relative to PC (Figure 5).[22]

Figure 5: Types of Cement and Production Emissions

Type	Production Emissions (kg/column)
Portland Cement	55.28
35% Blast Furnance Slag	37.16
50% Blast Furnace Slag	31.10
80% Blast Furnace Slag	16.55
20% Fly Ash	44.41
35% Fly Ash	36.03

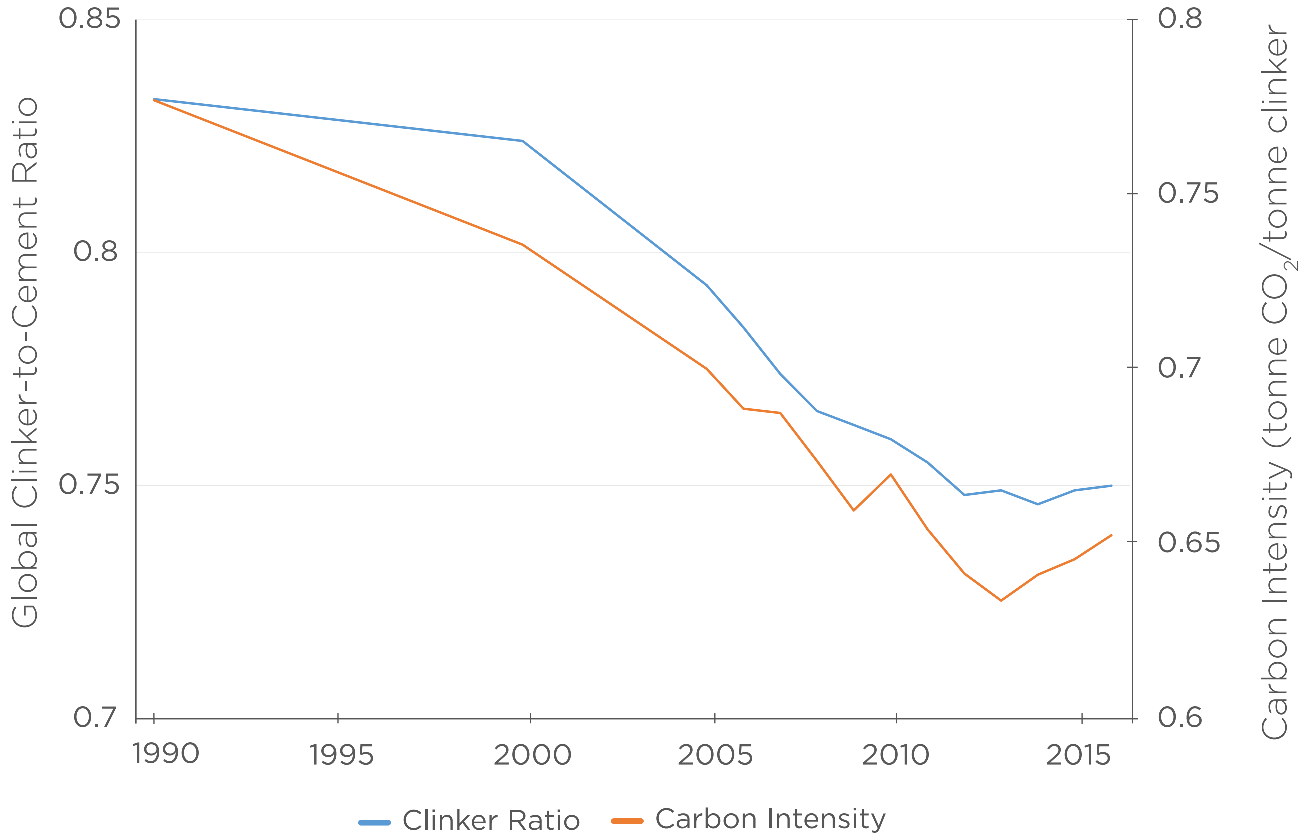
Source: European Committee for Standardisation

The use of blended cement has increased in most countries,[23] with the global clinker-to-cement ratio falling from 0.83 in 1990 to 0.75 in 2016, helping to lower carbon intensity (Figure 6).[24, 25] This trend needs to continue and accelerate, with a cement-to-clinker ratio of 0.60 in 2050 needed in the 2DS scenario.[15]

The advantage of targeting the clinker ratio is that limited extra investment is needed to introduce substitutes to the cement-making process. There are, however, restrictions. Due to the technical properties required for construction, the proportion of clinker that can be substituted has limits. For example, there is a 25-35% threshold for fly ash content.[26]

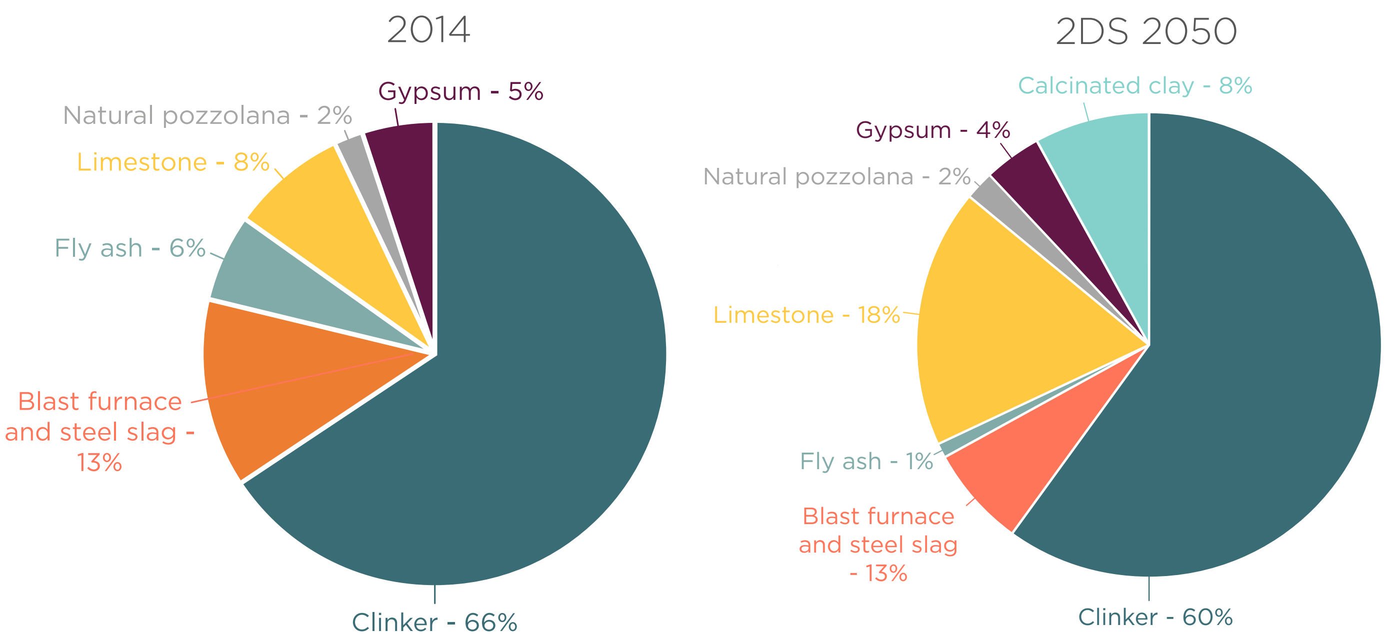
The availability of substitutes is also constrained. At present 80% of GBFS and 90% of fly ash are already used for construction.[20] Global production of these substitutes is set to fall as coal power is phased out and iron and steel furnaces become more energy-efficient. In their place, more readily available substitutes such as limestone and clay could be used (Figure 7).[26]

Figure 6: Global Clinker-to-Cement Ratio and Carbon Intensity



Source: Cement Sustainability Initiative (CSI)

Figure 7: Cement Content

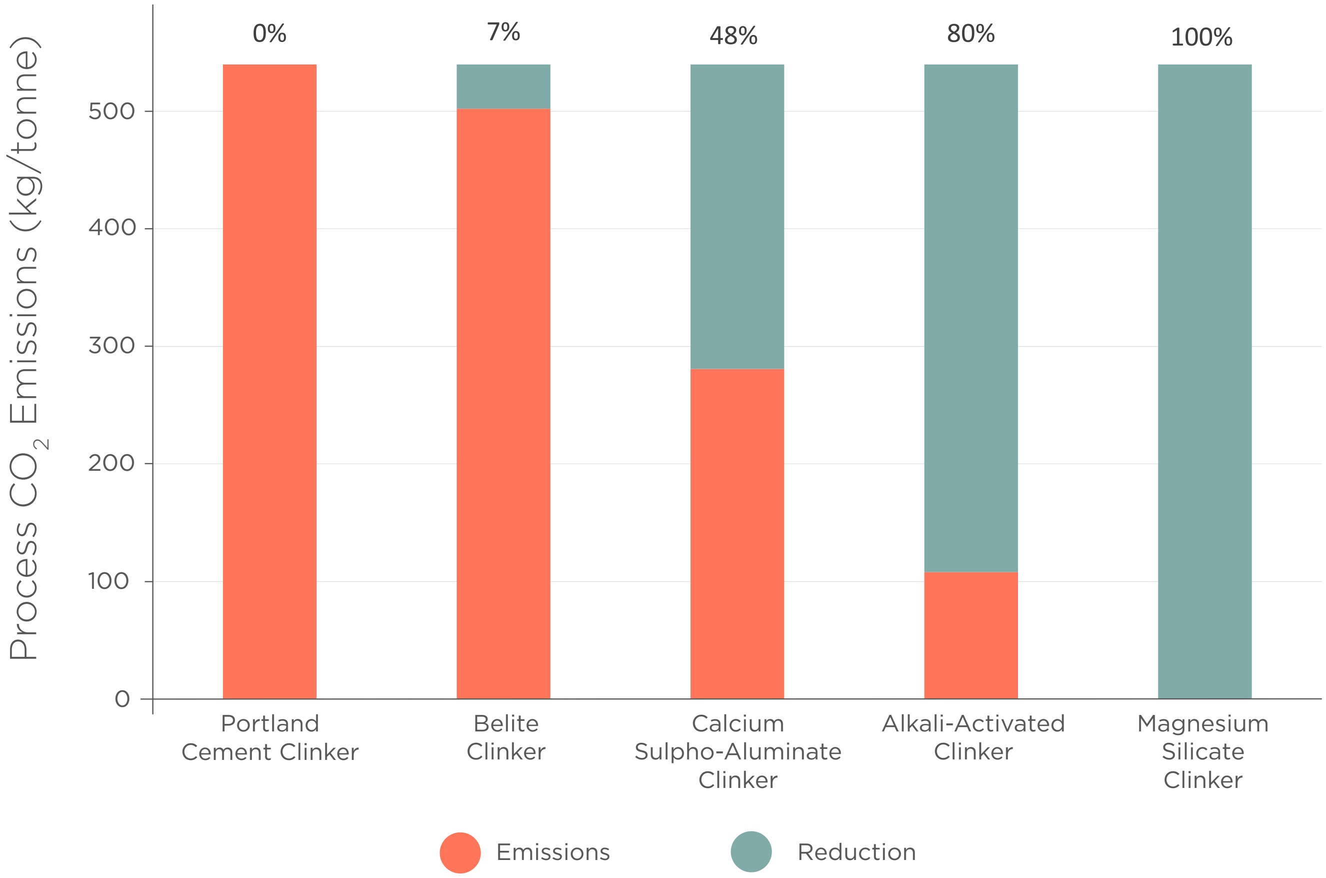


Source: IEA-CSI

Alternative Building Materials

As well as reducing the clinker ratio, there is scope to replace clinker with alternatives that have the same binding properties but with lower emissions (Figure 8). Different alternatives are at different stages of development. For example, belite clinker and calcium sulphoaluminate (CSA) clinker are commercially available, while others, such as magnesium-based cement, are in the research and development (R&D) and testing phases.

Figure 8: Potential Emission Reductions of Alternative Clinkers



Source: Chatham House

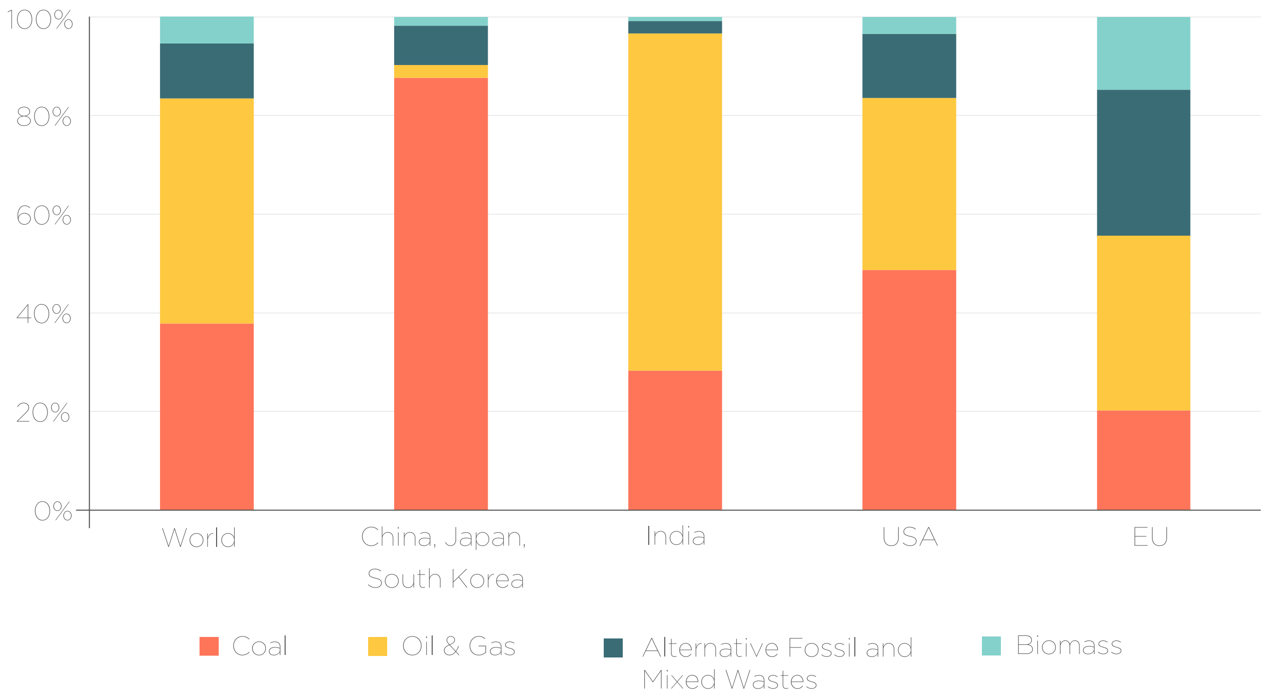
Even though a number of alternatives are commercially available, the uptake to date has been limited. Establishing a novel cement and demonstrating that it is fit-for-purpose is challenging. The construction sector is cautious in order to avoid any potential litigation or reputational damage associated with a structural failure. Adequate testing is also a barrier. Although concretes can be stress-tested to gauge durability, decades can be required to prove long-term suitability.[5]

It is also the case that alternatives with the greatest potential to reduce emissions often rely on the scarcest raw materials.[28] This is the case with alkali-based cement. In addition, cement companies themselves may be reluctant to invest in low-carbon alternatives. Incumbent firms with significant Portland clinker operations could face “stranded assets” if market share is lost to novel cements.[29]

Alternative Fuels

The second major source of emissions in cement production arises from the generation of thermal energy to raise kiln temperatures to the level required (1,450°C) for clinker production. Fossil fuels are mainly used, making up 83% of the energy mix in 2016 (Figure 9).[16] Consequently, fuel combustion accounts for 40% of emissions in the cement industry.[16]

Figure 9: Fuel Consumption 2016



Source: Cement Sustainability Initiative (CSI)

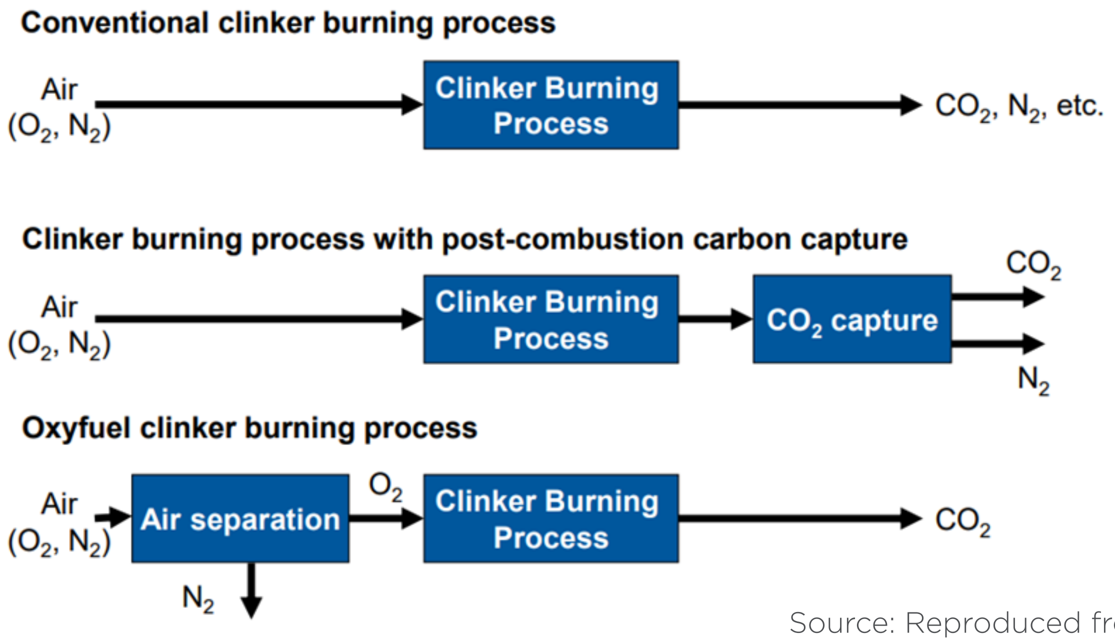
There are large regional differences in the fuel mix. China relies on coal while India relies on petcoke derived from petroleum. Europe is the leader in waste and biomass usage (44% of fuel consumption), which includes sewage, waste wood and animal fats.[25] Alternative fossil fuels and mixed wastes include industrial by-products as well as plastics, tyres and waste oil. The burning of these wastes releases CO_2 so they are not net-zero solutions.[28] However, emissions can be reduced given that wastes may be burnt regardless and carbon intensity may be lower than that of ordinary fossil fuels.[26]

The constraints facing clinker substitutes also apply to alternative fuels, namely the availability of raw materials. Sustainable biomass is a scarce resource and demanded by numerous sectors. In addition, although cement kilns could in principle rely only on alternative fuels, in practice technical limitations surrounding calorific value, moisture content and the generation of by-products could act as a constraint.[26]

Emerging Technologies

Considering the challenges facing both alternative fuels and clinker substitutes, it is likely that limestone clinker will continue to play a role in global cement production. As CO_2 emissions are embedded in the production of limestone clinker, even if clinker-to-cement ratios were to fall dramatically and fossil fuels replaced with alternative fuels, some process emissions would remain. Therefore, it is likely that to reach net-zero emissions and remove all residual emissions, some degree of carbon capture and storage (CCS) will be needed.

Figure 10: Carbon Capture and Storage Processes



Source: Reproduced from ECRA

In post-combustion CCS both process and thermal emissions are captured.[18] The most advanced post-combustion technology is chemical absorption, with commercial deployment expected in the coming years after successful trials in Norway and Texas.[30] In post-combustion CCS, CO_2 is mixed with other types of emissions which makes carbon capture challenging. One solution is oxyfuel CCS, which could theoretically achieve capture rates as high as 95%.[18] In oxyfuel technologies pure oxygen is burnt as opposed to air, generating a higher concentration of CO_2 and enabling higher capture rates (Figure 10).[28] A successful pilot test has been completed in Denmark, however commercial deployment is not expected prior to 2025.[31]

The mass deployment of CCS faces major challenges. Relative to traditional cement plants, an oxyfuel plant costs 63% more to build and 42% more to operate.[32] In addition, captured CO_2 needs to be transported and stored. However, many decarbonisation pathways still rely on CCS. In the IEA 2DS, 48% of emissions reductions relative to the Reference Technology Scenario (RTS) come from emerging technologies which includes CCS, while in the B2DS, 83% of cumulative emissions reductions come from CCS.[17] In the net-zero pathways for the European cement industry, modelled by Material Economics, 29-79% of emission reductions come from CCS by 2050.[18]

Case Study: Norcem Brevik Cement Plant

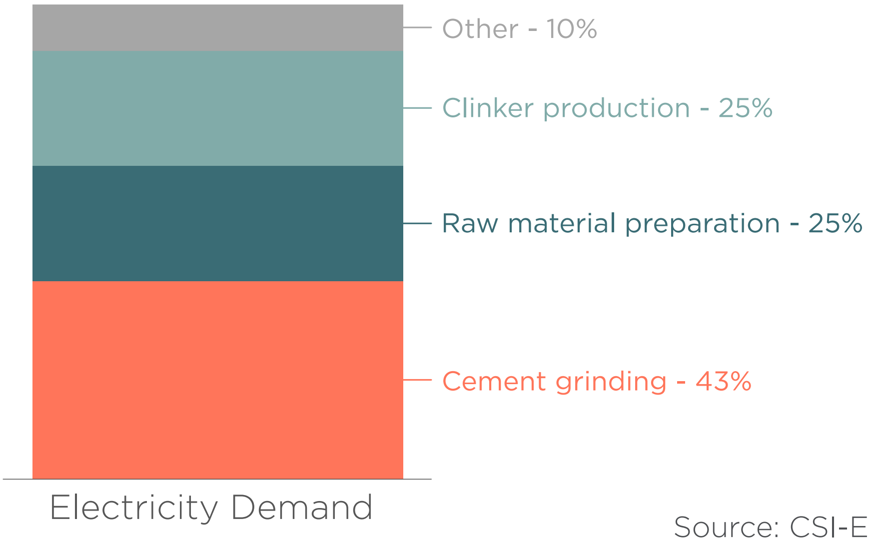
In 2013, Norcem and HeidelbergCement set a target to create a zero-emission cement plant in Brevik, Norway. As well as using alternative fuels and biomass for 70% of fuel used,[33] the plant is piloting CCS. After testing during 2013-2017, the project is currently in the final stage with a final feasibility study due to be published. If approved by the Norwegian parliament, the plant will be built over three years, making it the world's first cement plant with full-scale carbon capture.

Energy Efficiency

Improvements in energy efficiency also act as a mechanism to cut emissions. Production is most energy-intensive in wet kilns with high moisture content, as extra thermal energy is needed to dry raw materials. The best available technology (BAT) consists of dry kilns with 4-5 stage preheaters and precaliners. The BAT has a thermal energy consumption of 2.9GJ/t clinker, compared to the global average of 3.5 GJ/t clinker in 2014.[34]

Industry-wide energy efficiency can be improved by installing BAT in new plants or via retrofits. Existing plants have an operational lifespan of 30-50 years; however, ongoing retrofits can mean that after 20-30 years most original machinery is replaced.[35] This is the case in Europe, where, although cement plants are generally old, they are among the most energy-efficient.

Figure 11: Electricity Demand Distribution



Source: CSI-ECRA

Another aspect of energy demand relates to electricity consumption, which forms the smallest share of overall emissions at 5%.[16] As shown in Figure 11, cement grinding forms the largest share of power consumption. State-of-the-art grinding technology, such as vertical roller mills, can theoretically reduce electricity demand by up to 70% relative to standard ball mills.[26]

Average power consumption fell in the cement industry from 113kWh/t in 2000 to 103 kWh/t in 2016.[25] However, going forward retrofits of old plants can result in increased electricity demand. Likewise, the use of CCS greatly increases electricity demand. Within the IEA 2DS pathway, the uptake of CCS and other carbon reduction mechanisms increases the electricity intensity of cement production by 6% by 2050.[17] As a result, integrating renewable energy into cement production is crucial.

Case Study: Dalmia Cement and UltraTech Cement

Indian company Dalmia Cement joined RE100 in 2016, a corporate initiative committing to 100% renewable electricity.[36] Dalmia Cement is targeting 100% renewables by 2050 and has set an interim target to increase the share of renewable electricity fourfold by 2030 from 2015 levels of 7%. Dalmia Cement is also a member of EP100, a corporate initiative committed to improving energy efficiency, pledging to double energy productivity by 2030 from a 2010-2011 baseline.[37]

In 2018, Indian company UltraTech Cement joined EP100.[38] UltraTech aims to double energy productivity by 2035 compared to a 2010 baseline, using renewable energy and waste heat recovery systems (WHR). Already significant gains have already been made, with the company achieving 54% of its target in 2017 through energy efficient retrofits.[39]

Climate Risk and Mitigation

It is clear that decarbonising the cement industry is not without challenges, but for companies and investors, inaction brings its own risks. This section explores these risks and how they can be mitigated.

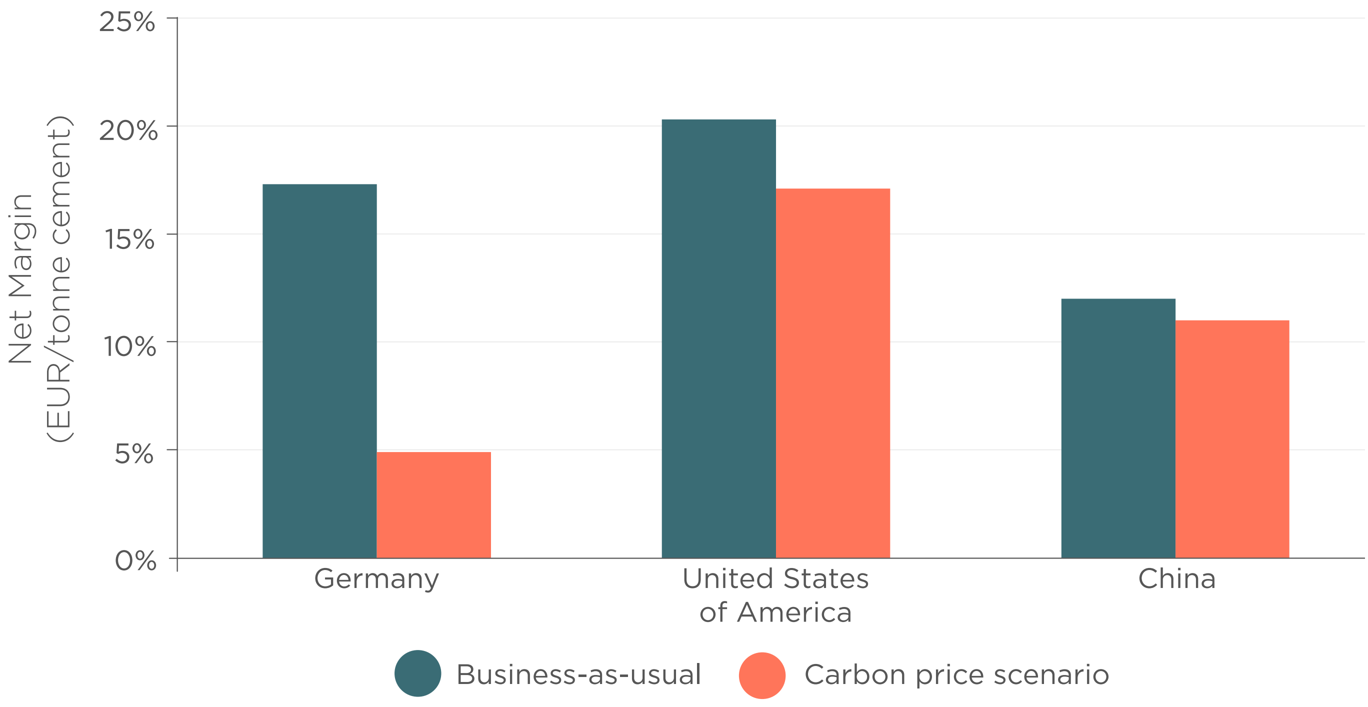
Policy Risk

Carbon pricing is one policy mechanism which could disrupt the cement industry. The EU Emissions Trading System (EU ETS) has historically had a carbon price too low to differentiate between different types of clinker. However, in the past few years carbon prices have rallied from below €10 in 2017 to over €20 in 2019.[40] At a carbon price of €20-30, some clinker substitutes are able to compete with Portland cement.[5]

The cement industry benefits from carbon subsidies under the EU as the industry is deemed at risk of "carbon leakage,"[41] which occurs when production moves outside of the EU to avoid carbon prices. By providing free carbon credits, the EU seeks to ensure that industries can remain cost competitive relative to external jurisdictions. However, by providing free allocations to carbon-intensive sectors, it can be argued that the incentive to cut emissions is removed.[42] Free allowances have enabled certain cement companies to generate large profits, with producers earning €5 billion from 2008-2015 by selling excess credits.[43]

In 2017, efforts to remove the free allocation of carbon credits to the cement industry were rejected.[44] If such a proposal was successful in the future, companies would be exposed, with EU cement producers using high shares of Portland clinker.[42] Analysis by CDP found that cement companies with either the highest carbon intensity or lowest carbon intensity faced a 114% and 10% reduction in earnings (EBIT) respectively, as a result of a $10 carbon price.[45] Likewise, a pilot study by Allianz Global Investors found that politically feasible changes in carbon and energy prices would hit margins (Figure 12).[46] They also found that by taking steps to improve energy efficiency, companies could offset this impact.

Figure 12: Carbon Pricing and Margins



Source: Allianz Global Investors

Demand Side Risks

In addition to policymaking, the public sector is also a consumer of cement. The share of public sector spending in the construction industry is 32% in the US, 40% in the UK and 20% in China.[47, 48, 49] Alongside construction, infrastructure accounts for a large share of cement demand. In China, infrastructure spending, which is dominated by state-owned enterprises, makes up 44% of demand,[50] and in India, public infrastructure accounts for 20% of demand.[51] In many countries cement contributes significantly to overall emissions and air quality issues, with cement kilns producing 20% of all industrial sulphur dioxide emissions globally.[52] Public procurement of low-carbon cement is therefore a powerful lever to meet both emissions targets and other public policy objectives.

Outside of the public sector, demand-side pressures are also likely to come from commercial entities. A total of 42 companies in the real estate and homebuilding sectors have committed to Science-Based Targets (SBTs) to reduce emissions.[53] Out the of 20 companies that have set SBTs, 13 cover Scope 3 emissions. Over a 25 year period, 49% of emissions in construction are embodied.[54] Therefore, to meet Scope 3 targets, tackling emissions from construction materials will be crucial. This is likely to translate into demand for low-carbon cements or alternative materials such as wood at the expense of carbon-intensive cement.

Risk Management

Due to the long lifespan of cement plants, a risk for companies is that carbon-intensive infrastructure becomes “stranded,” either due to competition from novel cements or a stricter regulatory regime that increases operational costs. By applying an internal carbon price to investment decisions climate-related risks can be mitigated. LafargeHolcim uses an internal carbon price of $32 to this effect,[55] stress testing existing assets. They also use an internal carbon price to calculate an “integrated” net present value when assessing potential investments.[56]

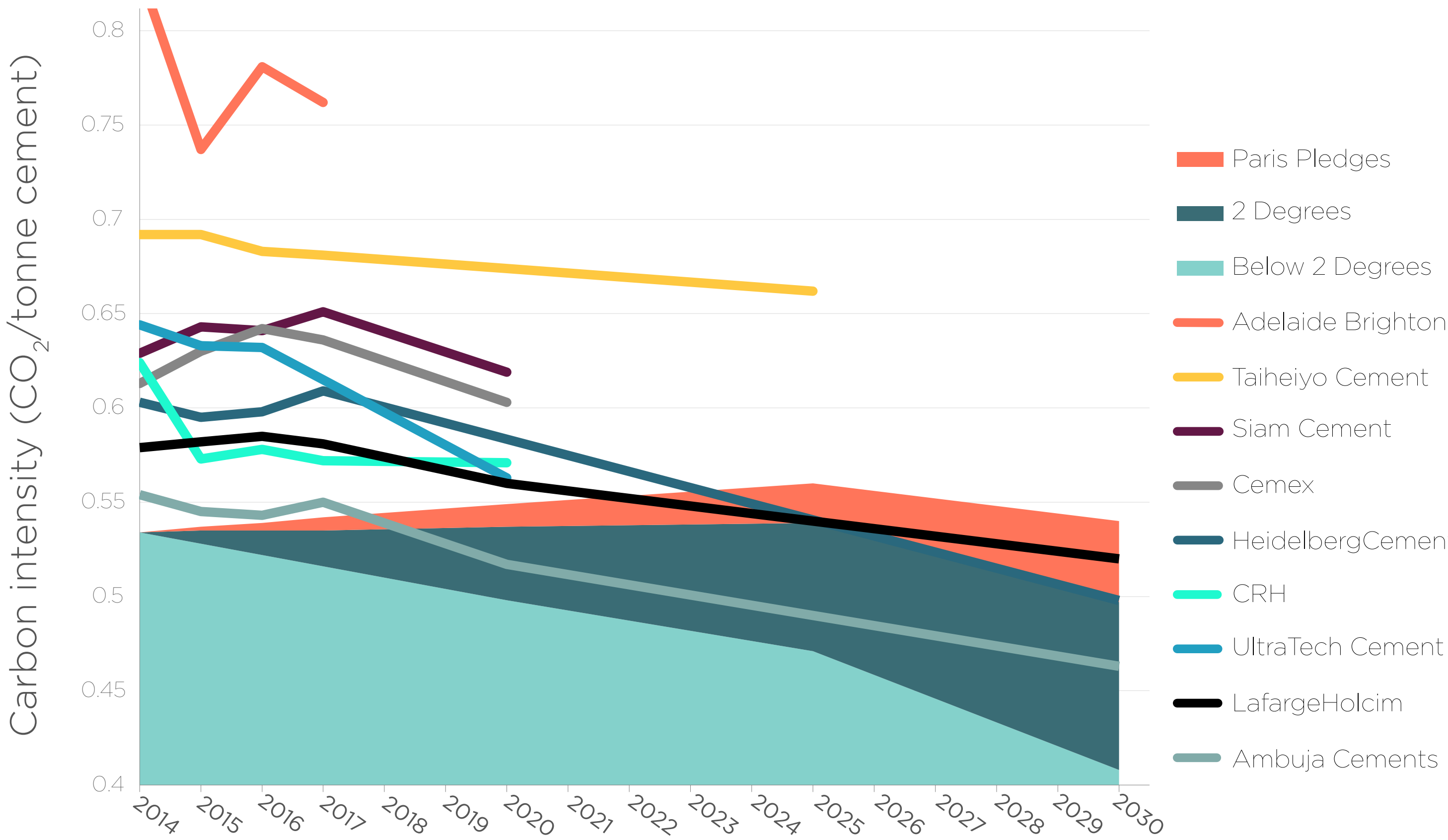
Scenario analysis can also be used by companies and investors to model climate-related risks. In 2018, The CO-Firm conducted a scenario analysis of the cement industry focusing on 55 companies in six countries, including the USA and Germany.[57] In the 2°C scenario modelled, earnings growth stagnates up until 2040, even as demand grows. As energy consumption accounts for a third of total costs, energy efficiency acts as a source of competitive advantage. This results in a large dispersion in financial performance, with earnings growth at the companies modelled ranging between +50% and -50% in 2040 relative to 2016 – demonstrating the power of scenario analysis.

Metrics and Targets

Emission reduction targets are crucial in guiding companies onto sustainable pathways. Ten companies in the construction materials sector have committed to setting SBTs. However, only two companies - HeidelbergCement and Imerys - have set verified SBTs, choosing a 2030 time horizon.[53] Outside of the SBTi framework, Ambuja Cements and LafargeHolcim have also set 2030 targets.

In 2017, analysis by the Transition Pathway Initiative (TPI) found that of the 21 largest listed cement companies, all 11 companies with available data had carbon intensities too high to be aligned with IEA pathways, with no cement company aligned with the B2DS using a 2030 time horizon (Figure 14).[58]

Figure 13: Carbon Intensity Targets



Source: Transition Pathway Initiative, LafargeHolcim, HeidelbergCement

In 2015, the World Business Council for Sustainable Development (WBCSD) coordinated the Low Carbon Technology Partnerships initiative (LCTPi) of 18 cement companies announcing an ambition to cut emissions by 20-25% by 2030.[59] Included in this list were UltraTech Cement, CRH, Cemex, and Shree Cement, which are among the largest listed cement companies in the world. Figure 14 shows that despite their stated ambition, most LCPTi members are yet to set 2030 targets. Moving from an ambition to a formal target is crucial; it cements emissions reductions in corporate strategy and signals commitment to investors.

Figure 14: LCPTi Members and Targets

2030 Target	SBT Committed	2020-2025 Target	Not Disclosed/ No Target
HeidelbergCement*	Dalmia	Argos	CNBM
LafargeHolcim	Shree Cement	InterCement	CRCH
Siam Cement	CRH	UltraTech	West China Cement
Cemex		SECIL	
		Votorantim	
		GCC	
		Titan	

* Heidelberg Cement acquired Italcementi Group in 2016

The Role of Institutional Investors

There is no easy fix to decarbonise the cement industry. However, for universal asset owners and institutional investors, the sector needs to be a priority. Due to the sector's contribution to the climate crisis, a failure to curb emissions will increase climate-related risks not only in the cement industry but across portfolios.

Engagement

As shareholders, investors can use active stewardship to press companies to decarbonise and to adopt policies to mitigate the risks highlighted in this report. Investors can also communicate expectations of best practice to investee companies.

The Investor Decarbonisation Initiative (IDI), coordinated by ShareAction and representing approximately $1.7trn of assets, has written to the CEOs of some of the world's largest cement companies.[60] The IDI has called on these companies to set SBTs and to sign up to the RE100, EP100 and EV100 initiatives led by The Climate Group. In 2019, following letters sent in 2018, Shree Cement committed to setting an SBT and HeidelbergCement set an SBT.[61, 62] Other companies targeted include LafargeHolclm, Cemex and Siam Cement.
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RE100: A corporate initiative of companies committed to using 100% renewable electricity in their operations. Companies aim to meet this goal in the shortest time possible and by 2050 at the latest. To date, 191 companies have signed up.

EP100: A corporate initiative of companies committed to improving energy productivity. Members of EP100 can choose between three commitments: double energy productivity within 25 years, implement an energy management system alongside energy productivity targets or commit to zero carbon buildings.

EV100: A corporate initiative of companies committed to transitioning to electric vehicles (EVs). Companies can commit to integrating EVs into their own operations or throughout supply chains.

In July 2019, the Institutional Investors Group on Climate Change (IIGCC) and Climate Action 100+ wrote to the Chairs of the board at CRH, LafargeHolcim, HeidelbergCement and Saint-Gobain. The group, representing investors with assets over $33trn, called on the companies to commit to net-zero emissions by 2050 and other keys asks summarised below.

Case Study: IIGCC – Investor Expectations of Companies in the Construction Materials Sector

1. **GHG Emissions:** Companies should commit to a target of net-zero CO_2 emissions by 2050. Targets should be set across a short-, medium- and long-term time horizon.

2. **Public Policy:** Companies should support policies enabling an orderly and cost-effective transition, and be transparent in their activities and positions.

3. **Governance:** Companies should have responsibility at the board level for overseeing climate-related risks.

4. **Disclosure:** Companies should report in line with the Task Force on Climate-related Financial Disclosures (TCFD).

These expectations are a good example of best practice and investors should actively engage with companies on these key asks. Investors can also engage with cement companies on how they are managing climate-related risks and opportunities. However, given that cement is one of the world's largest emitters, investors must take action if engagement does not lead to progress. If within a certain timeline investor expectations are not met, investors should vote against companies deemed laggards at annual general meetings (AGMs) and table climate-related shareholder resolutions. Legal & General Investment Management provides a good example of this model, whereby LGIM votes against publicly identified climate change laggards.[64]

Case Study: Wagners - Shareholder Resolution

In 2018, investors in cement producer Wagners filed a shareholder resolution giving directors the duty to manage the business in a manner consistent with a below 2°C scenario.[65] The resolution called for climate-related risks to be embedded into governance, for the company to not engage in projects inconsistent with a 2°C limit, and for executive remuneration to be aligned with these goals. The resolution did not pass, with only 4.36% of shareholders voting in favour.[66]

Primary Market Financing

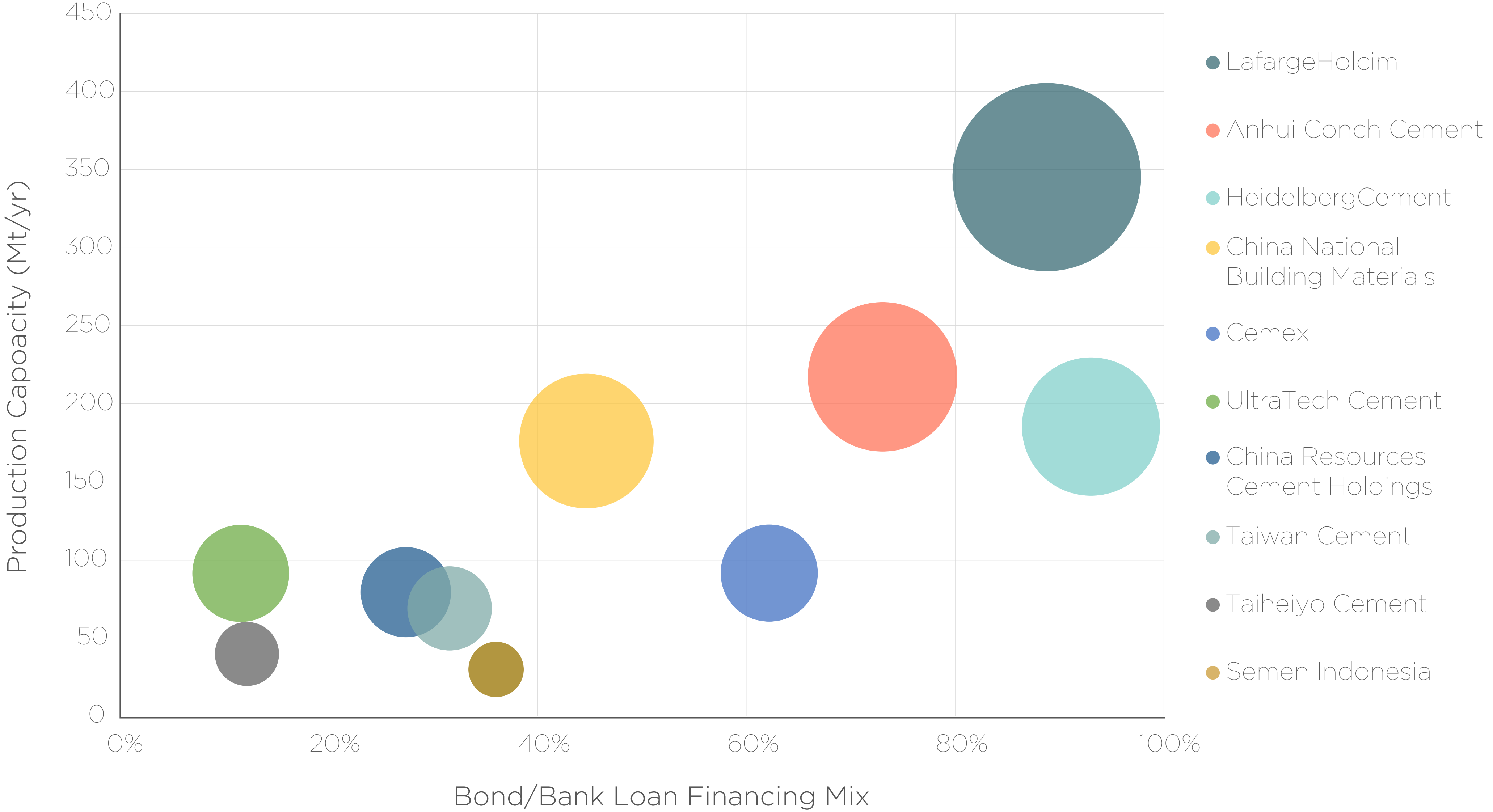
In addition to using their influence as shareholders, investors need to consider their role as a source of external financing. By issuing new debt and equity in the primary market, cement companies rely on investors as well as banks to fund operational and capital expenditures. As demand for cement grows, from 4Gt in 2018 to 5Gt in 2050,[9, 34] access to capital markets will be vital for companies to meet this extra demand.

Companies often use a blend of both bank loans and bonds in external financing, with bond issuance more prevalent amongst larger companies due to minimum size requirements in the bond market. This holds true in the cement sector. A balance sheet analysis of the largest 21 listed cement companies reveals that on average bonds make up 52% of the external financing mix of bonds and bank loans. The three largest cement companies - LafargeHolcim, Anchi Conch, and HeidelbergCement[67] - all rely heavily on bonds for external financing (Figure 15).

Unlike investments made in the secondary market, investments made in the primary market enable companies to raise fresh capital and therefore have a direct effect on the real economy. This effect is especially pronounced in the cement industry given the reliance on bonds of the largest producers. Responsible investors who do not want to generate negative "impact" should, therefore, be selective in primary market transactions.

Tools such as the TPI can be used to identify companies misaligned with climate goals. Should these companies fail to commit to Paris-aligned GHG targets or other key asks, investors should no longer partake in their new issuance. This would limit the negative impact generated by portfolios and limit investor exposure to climate-related risks. It would also act a strong incentive for companies to act.

Figure 15: Top 10 Listed Cement Producers - External Financing



Source: Global Cement, ShareAction analysis of annual reports

Recommendations

This section provides a set of key recommendations and questions for investors to raise with cement companies.

Strategy

1. Has the company committed to a target of net-zero CO_2 emissions by 2050? Targets should be set across a short-, medium- and long-term time horizon.

2. What is the company's strategy to deliver on low-carbon targets in each of the following areas?
    - Clinker substitution and alternative building materials
    - Alternative fuels
    - Electricity and thermal energy efficiency
    - Emerging technologies

3. What proportion of R&D and capital expenditure is linked to low-carbon technologies and operations?

4. How will the company ensure investment decisions are aligned with its low-carbon strategy?

5. Has the company signed up to initiatives focused on reducing emissions? For example, SBTs, RE100, EP100 and EV100.

Risk Management

1. What percentage of production is covered by emission trading systems?

2. What allowances or subsidies does the company receive under emission trading systems and how does the company expect this to change over time?

3. Has the company carried out and disclosed the results of climate scenario analysis? Which scenarios were used and what are the financial implications?

4. Does the company apply an internal carbon price to investment decisions?

Disclosure and Governance

1. Does the company report in line with the Task Force on Climate-related Financial Disclosures (TCFD)?

2. Does the company disclose absolute scope 1, 2 and 3 emissions as well as carbon intensity?

3. Is there board level of oversight of climate-related risks?

4. Does the company disclose positions on climate-related public policy?

5. Are lobbying activities of the company, and of trade associations that the company is a member of, aligned with emission targets?

Conclusion

This report lays out the mechanisms that can be used by cement companies to reduce carbon emissions. Progress has been made in the past decades in each of the areas outlined in this report, but with demand rising, efforts must be stepped up to reduce absolute emissions. Cement companies need to act now using all tools at their disposal. New plants must be fitted with the best available technology and limestone clinker substituted where possible.

Achieving this will be challenging. Emissions are embedded in the very chemical reactions used to produce limestone clinker, while low-carbon cements face numerous barriers to deployment. In addition, crucial CCS technology is not yet commercial. Despite these challenges, as cement plants built today can last for up to 30-50 years, the process of decarbonisation cannot wait. By focusing on reducing carbon-intensity, cement companies can reduce climate-related risks, stay competitive, and remain ahead of the regulatory curve..

Investors have a crucial role to play in this process. As shareholders, they can steer companies onto a sustainable trajectory and promote initiatives, such as the SBTi and EP100, which cement climate commitments into corporate strategy. As bondholders, they can finance companies that contribute to the low-carbon transition, and filter out those who undermine it.

These steps are in the best interest of asset owners. The sectors large contribution to global emissions mean that climate-related risks can be mitigated not just in the cement industry but across investor portfolios. Due to its carbon-intensive nature and the shrinking window available to meet the goals of the Paris Agreement – a sustainable cement sector must be a priority for all institutional investors and asset owners.

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ShareAction (Fairshare Educational Foundation) is a registered charity that promotes responsible investment practices by pension providers and fund managers. ShareAction believes that responsible investment helps to safeguard investments as well as securing environmental and social benefits.

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