
Visible cracks

Which cement makers are failing to address structural issues?
Executive Summary

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CDP's sector research for investors provides the most comprehensive climate and water-related data in the market. CDP's team of analysts, voted no. 1 climate change research provider in 2015 by institutional investors, takes an in-depth look at high-emitting industries one by one, starting with the automotive industry, electric utilities, diversified chemicals, metals & mining and now cement. Forthcoming industries include oil & gas and steel.

The full report is available to CDP investor signatories and includes detailed analysis, methodology and recommended areas of engagement for investors to raise with company management. In addition, a separate engagement booklet providing further detail on company-specific engagement ideas is available to CDP signatories on request.

For more information see

<https://www.cdp.net/en-US/Pages/events/2015/sector-research-for-investors.aspx>

Linking emissions to earnings for cement companies

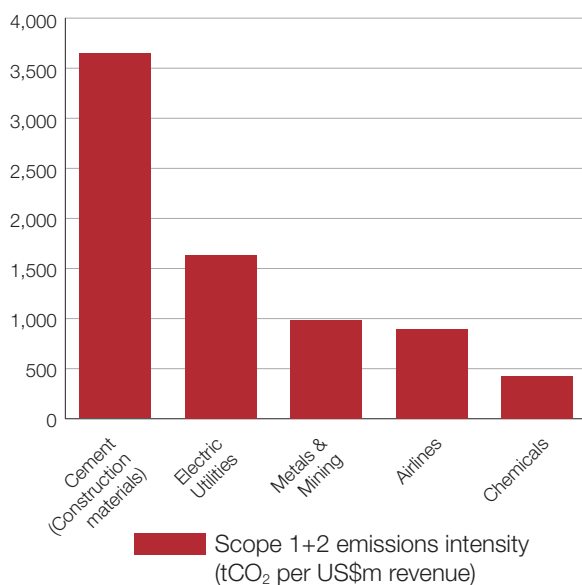
- ▼ CDP's cement League Table ranks companies in an industry that accounts for 5% of global emissions and highlights earnings risk for some companies.
- ▼ Highest ranked companies are: Holcim, Shree Cement and Lafarge.
- ▼ Lowest ranked companies are: Italcementi, Cementir and Taiheiyo Cement.

Overview

This report, covering cement companies, is the latest in a series of investor-focused reports covering high-emitting sectors. CDP has previously published on auto manufacturers (February 2015 and March 2016), European electric utilities (May 2015), chemicals companies (August 2015) and diversified miners (November 2015). Each report features a CDP League Table that ranks companies in an industry grouping on a number of emissions and water-related metrics relevant to that industry. When taken in aggregate, we believe these metrics could have a material impact on company earnings and investment decision-making.

In this report, we launch a cement CDP League Table that ranks 12 of the largest (by market capitalization) and highest-emitting cement companies. The cement industry is amongst the most emissions intensive (accounting for 5% of global carbon emissions) and in its current form is not compatible with the binding global agreement signed at COP21 in Paris. Despite eight of the 12 companies being covered by the EU ETS there are significant differences in emissions intensities across the companies and tightening emissions regulations are an expected feature of the industry's future. This report assesses which companies are preparing for a transition to a low carbon economy.

Sector emissions intensities



Scope of the report:

There are five key areas in our League Table:

- ▼ **Emissions performance:** using emissions profiles as an efficiency proxy for cement production, we assess each company's historical emissions-reduction performance and forward-looking targets in managing their carbon emissions exposure.
- ▼ **Energy and material management:** we assess the extent to which companies exploit existing opportunities to manage their energy cost base (representing around 30% of production costs) including deploying best available kiln technology to optimize thermal energy use, utilizing alternative fuel sources and using material substitution.
- ▼ **Carbon cost exposure:** examines the carbon emissions-related cost exposure of the cement companies in our study and the potential impact on earnings under different carbon pricing scenarios.
- ▼ **Water resilience:** we analyse cement companies' exposure to water risk and their respective water consumption levels and trends. We undertake facility-level analysis to assess which companies are at greater risk of business interruption due to water stress both now and in the future.
- ▼ **Carbon regulation supportiveness:** we use InfluenceMap's¹ proprietary analysis to assess each company's actions in supporting or opposing meaningful carbon regulation. We believe that firms that are supportive of a transition to a low-carbon economy are most likely to benefit from tightening regulatory measures.

1. A UK-based not-for-profit whose remit is to map, analyse and score the extent to which corporations are influencing climate policy and legislation. <http://influencemap.org/>

The summary League Table below initiates CDP investor coverage on the cement sector. It is based on detailed analysis across 15 metrics embedded in the table, which are aggregated to assign an A to E-grade to each company across each key area.

Condensed summary of the League Table for cement companies

League Table rank	Company	Country	Market cap 2015 (US\$m)	2015 cement production (m tonnes)	League Table score	Emissions performance	Energy & material management	Carbon cost exposure	Water resilience	Carbon regulation supportiveness	CDP Performance Band (i)
1	Holcim	Switzerland	21,400	140 (iii)	3.9	A	B	A	B	B	B
	LafargeHolcim	Switzerland	28,861(ii)	256	4.1						
2	Shree Cement	India	6,002	16	4.5	A	B	B	D	A	C
3	Lafarge	France	19,675	116 (iii)	4.7	B	B	A	B	B	C
4	CRH	Ireland	22,615	20	5.0	C	B	A	A	C	C
5	Cementos Argos	Colombia	4,608	13	5.5	C	D	B	A	B	B
6	HeidelbergCement	Germany	14,519	82	6.0	D	C	B	B	D	A
7	CEMEX	Mexico	10,846	68	6.6	D	C	C	C	B	B
8	Ultratech Cement	India	12,526	44	7.0	D	C	D	E	A	C
9	Buzzi Unicem	Italy	2,986	25	7.7	D	D	D	C	D	B
10	Taiheiyo Cement	Japan	3,874	18	8.2	D	C	D	E	E	D
11	Cementir	Italy	1,029	10	8.4	E	C	E	D	E	D
12	Italcementi	Italy	3,078	43	8.7	E	D	E	D	E	B

Weighting for each area

30% 25% 20% 10% 10% 5%

(i) This is the CDP annual performance band (A to E) awarded to companies that respond to CDP's climate change questionnaire. The distribution of A to E is awarded relative to 2,233 companies that responded to CDP in 2015.

(ii) Calculated over the period from 1 January 2016 to 23 May 2016.

(iii) 2014 production figures.

We highlight the following companies, who collectively represent over US\$60bn in market capitalization, as non-responders to CDP's 2015 climate change questionnaire and therefore not included in this report. We encourage investors to raise this lack of transparency over carbon and water reporting practices in discussions with company management.

Non-responders to CDP

Company	Country	Market Cap 2015 (US\$m)	First year approached by CDP	Reason for not responding	Public disclosure of carbon emissions	Business activities
Anhui Conch Cement	China	17,476	2008	No response.	Partially.	Produces and sells ordinary Portland cement, Portland blast furnace slag cement, compound cement and commercial clinker.
Siam Cement	Thailand	17,427	2006 (i)	No response.	Yes.	Diversified industrial company with operations in cement manufacturing, petrochemicals manufacturing, paper manufacturing, building product manufacturing and distribution.
Dangote Cement	Nigeria	14,380	2010	Company policy not to disclose.	No.	Cement manufacturer operating in Nigeria, Benin, Ghana, Senegal, South Africa and Zambia.
Vulcan Materials	USA	11,783	2006(ii)	They plan to disclose.	Partially.	Principal product lines are aggregates, asphalt mix and concrete, and cement.

(i) Siam Cement last responded to CDP in 2007 .

(ii) Vulcan Materials last responded to CDP in 2010.

Source: CDP

Key findings

- ▼ Emissions performance: there are large differences between cement production emissions intensities across the companies. The best performers have been reducing their emissions intensities over time and currently operate in line with a 2-degree transition, whilst others significantly lag behind and have increased their intensities in recent years. We note that all companies will be required to take further abatement action to align themselves with the industry decarbonization trajectory which tightens significantly post-2025.
- ▼ Emissions-reduction targets: only three companies in the study have targets aligned with global carbon budgets which are deemed as science-based. The vast majority of forward-looking targets for cement companies expire within the coming four years and many existing company targets do not align with a transition to a low-carbon economy. Companies should provide transparency that forthcoming reduction targets are both long-term (i.e. beyond 2025) and sufficiently ambitious, and explain how they intend to achieve them.
- ▼ Carbon pricing: the cement industry has significant potential carbon cost exposure. The most carbon intensive companies could have up to 114% of their EBIT at risk from a US\$10 carbon price (assuming no cost pass-through). More carbon efficient companies show greater resilience and as low as 10% of EBIT at risk from the same carbon price. Proposed revisions to the EU ETS, a system which covers eight of the cement companies in this report, are currently being submitted to policy makers. These include price support measures and changes to generous free allowance allocations which currently undermine incentives for cement companies to reduce emissions cost-effectively.
- ▼ Industry transition: to deliver deep decarbonisation in coming years, cement companies need to seek longer-term solutions such as carbon capture and storage (CCS) and develop less carbon-intensive cement products. Company disclosure on R&D spending and product development is currently inadequate to assess the extent to which companies are allocating their capital to benefit from a low-carbon transition.
- ▼ Consolidation: Lafarge and Holcim, who are strong performers in our analysis, merged in 2015. HeidelbergCement (sixth place) is due to acquire Italcementi (12th place) during 2016; the combined entity would benefit from HeidelbergCement's more efficient practices.
- ▼ Carbon regulation supportiveness: the three poorest performing companies in this key area, who are deemed as obstructive to progressive carbon

regulation, ranked at the bottom of the overall League Table, indicating that they are not preparing for a transition to a low-carbon economy.

- ▼ Fuel use: four companies source 20% or more of their thermal energy requirements from alternative fuels such as municipal waste and biomass. Such fuel sources can be more economical than traditional fossil fuels but are currently under-utilized by companies based in emerging markets, representing an opportunity for companies.
- ▼ Energy efficiency: energy represents around 30% of cement production costs and the most efficient company uses 25% less thermal energy per tonne of clinker produced than the least efficient.
- ▼ Water resilience: across the companies, more than 50% of facilities are currently located in areas of water stress, with 11% of facilities currently in 'high' or 'extremely high' water-stressed areas. This latter figure is projected to rise to 34% of facilities by 2030.

Company findings

- ▼ Holcim is ranked first and is one of only two companies that received an A-grade in the most important key area, emissions performance. It merged with Lafarge (ranked third) in 2015, the only other company to receive A and B-grades in all key areas. Lafarge and Holcim have amongst the lowest emissions intensities and set the most robust reduction targets. Individually the two companies were the largest cement producers by volume in the study and together they produce over three times as much as the next biggest producer of the League Table companies. Aggregating the two companies would result in a League Table score of 4.12 and the joint company ranking first.
- ▼ Shree Cement is ranked second and received an A-grade in emissions performance (it has the lowest cement production emissions intensity) and carbon regulation supportiveness. However it received a D-grade in water resilience due to its high exposure to water stress in India.
- ▼ Italcementi is ranked in last place and is the only company to receive D and E-grades across all key areas. It has the highest potential carbon pricing cost exposure, is deemed to be obstructive of carbon regulations and is significantly off-track to meet its own emissions-reduction target.
- ▼ Cementir is ranked second bottom and the company deemed as most obstructive to carbon regulation; it receives an E-grade in the carbon regulation supportiveness key area. Its cement production emission intensity has increased the most in recent years and it has amongst the highest proportion of EBIT at risk from carbon pricing.

- ▼ Japanese Taiheiyo Cement is ranked tenth. It has the highest emissions intensity of the companies and has the weakest emissions-reduction target. It has significant water stress risk in its operations (one of only two companies to receive an E-grade in water resilience) but discloses to CDP that it is not exposed to substantive water risks. It is also deemed to be obstructive to progressive carbon regulation.
- ▼ Cementos Argos (ranked fifth) received its only D-grade in energy and material management, partly due to its lack of historical information disclosure. It is also the only company not to independently verify its Scope 1+2 emissions. Better transparency and disclosure will aid the company's League Table position going forward.
- ▼ CRH, the company with the smallest proportion of revenue from cement production, is ranked fourth and receives no D or E-grades. It has one of the lowest proportions of EBIT at risk from carbon pricing, low water stress exposure and has been increasing its use of alternative fuel to meet its thermal energy requirements.
- ▼ HeidelbergCement is ranked mid-table and received B-grades in carbon cost exposure and water resilience, and is also one of only three companies to disclose use of an internal carbon price. However its lack of progress against its own emissions-reduction target partly explains its D-grade in emissions performance. We note that HeidelbergCement is due to acquire Italcementi during 2016.
- ▼ CEMEX also ranks mid-table and receives one D-grade, in its emissions performance. Its C-grade in energy and material management masks a contrasting performance in the key area – it has the highest utilization rate of alternative fuel but one of the highest thermal energy intensities. It is also deemed supportive of some carbon regulation measures and receives a B-grade in the key area.
- ▼ Buzzi Unicem is the best performer of the three Italian companies featured in the study but is ranked ninth overall. It received D-grades across all key areas except for water resilience (C-grade) and consistently under-performed relative to its peers in carbon-related metrics.
- ▼ Ultratech Cement is ranked eighth and received a D-grade in emissions performance, the key area which carries the greatest weight in the League Table. Similar to the other Indian company assessed, Shree Cement, it achieved an A-grade for carbon regulation supportiveness but it has the highest exposure to water stress amongst the companies.

Scope of report: Company selection

We selected the group of companies for our study as follows:

- ▼ Started with the 27 construction materials companies that responded to CDP's 2015 climate change questionnaire.
- ▼ Excluded subsidiaries and privately owned companies.
- ▼ Ranked the companies by market capitalization and Scope 1+2 emissions and selected the top 19. This equates to companies with a total market capitalization of US\$143bn.
- ▼ Reviewed the business activities and shareholdings of the 19 companies which resulted in the exclusion of:
 - ▼ Asia Cement due to its shareholder base.
 - ▼ Marshalls due to its relative size.
 - ▼ Boral, Imerys, Fletcher Building and CSR due to their significantly diverse operations (which include cement production to lesser degrees).
 - ▼ PPC due to lack of disclosure quality.

The chosen 12 companies represent approximately US\$123bn in market capitalization and account for 87% of the combined emissions (Scope 1+2) of the 27 relevant companies that responded to CDP. The primary business activities of the 12 companies are production of cement, aggregates, ready-mix concrete and asphalt.

Linking our findings to investment choices

We recognize that investment decisions are based on a multitude of different factors and that some of these can be misaligned with emissions-reduction efforts.

Our League Table is not intended to identify definitive winners and losers for investment purposes, but more as a proxy for business-readiness in an industry likely to be impacted by more stringent carbon regulations needed to meet long-term carbon objectives and worsening water security.

We would flag that companies towards the bottom of our League Table are possibly higher risk investments from a regulatory perspective than those towards the top.

Methodology

We score each cement company based on a number of different metrics which are ranked and then weighted within each key area (see table below for metric weightings within each key area). We then grade each area from A to E based on these weighted ranks. We calculate the overall League Table score by collating the weighted ranks for each key area.

Each of the key areas has a separate chapter within the full report in which we disclose the precise methodology for how we rank each metric.

In addition to the five key areas, we also include CDP's climate change performance band for 2015 in the League Table. It scores the 2,233 companies that responded to CDP's investor-backed climate change questionnaire based on their climate change readiness. A high overall score is a sign of completeness of the response and implies a well-run business and forward-looking management.

For further study

Areas of interest to investigate further include:

- ▼ Advanced carbon pricing modelling to analyse carbon prices at which certain abatement actions (such as material substitution or CCS) become economical for companies.
- ▼ Analysis of cement companies' electricity costs, which typically account for half of company energy expenditure despite only representing approximately 15% of energy consumption in cement production.
- ▼ Enhanced analysis of company R&D expenditures (e.g. on CCS pilot schemes) and sales exposure to low-carbon cement products.

A summary of key areas, associated metrics and relative weighting with the League Table

Key area in League Table	Link to company earnings	Metrics	Metric weighting within each key area	Key area weighting in overall League Table
Emissions performance	Carbon intensity of production is taken as a proxy for wider company output efficiency as measures taken to reduce emissions can deliver cost benefits. Future reduction targets are indicative of company emissions management intentions.	i) Reduction in cement production emissions intensity (2008-2014). ii) Current cement production emissions intensity (2012-2014). iii) Quality of emissions-reduction target. iv) Performance against target. v) Emission data transparency.	12% 18% 30% 20% 20%	30%
Energy and material management	Energy can represent up to 30% of cement production costs. Thermal energy efficiency measures can reduce energy usage, whilst switching to alternative fuels can deliver both cost and emissions savings relative to fossil fuels. Greater material blending to reduce cement clinker content can reduce thermal energy requirements, costs and emissions.	i) Thermal energy intensity of clinker production. ii) Alternative fuel use. iii) Clinker-to-cement ratio.	30% 40% 30%	25%
Carbon cost exposure	This is the financial exposure of meeting potential emissions costs of carbon pricing schemes across two scenarios. This is a direct financial cost to companies and thus impacts net earnings.	i) Carbon cost exposure under intensity benchmarking. ii) Carbon cost exposure under auctioning. iii) Company use of internal CO ₂ price.	50% 30% 20%	20%
Water resilience	Localized water issues at cement production sites can pose risks to operational continuity at locations experiencing water stress.	i) Water stress risk exposure. ii) Water consumption intensity (2008-2014).	70% 30%	10%
Carbon regulation supportiveness	Companies that are supportive of regulation which facilitates a low-carbon transition are likely to be better placed to benefit from it.	i) InfluenceMap organizational score.	100%	10%
CDP Performance Band	A good annual CDP score is a proxy for a generally well-run company. Well-run companies are better placed to succeed in a changing marketplace.	i) CDP performance band.	100%	5%

Source: CDP

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