

ESG Industry Report Card: Building Materials And Engineering And Construction

June 3, 2019

(Editor's Note: Our ESG Industry Report Cards include an analysis of ESG factors for a selection of companies. We intend to expand our ESG Industry Report cards to include more companies throughout the year.)

Key Takeaways

- The building material industry has relatively high exposure to environmental risk, notably cement companies; construction companies are more exposed to social risks.
- The cement industry, together with steel, ammonia, and ethylene, accounts for about half of total CO2 emissions in the industrial sector; as a result, cement companies are likely to invest significantly more to comply with more stringent environmental regulation.
- Evolving consumer behavior in response to environmental concerns may support medium-term growth prospects for the most innovative building materials companies.
- The construction industry has above-average exposure to governance issues, due to the inherent complexity of projects, which exposes companies to contingent liabilities and litigation risks.

The ESG Risk Atlas

To calibrate the relative ranking of sectors, we use our environmental, social, and governance (ESG) Risk Atlas (see "The ESG Risk Atlas: Sector And Regional Rationales And Scores," published May 13, 2019). The Risk Atlas provides a relative ranking of industries in terms of exposure to environmental and social risks (and opportunities). The sector risk atlas charts (shown below) combine each sector's exposure to environmental and social risks, scoring it on a scale of 1 to 6. A score closer to 1 represents a relatively low exposure, while 6 indicates a high sector-wide exposure to environmental and social risk factors (for details see the Appendix). This report card expands further on the Risk Atlas sector analysis by focusing on the credit-specific impacts, which in turn forms the basis for analyzing the exposures and opportunities of individual companies in the sector.

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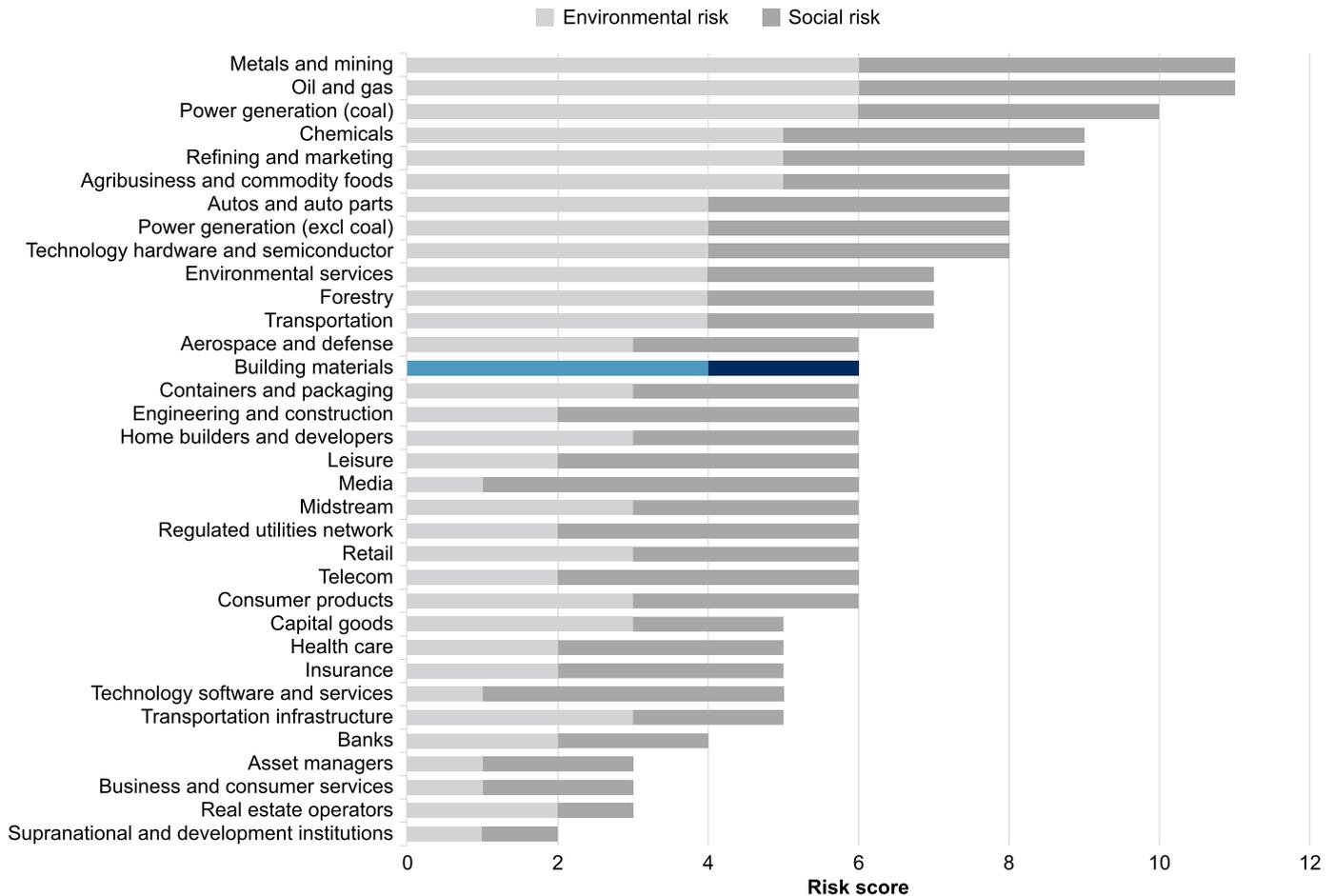
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Building Materials Companies

ESG Sector Risk Atlas



Source: S&P Global Ratings.
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Environmental (Risk Atlas: 4)

Cement and other heavy building materials. Environmental risk is relevant for cement producers and other heavy building material companies, given they typically crush and move raw materials to produce their end-products, which often requires a substantial use of fuel, and frequently results in greenhouse gas (GHG) emissions, waste, and pollution.

Cement, steel, ammonia, and ethylene companies account for about half of total CO2 emissions in the industrial sector, according to market statistics, and many of the large players are committed to reducing carbon emissions in line with the Paris Climate Agreement, mainly through increasing the proportion of alternative fuels and intensifying the use of alternative raw materials to reduce the amount of clinker necessary (clinker being a precursor to powder cement; producing clinker accounts for most of the energy used during cement production).

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Emissions trading systems (ETS) for reducing GHGs are set in some regions, such as Europe and California. The price of ETS credits can fluctuate and the recent rises in CO₂ prices in Europe will make carbon-intensive fossil fuel generation more expensive for cement companies. This will likely turn into additional expenses to revamp cement plants. S&P Global Ratings estimates maintenance capital expenditures (capex) accounts for an average of 5%-7% of cement revenues in developed markets, and in next few years will likely increase when including energy efficiency and compliance with environmental regulation.

Other environmental-related duties, such as the storage of certain hazardous substances and the restoration of quarrying sites, have a direct impact on adjusted debt, albeit the impact has been modest. For example, asset retirement obligations related to large building material players in EMEA (Europe, the Middle East, and Africa) on average have resulted into an increase of 0.2x in terms of debt/EBITDA.

Building materials distributors. Environmental risk is comparatively low for building materials distributors, because their business is much less energy intensive than cement production and has lower amount of GHG emissions, waste, and storage considerations.

All building material companies are exposed to climate-related risks (storms, harsh winters, etc.), which can interrupt local operations and damage equipment. For example, in several instances in past couple of years, persistent bad weather resulted in a drop in sales, which companies were not able to recover from in the short-term.

Social (Risk Atlas: 2)

In our view, social risk is a less important credit driver in the building materials industry, although safety management risk is relevant, with varying degrees of risk among emerging and developed markets depending on regulatory oversight, policies, procedures, and training.

The most significant credit factor relates to evolving consumer behavior in response to climate change or environmental concerns. For example, regulatory initiatives to increase energy efficiency in mature markets, develop high thermal efficiency insulation in buildings, and promote the use of alternative power sources may be a risk as well as an opportunity, supporting medium-term growth prospects for the most innovative products. This is becoming a key differentiating factor that favors those companies that invest more in research and development (R&D), and that to some extent reduce their exposure to the cyclical nature of the construction business.

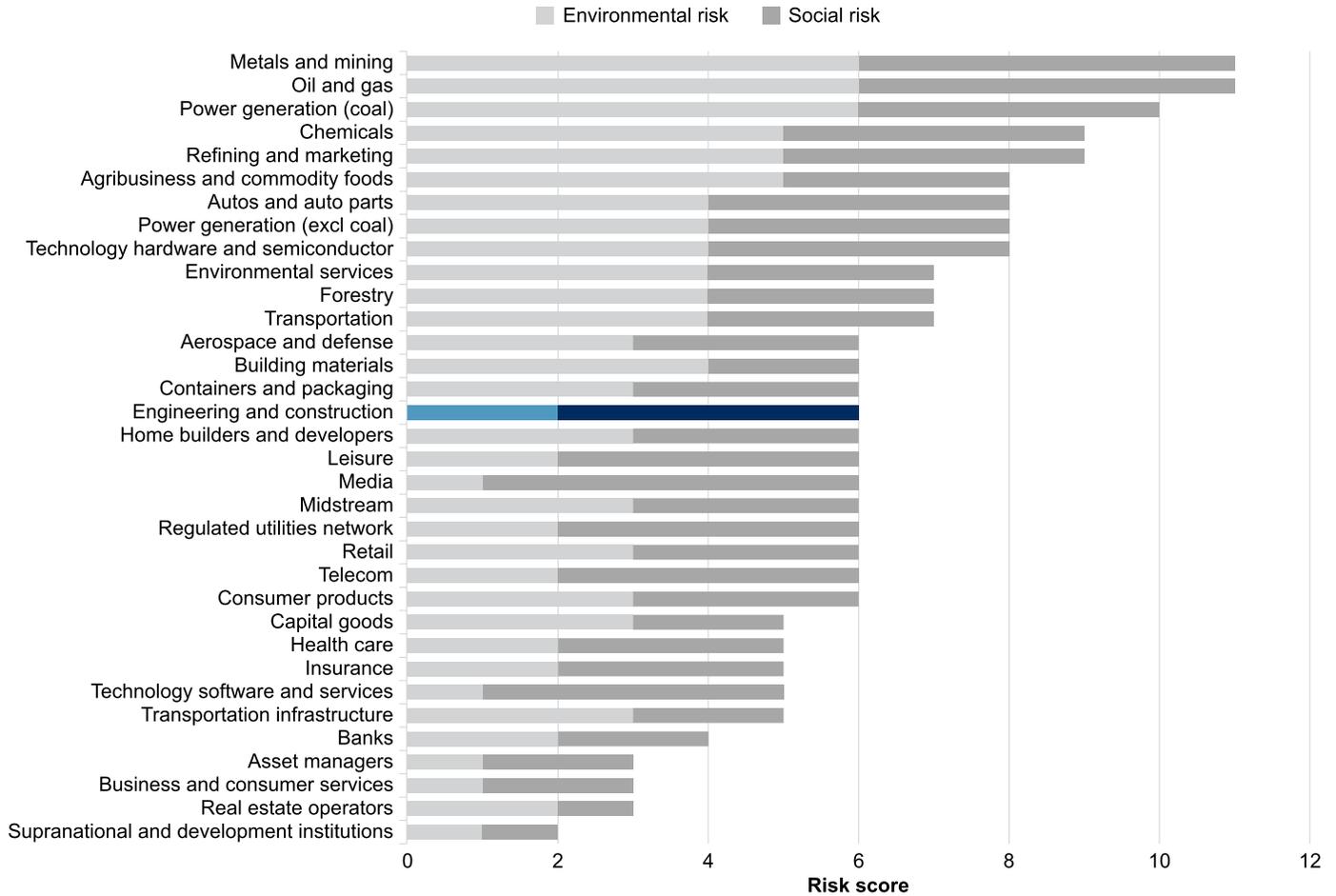
Governance

Overall, governance risk is idiosyncratic, usually reflecting the corporate culture, strategy, geographic footprint, and group complexity. Still at the sector level, we pay attention to litigations and antitrust disputes that are common in the cement and building material sector in both developed and emerging countries.

Family ownership may be present in a few cases, but has not necessarily translated into weaker governance. In fact, we have a few instances in the cement sector where family ownership has allowed the companies to pursue longer-term growth and sustainability rather than short-term shareholder remuneration.

Engineering & Construction

ESG Sector Risk Atlas



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The most meaningful ESG risk to the engineering and construction (E&C) industry are social exposures because of the high reliance on labor and importance of safety. A key governance factor for the sector is poor project- and risk-management oversight or standards, which can result in meaningful project delays, losses, or protracted litigation with clients.

Environmental (Risk Atlas: 2)

Environmental risk in the E&C sector is weighted toward the exposure to increasing climate change risk. Although companies assume some level of weather-related delays to complete construction projects, extreme weather can cause major delays and project-cost overruns. Risk of remediation for biodiversity or restitution for incorrect land use is usually low for the construction of high-rise buildings but can be more relevant for the construction of civil projects and industrial projects.

Social exposure (Risk Atlas: 4)

Social risk in the E&C sector is a more relevant risk consideration. The construction industry is labor-intensive, and the ability to find and keep skilled labor, particularly at expected cost levels, directly affects the profitability of construction projects. In addition, given the exposure to unions in some regions, E&C companies can face strikes, which increase the cost and time to complete projects. Safety management is another key risk, given the use of large and dangerous equipment. Companies in the sector track and manage incidents and have specific programs to educate their workforces. Community opposition to construction projects can also cause significant delays. Similarly, regulation and compliance requirements could become tougher for contractors, which could result in higher costs.

Governance

The construction industry has an above-average exposure to governance issues, in our estimation. The inherent complexity of projects exposes companies to contingent liabilities, and litigation risks grow in tandem with challenges to complete a project profitably and on time. These challenges include client cancellations and delays, change orders, and subcontractor risk.

The E&C sector is also exposed to bribery, corruption, and anticompetitive practices because of the magnitude of the contracts and the competitive process necessary to secure contracts with both private and public clients. Ethical breaches typically result in investigations by public authorities, and large fines, settlement costs, and reputational damage can affect financial performance. Among our rated companies, litigation is more common in emerging countries, where the legal framework is usually weaker; however, developed countries have similar but less pronounced risks.

Furthermore, complex groups with a presence in high-risk countries can face limits on the ability to move cash flow within the group, thus limiting the potential benefit of project and geographic diversification. Transparency related to advance payments and working capital swings is another key area of our governance focus.

ESG Risks For Building Materials Companies

Cement and heavy building material companies

Company/Issuer Credit Rating/Comments	Country	Analyst
Anhui Conch Cement Co. Ltd. (A/Stable/--) Environmental factors are meaningful. The cement industry in China faces increasing regulatory and public scrutiny over its environmental impact. As China's second-largest cement producer, Conch plays a pivotal role in the industry's environmental protection upgrade. The company has developed technologies to reduce greenhouse gas and air pollution emissions. In addition, it has made meaningful progress in energy conservation, recycling, and waste treatment. We expect the company to further its pursuit of technological innovations to reduce emissions and to increase energy consumption efficiency. Conch's increasing expenditures toward environmental protection will likely have negligible impact on the company's credit metrics, given its extremely low leverage. In the long term, we expect the tightened control over environmental protection to clear out small-scale competitors, increase industry consolidation, and benefit market leaders like Conch. We do not expect social and governance factors to pose significant risk to the ratings on Conch.	China	Calvin Ge
Buzzi Unicem SpA (BBB-/Stable/A-3)	Italy	Francesca Mancini

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Environmental factors are meaningful given the company's focus on cement. Buzzi Unicem has set a goal to reduce its CO2 emissions by 5% in 2022 compared with 2017 level. To reach this target, the group aims at optimizing the thermal and electrical efficiency of plants, the proportion of alternative fuels, the use of non-natural raw materials, and the proportion of clinker content in cement. The Buzzi family holds about 58% of the ordinary shares of Buzzi Unicem, and the executive board consists predominately of Buzzi family members. We do not see this as a constraint to the rating because the Buzzi family has a track record of investing in the business development while preserving balance sheet strength. Buzzi Unicem is exposed to antitrust proceedings. In particular, in 2017, the Italian Antitrust authority fined Buzzi Unicem for €59.8 million, or about 10% of 2017 reported EBITDA, for allegedly coordinating with three competitors on cement price increases. Buzzi Unicem appealed the decision.

CEMEX S.A.B. de C.V. (BB+/Stable/--)

Mexico

Luis Martinez

CEMEX has a leading role in the Cement Sustainability Initiative (CSI), an organization pursuing global sustainable development for the cement industry. Its objective is to minimize the impacts of cement production, while addressing fuel use, employee health and safety, airborne emissions, concrete recycling, and quarry management issues. CEMEX's target for 2020 of reducing 25% its CO2 emissions per ton of cement (from its 1990 baseline) is an example of such commitment. On the social side, CEMEX has prioritized incurring zero injuries across its operations worldwide, and recently announced it dropped the number of fatalities in 2018 to zero, for the first time ever, down from 20 in 2017. Also, the company has programs to support the communities where it operates. CEMEX faces several claims, litigations, legal proceedings, and environmental liabilities. We consider that the company's management and corporate governance to be one of its key strengths. The board of directors and the top management are highly experienced, have a track record of improving operational and financial performance, and include disclosure on ESG in its annual report.

Compagnie de Saint-Gobain S.A. (BBB/Stable/A-2)

France

**Renato
Panichi**

Environmental factors are meaningful, given the company's focus on heavy building materials. Saint-Gobain is managing some asbestos-related litigations, mainly in the U.S., and in 2018 recorded a \$106 million charge to cover future developments in relation to claims, or less than 2% of the group EBITDA. At Dec. 31, 2018, the group's provision for asbestos-related litigation in the U.S. amounted to \$568 million, which is unchanged compared with past few years. We believe regulatory initiatives to increase energy efficiency in mature markets, develop high thermal efficiency insulation in all buildings, and promote the use of alternative power sources in homes, support medium-term growth prospects for Saint-Gobain's most innovative products. The company has invested significantly in research and development (R&D) and has taken out several patents in the past few years. This is among the key supporting factors for our positive assessment of the company's business risk profile, as it somewhat lessens the company's exposure to the volatility of the building material cycle. Cyber-security risk is increasing for building material distributors like Saint-Gobain. Case in point: in June 2017, Saint-Gobain experienced a cyber-attack that affected the majority of its systems in Western Europe. Saint-Gobain estimated the impact of the attack was a €220 million sales reduction and a €65 million operating income reduction during the first half of 2017, equivalent to 1.1% of organic sales growth and 4.4% of operating income. Accordingly, we expect all building material distributors to increase their investments in cyber security. Saint-Gobain is involved in antitrust proceedings, mainly in Europe, but the potential financial implications are limited. In 2014, Saint-Gobain paid €715 million to settle an antitrust claim by the European Commission concerning automotive glass. The simultaneous disposal of its entire stake in its glass-packaging subsidiary Verallia North America allowed the group to offset the otherwise meaningfully negative impact on its leverage metrics.

CRH plc (BBB+/Stable/A-2)

Ireland

**Renato
Panichi**

Environmental factors are meaningful, given the company's focus on building materials and cement. CRH has set a goal to reduce its CO2 emissions by 25% in 2020 compared with 1990 level (emissions stood at 583 kilograms per metric ton (kg/t) cementitious product in 2018, or 23% lower than 1990). To reach this target, the group aims to increase the proportion of alternative fuels and raw materials as well improve thermal efficiency measures. CRH has no history of significant environmental accidents, and has a good safety track-record. As one of the largest building material players in the world, CRH extracts raw materials from its own quarries and pits, for which it has made provisions to cover costs relating to environmental protection measures, as well as site rehabilitation and clean-up costs (€484 million at the end 2018, or about 4% of total adjusted debt). The company's solid governance structure and management's experience and expertise helps limit risks in this area. CRH is involved in some antitrust proceedings, mainly in Europe, but the potential financial implications are limited.

HeidelbergCement AG (BBB-/Stable/A-3)

Germany

Pascal Seguier

Environmental factors are meaningful, given the company's focus on heavy building materials and cement. HeidelbergCement's goal is to reduce its CO2 emissions by 30% in 2030 compared with its 1990 level (emissions stood at 609kg/t cement in 2017, or 19% lower than 1990), which it intends to do by increasing the proportion of alternative fuels to 30% of total fuel mix (21% in 2017) and to further intensify the use of alternative raw materials to reduce the clinker ratio. HeidelbergCement has no history of significant environmental accidents. Being among the largest aggregate producers in the world, HeidelbergCement extracts raw materials from its own quarrying sites, for which it has made provisions to cover costs relating to environmental protection measures, as well as site rehabilitation and clean-up costs (€413 million at the end of 2018, or about 3% of total adjusted debt). As is the case for other heavy building materials company, HeidelbergCement is exposed to climate-related risks (storms, harsh winters, etc.), particularly in the U.S., which can interrupt local operations and damage equipment. For example, persistent bad weather in the U.S. in 2018 were among the key reasons the group revised downward its EBITDA guidance for 2018. In our view, HeidelbergCement has a solid governance structure and management has experience and expertise, which help limit risks in this area and pursue long-term sustainability.

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LafargeHolcim Ltd. (BBB/Stable/A-2)

Switzerland

Paulina
Grabowiec

Environmental factors are meaningful, given the company's focus on heavy building materials and cement. LafargeHolcim is also facing some litigation and allegations, but has implemented initiatives to prevent similar situations in the future. LafargeHolcim's sustainability ambitions include reducing carbon emissions per ton of cementitious output to 520kg of CO₂ by 2030; using 80 million tons of resources derived from waste (including biomass); and reducing specific freshwater withdrawal to 262 liters per ton of cementitious output. As of 2018, the company had reduced its CO₂ emissions to 576 kg CO₂ per ton, which translates into a 25% reduction compared to 1990, the highest reduction against the 1990 baseline among international cement companies. Site restoration and other environmental provisions stood at CHF860 million as of end-December 2018, representing 36% of total provisions. In June 2018, French authorities placed a subsidiary of LafargeHocim, Lafarge SA, under investigation over allegations that it financed terrorist groups, including the Islamic State, and for endangering the lives of its employees in order to keep its Syrian cement plant running despite worsening regional conflict. We understand that at this stage there is no evidence that the investigation's findings will materially hurt the group financially. However, a significant disbursement, in case of an adverse outcome, could put pressure on the ratings. LafargeHolcim is also subject to an ongoing case in India, where the group's subsidiaries were fined €390 million for the alleged cartelization in 2012. Notwithstanding these, we view LafargeHolcim's governance as a neutral factor for the ratings, balancing management's experience and expertise, commitment to sustainable business operations, and transparency in reporting and dialogue with capital markets. Following the changes in the management team and the resignation of the CEO in the wake of the Syria investigation, the company implemented a number of initiatives to prevent similar situations in the future, including the creation of a new ethics, integrity, and risk committee; the adoption of a more rigorous risk assessment process focusing on high-risk third parties (and joint ventures); the introduction of a restricted party screening program; and a new sanctions and export control program. We regard these changes as a timely response to lessons learned.

Martin Marietta Materials Inc. (BBB+/Stable/A-2)

U.S.

Kimberly
Garen

We view MLM's degree of environmental risk as moderately high compared to other building materials companies. The majority of MLM's operations involves the mining, production, and distribution of aggregates. MLM's aggregates operations consume fossil fuels to operate equipment and create water discharges that must be properly managed. The company is subject to environmental risk, particularly given its operation of two cement plants. Cement plants are a significant source of carbon monoxide, sulfur dioxide, nitrogen oxide, and greenhouse gases. We view its record in environmental and safety matters favorably and supportive of the rating. The company's operations are subject to numerous federal, state, and local laws; and to regulations and inspections relating to zoning, land use, air emissions (including greenhouse gases), water discharges, and other environmental, health, and safety, matters. To reduce emissions, MLM has increased its use alternative fuels (such as bio-diesel). It has deployed real-time fleet management software and conveyor systems to reduce fuel use and costs at its quarries. And it is reducing water use and wastewater by reusing water streams, installing deep water wells to reduce surface water use, and recycling waste asphalt and concrete. We assess MLM's social risk as moderate given that quarries often are located in close proximity to residential and urban areas. Good relations and communication with local municipalities and residents is critical as a most quarries operate under local permits with strict requirements. We also view MLM's corporate governance to be satisfactory and supportive of the rating, which is partly reflected by the company's effective strategic planning, good record of internal controls, independent board, and transparent financial reporting.

Summit Materials LLC (BB/Stable/--)

U.S.

Pablo Garces

Summit is subject to environmental and social risk, primarily because of its operation of two cement plants, as well as numerous quarries, some of which in close proximity to residential and urban areas. Cement plants are a significant source of carbon monoxide, sulfur dioxide, nitrogen oxide and greenhouse gases. Summit's operations are subject to numerous environmental and safety laws, regulations, and inspections administered by U.S., state and local agencies as well as in Canada. Failure to comply can result in significant fines, remediation liability, litigation, and possible restrictions on future operations. Summit has programs geared to reducing the use of fossil fuels and removing hazardous waste. It utilizes hazardous and industrial waste as fuels to operate machinery and one of its cement plant's kiln. The company's cement operations derived an average of 35% of its energy from alternative waste fuel sources in 2017, reducing coal use by 200,000 tons while consuming about 120,000 tons of hazardous and industrial waste that would have gone to landfills. Summit also recycled 780,000 tons of asphalt pavement and 463,000 tons of recycled concrete in its paving, asphalt and concrete operations. Summit seeks good relations with local communities, as most quarries operate under local permitting requirements as to emissions, noise, dust abatement, and water runoff. Failure to comply could result in restricted operations, fines, litigation, and adverse publicity. As with all heavy construction/manufacturing concerns, safety is high priority and the company has formal programs and monitoring in place to meet all safety requirements.

U.S. Concrete Inc. (BB-/Stable/--)

U.S.

Thomas
Nadramia

U.S. Concrete's ready mix operations pose a degree of environmental risk given the production and use of concrete consumes large amounts of water and creates water discharges that are pollutants if not properly managed. The company is heavily regulated and subject to numerous federal, state, and local environmental safety regulations, permitting requirements, and inspections. Failure to comply can result in significant fines, possible litigation, and restrictions on operations. To reduce its environmental impact, U.S. Concrete has introduced "low CO₂" concrete. This provides some competitive advantage as it allows designers to reduce the carbon footprint of concrete-intensive projects. It also produces a family of concrete mixes that utilize alternative materials such as fly ash and slag in their formulations. The company also collects processed water in all of its facilities, and recycles it into its manufacturing process, leaving zero processed-water discharge. Storm water is segregated from process water and leaves its properties at

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designated outflow sites. The company's ready-mix facilities also recycle all unused concrete returned to plants, either internally or through third parties.

Votorantim S.A. (BBB-/Stable/--)

Brazil

**Felipe
Speranzini**

Environmental factors are relevant to our analysis, given Votorantim's focus on producing cement and other heavy building materials. Through its main subsidiaries, the mining-company Nexa Resources S.A. and the cement-producer Votorantim Cimentos S.A., Votorantim also faces weather conditions that affect its operating performance. El Niño led to floods in Peru in 2017 and impacted Nexa's production, while the severe winter in the Great Lakes region usually delays cement consumption. The financial impact from those events, however, was moderate and didn't cause a major deviation in our forecasted credit metrics, especially because of the group's business and geographic diversification and ongoing efforts of operating and logistics improvements. From a governance standpoint, Votorantim has a consistent strategic planning process, with clear and well-defined operational and financial goals, and sound internal controls and risk management culture. We see this governance pattern spread out from the holding level to all subsidiaries.

Vulcan Materials Co. (BBB/Stable/--)

U.S.

Pablo Garces

We view Vulcan's environmental risk as greater than that of non-aggregates building materials manufacturers and distributors, but less than that of cement producers, which generate large amounts of greenhouse gases. (Vulcan does not operate any cement plants.) Vulcan has no history of significant environmental accidents. Vulcan's operations are subject to numerous federal, state, and local laws and regulations relating to the protection of the environment and worker health and safety; including regulation of air emissions and water discharges, waste management, protection of wetlands, listed and threatened species, noise and dust exposure control for workers, and safety regulations under both Mine Safety and Health Administration (MSHA) and Occupational Safety and Health Administration (OSHA). Though not a material source of GHG emissions, Vulcan has ongoing efforts to reduce GHG emissions from machinery and mobile fleet. Between 2013 and 2017, Vulcan reduced its GHG Scope 1 Emissions by 50%. Aggregates quarries often operate in close proximity to residential and urban areas. Vulcan operates with the view that land use is a privilege granted by the communities in which it does business. Additionally, environmental management is a key responsibility of the Chief Administrative Officer and is reviewed by the board of directors at every board meeting. For 2017 and 2018, Vulcan's accrued environmental remediation costs (measured on an undiscounted basis) were \$32.5 million and \$50.4 million, respectively. In both years, approximately \$10.5 million of such costs were retained from its former chemicals business.

Building distributors

Company/Issuer Credit Rating/Comments

Country

Analyst

Legrand S.A. (A-/Negative/A-2)

France

**Pascal
Seguier**

Since Legrand is a manufacturer of electrical and digital building infrastructures, we see less environmental risk than for heavy building materials and cement companies. Legrand's strong R&D capacity (4.8% of sales in 2018) and ability to launch new products enable the company to cope with regulatory initiatives to increase energy efficiency in mature markets and to maintain its market shares. Furthermore, its investments, new products, and acquired businesses, which respond to social megatrends, somewhat lessen Legrand's exposure to the volatility of the building material cycle. We view Legrand's governance as a supporting factor for the ratings, reflecting management's experience and expertise, and a proper balance of different stakeholders' interest. Legrand does not have a track record of significant litigations. However, in September 2018, the police investigated Legrand's offices, along with the offices of other electrical goods' manufacturers and distributors. According to the press, these investigations are related to suspicions of cartel pricing and corruption. We understand these investigations are ongoing, and do not embed any financial impact in our base case, as the necessity of disbursement is currently uncertain.

Adolf Wuerth GmbH & Co. KG (A/Stable/A-1)

Germany

Wen Li

As a global distributor of assembly products in the building materials industry, Wuerth's exposure to environmental risks is lower than for heavy building materials and cement companies. Although the chemicals business unit accounts for only 3.9% of group sales in 2018, environmental issues could lead to supply bottlenecks and higher purchasing prices for some commodities. For example, Chinese authorities have considerably tightened their environmental control in recent years, leading to shutdown of some capacities, which has resulted in tenuous situation on the Chinese procurement market and pushed up prices accordingly. However, we expect the solid growth in sales will more than offset the increase in input costs. We view governance to be a neutral factor to the Wuerth rating. The Wuerth family remains heavily involved in the overall development of the group and continues to have a strong say in key strategic decisions, as reflected in the fact that supervisory board includes three family and two nonfamily members. However, we think the management structure is effective and will appropriately balance all stakeholders' interests.

Engineering and Construction companies

Company/Issuer Credit Rating/Comments	Country	Analyst
<p>ACS, Actividades de Construccion y Servicios S.A. (BBB/Stable/A-2)</p> <p>ACS' group governance structure has significantly improved in the past few years, thanks to a transformation process that led to a better working capital position and significantly lower financial leverage. Still, there are some areas of complexity, mainly due to significant minority stakes in the shareholding of its main subsidiaries, Hochtief and CIMIC. ACS is among the largest construction companies in the world, and its group companies are managed independently. However, each group company shares common principles in risk management, including employees' health and safety. In 2014, ACS started a transformation process to reduce the group's corporate complexity, strengthen and standardize risk management across main subsidiaries Hochtief and CIMIC, increase group integration, and improve cash flow generation. As a result, the group has sold several noncore assets and has introduced more disciplined working capital management and a stricter project selection process. We regard this transformation process as credit positive. ACS' outstanding litigation risk is lower than peer average, reflecting its smaller presence in emerging markets, where legal framework tends to be weaker compared to developed regions. Based on end of 2017 data, the group had €1.575 billion of completed works under litigation, which represent 1.3% of the construction activity performed in the period when those delays accumulated. Most of it refers to claims raised before stricter project selection criteria were introduced in 2015. We do not adjust our debt number for the provisions on litigation because they mainly refer to claims by ACS to its clients. The ACS group has a good safety record and no history of significant environmental accidents. Given that construction work is inherently dangerous, ACS' focus on safety is a competitive strength.</p>	Spain	Renato Panichi
<p>China State Construction Engineering Corp. Ltd. (A/Stable/--)</p> <p>Social factors are relevant to our credit analysis of China State Construction Engineering Corp. Ltd. (CSCEC). The company is exposed to potential earnings and losses from schedule delays arising from safety issues or neighborhood protests against certain projects. In addition, legal liabilities and reputational damage from building quality deficiency and accident casualties could have a financial impact. However, we have not observed, nor has the company reported, any material deficiencies or safety incidents thus far. Governance factors are neutral for CSCEC. The company's governance standards and implementation are satisfactory, mainly based on its long track record of strategic planning and good project execution as well as management's expertise and experience. Environmental factors do not play a major role in our credit analysis for CSCEC. Although China is increasing its regulations concerning pollution control and environmental protection, any related expenditures are immaterial compared to CSCEC's revenue and profit base.</p>	China	Yolanda Tan
<p>Ferrovial S.A. (BBB/Watch Dev/A-2)</p> <p>We view Ferrovial's governance as a supporting factor for the ratings, reflecting management's experience and expertise, and a proper balance of different stakeholders' interest. However, the group is involved in some legal proceedings, mainly related to its construction and business service activities. Ferrovial's most notable ongoing litigation is with the Birmingham (U.K.) City Council over its road network. So far, Ferrovial has posted a cumulative provision of GBP 283 million for this contract, and the total losses accumulated under the contract have reached GBP 330 million, which is about 40% of group reported EBITDA in 2017. The provision and loss related to the Birmingham dispute did not result into downgrades mainly because of the group's significant rating headroom available, as result of its nil debt position at the corporate level. Although social risks may be relevant in the construction business, Ferrovial has a good safety record and no history of significant accidents.</p>	Spain	Gaetan Michel
<p>Fluor Corp. (BBB+/Negative/A-2)</p> <p>The E&C industry's social risk relates to its labor intensity. Certain regions can experience labor shortages, increasing project costs. However, partially mitigating this risk, Fluor has engineering capabilities and operates self-perform fabrication yards in several regions globally, which can reduce on-site craft labor needs and shift work to safer and more controlled work environments. Less than 10% of the company's overall workforce is unionized, although this percentage can fluctuate depending on projects underway. Given that employees often work on projects that are inherently dangerous, safety is critical in the industry and impacts company reputation and project performance. As such, we view the company's focus on safety and its strong safety record as competitive strengths. We view the E&C industry as having environmental risk, to the extent that climate change causes increased severe weather conditions that could result in project delays and increased costs. However, we believe Fluor's strong liquidity positions the company to absorb any extra project costs, and that the company would continue to perform under its contracts. Changing regulations regarding greenhouse gas emissions could affect the demand and cost of projects for E&C customers, such as exploration, production, and refining energy and chemical companies, utility companies, and mining companies. However, given Fluor's project capabilities, we believe the company is well positioned should legislation and regulation regarding climate change increase the pace of development of carbon capture and storage projects, alternative transportation, alternative energy facilities (such as wind farms or nuclear reactors), or incentivize increased implementation of clean fuel projects.</p>	U.S.	Robyn Shapiro

Appendix: Components In The Sector ES Risk Atlas

Here is a list of examples of factors we consider in evaluating sector-specific environmental exposure. For example, we examine to what extent each sector is relatively exposed to:

Greenhouse gas emissions (GHG): Actual or potential regulations such as carbon taxes, emissions trading schemes, and other direct or indirect costs. The GHG emissions under the Kyoto climate change agreement are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆).

Sensitivity to extreme weather events: Incremental costs or the potential physical impact on assets associated with recurring (for example, hurricanes) or infrequent (droughts) severe weather events.

Sensitivity to water scarcity: Potential costs related to the need for extracting or sourcing large quantities of water, or requiring on-site water treatment, in comparison to other water users of the same water basins or utilities.

Waste, pollution, and toxicity: Potential fines or rising costs associated with prevention and treatment of waste and pollution, including hazardous waste and air pollution.

Land use and biodiversity: Asset retirement obligations, developing natural land or potential operating constraints, or increased costs associated with protecting plant and animal life.

The following is a list of examples of factors we consider in evaluating sector-specific social exposure. For example, we analyze to what extent each sector is relatively exposed to:

Human capital management: A sector's capacity to develop a long-lasting productive workforce while reducing potential operational disruptions from workforce mismanagement; diversity and inclusion attributes; exposure to strikes and the sector's general exposure to dealing with emerging skills scarcity or surplus labor.

Changing consumer or user preferences: We recognize that changes in consumer behavior are often the result of complex dynamics, such as changes in technology or fashion or other disruptive business trends. Therefore, we treat a change in consumer preferences as a social factor related to sustainability, health, safety, the environment, privacy, financial mis-selling, or community and human rights, particularly when an entity has triggered the change.

Demographic changes: Potential costs or opportunities related to population growth and composition, such as an aging population, urbanization, changing living standards, or a growing middle class

Safety management: Potential direct or indirect costs resulting from problems related to the safety of a sector's production processes and final customer products.

Social cohesion: Potential or actual costs in direct operations or in the supply chain resulting from geopolitical or community-related events such as conflicts, community unrest, and terror attacks.

This report does not constitute a rating action.

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