ESG Industry Report Card: Real Estate And Homebuilders/Developers

June 3, 2019

(Editer'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

- Globally, real estate operators, homebuilders and developers have modest exposure to environmental risks and low exposure to social risks.
- Ownership of a portfolio of assets with environmental certification can be a point of differentiation when ranking the assets relative to peers for real estate operators.
- Changes in consumer behavior and demographic trends are influencing operating strategies of real estate operators, which include developing retail assets to cope with the impact of e-commerce on tenants.
- Social cohesion risk exists when developers fail to meet tightening regulations, obtain land permits, meet environmental standards, or ensure safety throughout the construction phase.
- Governance factors are generally neutral to our ratings for the real estate sector, although many midsize companies in the developers sector were often started by legacy entrepreneurs who sometimes continue to have a strong influence on those companies' operations.

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 sectorwide 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.
Real Estate Operating Companies

Environmental exposure (Risk atlas: 2)

Real estate operators are primarily exposed to climate change, given the need to use energy to heat or cool buildings. Efforts to enhance the sustainable credentials of a real estate asset can enhance the issuer’s operating efficiency (by conserving energy, reducing water usage, and managing waste), reduce operating costs, and encourage environmental benchmarks to monitor assets. A growing awareness of environmental issues, particularly in cities, also requires landlords to focus on owning environmentally certified assets (that meet or exceed local regulations or industry associations best practice) and undertake asset repositioning with a sustainability focus to ensure that their assets are attractive to a wide array of tenants. Owning a portfolio of assets with environmental certification (such as LEED, BREEAM, FEED, and NABERS) are factors we consider, although they are not overly important in our analysis; location and quality of assets remain our key focus. However, as the number of green assets increases, this could be a point of differentiation when ranking the assets, particularly in the office and data center sectors. Purchasing new and refurbished buildings with low greenhouse gas emissions, efficient water use and low waste, pollution, and toxicity enables a landlord to offset the potential physical impacts of extreme climate events on its portfolio. To mitigate risks from extreme weather events such as flood in coastal markets or incidents of terrorism, real estate companies generally have insurance policies, although they could be exposed to deductible excesses, some remediation costs, and potential increases in premiums. To fund growth in sustainable assets, many rated real estate investment trusts (REITs) have tapped the green bond market to fund eligible green projects. This funding improves sustainability initiatives and expands the investor base to non-traditional debt investors.

Social exposure (Risk Atlas: 1)

The real estate sector has relatively fewer social risks because the sector is not labor-intensive, generally maintains good community relations, and faces no material safety issues. However, changing customer expectations, such as requiring flexible office space, in addition to responding to demographic shifts of growing urbanization that is fuelling demand for mixed use assets, are influencing companies’ operating strategies and attitude to ownership of specific assets. The industry has a long track record of adapting assets to meet new regulations (such as for housing) and evolving to meet changing tenant requirements (such as more flexible office space, short-term leases, and upgraded retail space rented out to health-conscious retailers). Multifamily residential properties have responded to demographic shifts from rising urbanization and higher standards of living. We expect that the demographic trends within the developed markets that propel infrastructure spending are heightened and will influence each real estate assets market position and asset quality differently. Increasing focus on health and wellness can affect the location and design of assets to promote walkability and proximity to transit hubs.

Governance factors are generally neutral to the ratings in the sector, which are largely investment-grade. Most rated issuers are publicly traded and have established track records and transparent reporting practices. C-suite turnover or family ownership could present key man risk.
Homebuilders And Developers

Environmental exposure (Risk Atlas: 3)

The homebuilder and developer sector is exposed to environmental risks primarily related to the energy intensity of the building stock, largely from heating and air conditioning systems, and the risks related to rising energy costs and more stringent requirements to reduce energy-related carbon dioxide emissions to meet climate change goals. We expect that companies in this sector will continue to effectively manage these risks by enhancing their products' ongoing sustainability features and quality while seeking appropriate compensation from property buyers to cover higher costs. Regulation to achieve more efficient thermal insulation, thereby limiting greenhouse gas emissions, along with other water and energy conservation standards are tightening around the globe and increasing building costs. However, property buyers appear ready and willing to pay for it given the associated improvements in the properties' long-term value. Growing environmental awareness, particularly in urban areas, is increasing demand for more efficient buildings and is
prompting homebuilders and developers to focus on developing environmentally certified assets, which meet or exceed local regulations and industry best practice. Developing assets with environmental certification can differentiate issuers in the sector. Similarly, having a product offer that is more resilient to extreme weather events is a differentiating factor for homebuilders and developers in more vulnerable geographic locations. Supply chain exposure resides in building materials provided by construction companies; those suppliers are the ones primarily exposed to the environmental risks stemming from mining, excavating and clearing operations, pollution, or energy or water consumption related to producing the materials. The sector has an inherently low exposure to water use and resources scarcity. With respect to land usage, development activities are generally undertaken on planned and approved land parcels, resulting in limited risks of remediation for biodiversity or restitution for incorrect land use.

Social exposure (Risk Atlas: 3)

We view the sector as having a moderate exposure to social risks because the sector is not as labor-intensive as others and generally maintains good community relations, but it can face some safety issues around construction.

Social cohesion risks emerge when developers fail to meet tougher regulations, a development proposal or operation creates community issues, land permits or land conversion rights are viewed to have been prone to lobbying or bribery, or the rising price of property in urban areas is perceived as contributing to income inequality and social instability. Safety management risk in the sector reflects the increasing awareness to constantly improve safety standards for construction workers. The industry has a long track-record of adapting their products offer to meet new regulations and changing property buyers' requirements.
Governance

Governance factors are generally neutral to our ratings for homebuilders and developers, although we note that many small-to-medium-size companies were often started by legacy entrepreneurs who sometimes continue to have a strong influence on companies' operations. Bigger players are typically listed companies with more established track records and governance frameworks. C-suite turnover or founder and family ownership could present key man risk.

Source: S&P Global Ratings.
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Environmental, Social, And Governance Risks With Real Estate Operators And Homebuilders/Developers

Real Estate Operators

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<tr>
<th>Company/Issuer Credit Rating/Comments</th>
<th>Analyst</th>
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<tr>
<td>Alexandria Real Estate Equities Inc. (ARE) (BBB+/Stable/--)</td>
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We believe ARE, similar to other real estate operators, faces environmental risk factors such as climate change, water usage, and greenhouse gas emissions. However, these are not material rating factors. To mitigate these risks, the company has implemented several sustainability guidelines that dictate how it develops its characteristic collaborative urban campuses. ARE targets 100% of new ground-up developments to receive LEED Gold or Platinum certifications and as of year-end 2018, 51% of its annualized based rent came from LEED Projects. It reported that it has reduced greenhouse gas pollution by 3% in 2018 (after three consecutive years of achieving a 5% reductions in average annually). We view these enhancing our assessment of the company's competitive advantage and operating efficiency. ARE has been an active issuer in the green bond market with a $450 million bond in 2018 and an add-on of $550 million in March 2019, expanding its investor base and somewhat diversifying its capital structure. Year to date, the company has the largest green bond dollar amount outstanding across the REIT space. ARE does not have meaningful exposure to social risks. We view the company's management and governance as satisfactory and neutral to our ratings.

| Boston Properties Inc. (A-/Stable/--) | Michael Souers |

While Boston Properties is exposed to environmental risk factors such as climate change, water usage, and greenhouse gas emissions, these factors are not material to the rating. That said, we consider the company a leader in sustainability among real estate companies. For instance, in 2018, it completed construction on one of the most sustainable buildings in the U.S., Salesforce Tower, the city's first building with a blackwater recycling system, saving an estimated 7.8 million gallons of water each year. From 2008-2017, Boston Properties buildings reduced energy use by 23%, reduced greenhouse gas emissions by 38%, cut water use by 28%, and increased waste diverted from landfills by 67%. In November 2018, the company issued $1 billion in green bonds, with the proceeds allocated toward eligible green projects. Social risks for real estate operators are relatively low, in our opinion. Boston Properties' core assets are predominantly office properties, which could be indirectly exposed to shifts in consumer behavior and demographic trends. We view Boston Properties' management and governance as strong, supported by a track record of managing risk throughout multiple real estate cycles.

| Brookfield Property Partners L.P. (BPY) (BBB/Stable/--) | Michael Souers |

While environmental factors such as climate change, water usage, and greenhouse gas emissions are ongoing risks for real estate operators such as BPY, these are not material factors in our ratings. The company has an operating strategy that focuses on sustainability to reduce overall operating costs and enhance property value. These measures have helped reduce operating costs and attract tenants with increasing preference for green buildings. BPY reported 16% energy, 8% greenhouse gas emission, and 22% water savings in 2017 compared with 2013 levels. The partnership plans to increase green assets in 2019, particularly through development and redevelopment projects. We also expect real estate operators to have relatively low exposure to social risks given that the sector is not labor-intensive, maintains good community relations, and faces no material safety issues. However, BPY's core assets in the office and retail sector could be indirectly exposed to shifts in consumer behavior and demographic trends. The disruption in the retail sector as consumers move online affects the partnership's retail strategy, and the need to redevelop or reposition its retail assets requires a significant level of investment. BPY plans to spend about $1 billion per year at several malls, primarily to redevelop space vacated by anchor tenants. For office assets, workforce mobility and the increasing use of technology could result in a growing preference for co-working office space that could reduce demand for office real estate.

| CPI Property group SA (BBB/Stable/--) | Manish Kejriwal |

CPI has embedded sustainability in its strategy and is committed to improve its portfolio’s environmental performance, establishing KPIs and setting up regular monitoring and reporting processes. CPI complies with environmental energy-efficient solutions and green/BREEAM certification for new and existing assets. The group replaces older heating systems with natural gas systems, and seeks to improve the overall level of thermal insulation of its buildings. Some buildings, notably in Berlin, are equipped with solar panels, providing self-generated energy to some 1,800 tenants. CPI’s other environmental initiatives include recycling of main waste, using eco-friendly materials in reconstruction and the installation of rain drainage storage in most of its properties. From a social perspective, the group provides a work environment that is motivating, competitive, and inclusive, promoting diversity and equal opportunity; 57% of its workforce are women. The company has strict regulations concerning health and safety, collaborating with suppliers and subcontractors to enforce them. It also has a specific data protection policy to minimize any risk of breach. The company's core assets are in the office and retail markets, two segments exposed to shifts in consumer behaviours and demographic trends, with the possibility of material capital expenditure necessary to reposition some assets.
### Digital Realty Trust Inc. (DLR) (BBB+/Positive/--)

We believe that data center operator DLR faces higher environmental risk factors such as climate change, water usage and greenhouse gas emissions, compared with traditional asset classes, given intense power requirements at its facilities. However, these are not significant rating factors. DLR has developed a thorough strategy to build resource-efficient and environmentally responsible data centers and supports its customers to achieve their sustainability goals. In a growing number of markets, local authorities expect certification for project approval. DLR’s data centers are designed to require fewer construction materials to construct while delivering industry-leading power usage effectiveness levels—resulting in a smaller carbon footprint when compared with similar data centers. In 2014, DLR established a goal to make its buildings 20% more energy efficient by 2024. By the end of 2016, the company achieved that target, and as of year-end 2018, it reached a cumulative 25% reduction in energy intensity. We view these as enhancing credit factors to our assessment of the company’s operating efficiency. In 2015, DLR became the first data center REIT to issue a green bond and in 2019 it became the first to issue Green Euro Bonds in 2019. Both transactions expanded the company’s investor base and contributed to a somewhat more diversified capital structure. DLR is not exposed to significant social risks. We view the company’s management as governance as satisfactory and neutral to the ratings.

#### Equity Residential (A-/Stable/A-2)

Equity Residential, like many real estate peers, is exposed to moderate environmental risk factors such as climate change, water usage and greenhouse gas emissions. Although these factors are not material to the rating, we consider Equity Residential a leader in sustainability among real estate companies. From 2011-2017, the company reduced energy use by about 19%, water consumption 5%, and greenhouse gas emissions 25%. Equity Residential planned to spend more than $12 million in 2018 on sustainability projects including solar panels and co-generation systems at the company’s existing assets. Partially a result of its urban focus, Equity Residential has the highest "Walk Scores" among multifamily REIT peers, which measures the ability of residents to walk to work, recreation, retailers, public transportation and nightlife. The company is committed to pursuing LEED or equivalent certifications on all of its new developments, and it issued $400 million in green bonds in December 2018, with the proceeds allocated toward eligible green projects. Social risks for real estate operators are relatively low, in our opinion. In general, the real estate sector is not labor-intensive, faces no material safety issues and maintains good relations with its communities. Equity Residential’s assets are residential properties, which could be indirectly exposed to shifts in consumer behavior and demographic trends. We view EQR’s management and governance as strong, based on the company’s good strategic planning, operational track record, and risk management.

### Goodman Group (GMG) (BBB+/Stable/---)

While ESG factors are incorporated into our rating on GMG, they are not material factors in the group’s credit quality. Nevertheless, we expect that tenants will demand from Goodman that the group provides energy efficiency targets that improve the occupancy costs and meet its environmental targets. GMG has undertaken initiatives to reduce energy consumption such as retrofitting the existing portfolio with lighting upgrades. In addition to this, all developments in the year ended June 30, 2018, included sustainable design features. This not only improves the property’s environmental impact, reduces its operating costs, and improves the property’s value. As a real estate operator, GMG has a low exposure to social risks given that the sector is not labor-intensive, maintains good community relations, and faces no material safety issues. However, given GMG’s logistics focus, we expect the group to be well placed to accommodate shifts in consumer behavior, demographic trends, and urbanization. We assess GMG’s management and governance as satisfactory, reflecting in part the company’s continued execution of its growth strategy.

### GPT Group (A/Stable/A-1)

We consider risks that encompass ESG to be neutral to the rating, GPT has integrated ESG management practices within its core operations, development activities, and investment decisions. In our view, GPT is well positioned to limit the potential sustainability threats. The company aims to be carbon neutral before 2030. Achieving high ESG standards is likely to benefit GPT’s long-term performance by boosting income through higher rental rates; reduced operations and maintenance costs; and enhanced business reputation. This is indicated by GPT’s efforts to reduce energy and water usage, lower its carbon footprint, and improve its waste management. Compared with 2005 levels, water usage fell by 45%, energy intensity dropped by 41%, carbon emissions declined by 61%, and recycling improved to 40% from 29%. As a result, for the year ended June 30, 2017, GPT saved A$28.7 million of operating costs that it would have incurred if it had maintained the same level of usage, emissions, and waste as in 2005. We view GPT management as prudent, given our assessment of the group’s operating strategy and corporate governance architecture. Our management and governance assessment is neutral to the rating.

### Hongkong Land Holdings Ltd. (HKL) (A/Stable/---)

We do not believe environmental risks are material rating factors for HKL. The company is committed to high levels of sustainability with its properties. HKL reported a 27% reduction in carbon emission and about 20% savings in energy usage in its Hong Kong portfolio in 2017. In addition, many of the company’s properties in Singapore, Cambodia, Indonesia, and China have received green certification. HKL’s maintenance of good community relations supports the management of its social risk. For the property development segment, safety issues are paramount. In addition, HKL’s significant presence in the office and retail sectors could indirectly subject performance to shifts in consumer behavior and economic trends.

### Mitsui Fudosan Co. Ltd. (A/Stable/A-1)

Environmental and social risks for Mitsui Fudosan are neutral to our ratings on the company. As a diversified real estate company, it faces somewhat higher social than environmental risk, but both are generally low impact and manageable. Mitsui Fudosan focuses on mitigating the risks. The company has not faced any significant material costs or liabilities that relate to environmental or social issues. Real estate companies are somewhat exposed to environmental risks, such as climate change and rising energy costs. Mitsui Fudosan is working on reducing environmental burdens by developing buildings that minimize carbon dioxide emissions and by introducing energy management systems. Because of these efforts, the Tokyo Metropolitan Government has certified multiple major office buildings the company developed and owns for demonstrating excellence in...
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efforts to counter global warming. The social risk factors encompass changes in consumer preference, regulation, population dynamics, and reputation. Through the development of multipurpose complex facilities and the encouragement of the creation of communities, the company has a strong record of developing and supplying high-quality properties that address changes in consumer preferences and regulations. We assess Mitsui Fudosan’s management and governance as strong, given its strategic competence, organizational effectiveness, risk management, and governance practices. This assessment is neutral to the rating

Société Foncière Lyonnaise S.A. (SFL) (BBB+/Stable/A-2)
Kathleen Allard

SFL has developed CSR policies under which it identifies issues and sets objectives, such as sustainability of the buildings, carbon efficiency, biodiversity, health and safety, management of environmental risks, and business ethics. Since 2012, SFL has sought a very high level of environmental certification on its properties and redevelopment projects. From 2011-2017, the company achieved declines of 16.3% in its energy intensity, 20% in water intensity, and 25% in carbon intensity. On social risks, employment contracts include a code of ethics addressing such issues as professional integrity, fraud, discrimination, and legal and regulatory compliance. SFL also complies with the national code of ethics for French-registered real estate investment trusts, which covers topics such as the selection and rotation of independent appraisers to value its portfolio. We believe SFL, like other real estate companies, contribute to rising rents in operating in congested Paris, affecting affordability for some tenants. Although publicly listed, Colonial is a majority shareholder in SFL, limiting to some degree its operational independence.

Unibail-Rodamco-Westfield (URW) (A/Stable/A-1)
Eric Tanguy

Since 2007, URW has had an ambitious CSR strategy to focus on sustainability, reducing the impact of its operations on the environment and operating costs, while enhancing property values. From 2006-2015, the group reduced energy intensity by 33.8% and carbon intensity by 65.1%. URW is accelerating its CSR strategy and has set for itself new long-term ambitions under its “Better Places 2030” plan. Environmentally, the core commitment of its new program is to reduce the group’s carbon footprint by 50% from 2015-2030. In 2018, the carbon intensity from energy usage by assets in operation was 62 kilograms of carbon dioxide per square meter, down 10% since 2015. In addition, throughout 2017-18, 100% of the projects delivered or in a construction phase over 10,000 square meters within URW were in a BREEAM certification process. We also expect the company to have relatively low exposure to social risks given that it is not labor-intensive, maintains good community relations, and faces no material safety issues. URW has drawn up an appropriate health and safety risk management policy, including rules and guiding principles at group level, supplemented at the local level by procedures imposed by local legislation. The current disruption in the retail sector stemming from changing consumer preferences toward e-commerce is not affecting URW’s retail strategy, leading to sustained capital expenditure needs to redevelop or reposition assets. For office assets, workforce mobility and increasing use of technology could result in a growing preference toward co-working office assets or mixed-use properties.

Vonovia SE (BBB+/Stable/A-2)
Nicole Reinhardt

Environmental risks are not important rating factors for Vonovia, the largest residential real estate company in Germany. The company refurbishes and renovates approximately 5% of its portfolio per year to meet latest standards in terms of thermal insulation and energy efficiency. In 2018, Vonovia invested €1.14 billion to upgrade existing buildings and new constructions, and €430 million on maintenance. In 2019, the company will shift its focus slightly toward new constructions and neighborhood developments, with renewed company efforts to address the increasing undersupply in the German residential market, in particular in and around metropolitan areas. It will pursue modernization projects if they increase monthly rents by no more than €2 per square meter, within the regulatory framework in Germany to prevent exaggerated rent escalation (the national cap to pass-through renovation costs to tenants is set at €3 per square meter). Vonovia, like the real estate sector at large, retains low exposure to social risk. The strong rent and price increases in the past decade in Germany, particularly in metropolitan areas and despite regulated rents, is now part of the wider social and political debate around affordability in the country. This may come to represent a reputation or regulatory risk for Vonovia, as with other German residential peers.

CSR—Corporate social responsibility.

Homebuilders/Developers

Company/Issuer Credit Rating/Comments Analyst

Asia-Pacific

Agile Group Holdings Ltd. (BB/ stable/--) Spencer Ng

As a developer in China, Agile’s ESG issues mostly relate to air pollution, given that construction can add to urban smog. Like other developers in China and in line with stricter regulations, Agile has policies for cleaner construction and buildings. From a social risk perspective, we consider product quality and safety management as mitigating reputational and regulatory risks. The company has established quality controls to comply with applicable laws, comply with regulations, and meet market standards. To enhance employee safety, Agile has initiated safety and health measures linked with reward and punishment mechanisms. The company reported reduced lost days from work-related accidents and occupational diseases to 2,087 days in 2017 from 3,930 in 2016, despite a 41.2% growth in the number of employees. Overall, however, ESG factors do not play a major role in the rating. Agile has expanded into the environmental protection business since 2016 with waste development and water plant projects, although this business remains small relative to development. This business line is not material to our rating on Agile, though we expect it to grow further. As of
year-end 2018, the company owned 34 solid waste treatment plants and two waste treatment facilities in China. Of these, 15 plants are in operation and 21 are under construction or in preparation status.

**China Evergrande Group (B+/Positive/--)**

Developers in China face increasing social risks regarding land use rights, product quality, and labor safety. We consider these factors in our analysis, although they are not material. So far, the company has managed the social risks satisfactorily with no large-scale disputes. In addition, Evergrande has not had major safety incidents relating to its construction sites. Indeed, being one of the largest developers in China, the company’s presence in some cities can influence the benchmarking of prices and homebuyers’ terms. Therefore, pricing could carry a risk of instigating social discontent from potential homebuyers. Likewise, the company’s large scale could allow it to exert strong bargaining power over suppliers, which might have a risk of prompting corporate disputes. Managing these risks are also becoming increasingly complex as Evergrande expands. The company’s property development business contributes to environmental risks, but we do not believe these to be unduly material, given Evergrande’s long track record and management’s plan to obtain green building certifications for some of its projects.

**China Jinmao Holdings Group Ltd. (BBB-/Stable/--)**

Chinese developers face increasing social risks regarding land use rights, product quality, and labor safety. We include these in our assessment, although they are not material rating factors. Given Jinmao’s sizable primary land development and new urban redevelopment projects, the company has managed settling original residents and reconciling demands from local interest groups, which could generate disputes. We believe Jinmao’s status as a central state-owned enterprise (SOE) can smooth negotiations with local governments and communities. The company has not faced material issues regarding labor safety or project execution. We view Jinmao’s environmental efforts as stronger than that of most Chinese developers. Most new large-scale projects are labelled “eco-cities” as the company tries to appeal to increasing customer demand for more environmental and healthier living. Its green initiatives are consistent with its positioning for premium branding and quality. For its commercial properties, the company reported a 6.4% electricity saving, a 21.9% natural gas saving, a 6.4% carbon dioxide indirect emission reduction, and a 15.2% water saving in 2017, which indirectly helped to make its investment property business more cost-efficient. Jinmao’s governance practices are consistent with those of other SOE developers and are neutral to our assessment. In early 2018, Jinmao completed a rights offering to allow management to increase equity, which we regard as boosting incentive alignment and more commercialized decision-making.

**China Overseas Land & Investment Ltd. (COLI) (BBB+/Stable/--)**

While environmental factors do not play a major role in our ratings on COLI, the company has developed environmental management policies to promote sustainable practices. It has a good track record of managing and reducing the negative impact of its business activities by preventing dust emission, reducing noise, and proper sewage treatment and waste management. From a social perspective, COLI has increased awareness of higher construction safety standards and better-quality building materials and fixtures for buildings. It has made a lot of effort in reinforcing operational safety. In 2017, it implemented safety inspection months by region. The company cooperated closely with contractors to formulate site work-safety management instructions and conduct safety training. COLI is a key subsidiary of a central state-owned enterprise, China State Construction. We believe corporate governance will continue to be a key initiative and held to a strong standard by the government.

**China Resources Land Ltd. (CR Land) (BBB+/Stable/--)**

In response to environmental protection initiatives in China, CR Land integrates environmental concepts into its project development and business operations. These seek to reduce the environmental impact by tightening emission control, saving energy and resources, and using eco-friendly materials and low-carbon equipment. This, however, is not an important factor in our ratings. Property development is exposed to social cohesion and safety management risks. As one of the largest state-owned developers, CR Land’s pricing strategy, especially during the downturn, has “social harmony” as one of its consideration. We have not observed any major incidents resulting in large-scale disputes. The company has also reinforced operational safety. It meets legal standards on operations, service-delivery and product safeguards, and encourages its supply chain to fulfill their social responsibility. In 2017, CR Land had no fatal work-related accidents, and performed 3,600 safety emergency drills. The company’s practices and governance are in line with industry standards for publicly traded developers. As a central state-owned enterprise, CR Land’s governance is directed by industry professionals, which fill senior management roles. The board is not dominated by family shareholders.

**CK Asset Holdings Ltd. (A/Stable/--)**

CK Asset has managed its environmental footprint throughout its property business operations and requires external contractors to minimize their carbon footprint, air emissions, and waste during construction of projects. Its property management subsidiaries also adopt various energy- and water-saving practices and the company participated in the Charter on External Lighting for prominent commercial properties. Although property development can mean environmental risks, they are not material rating factors. CK Asset faces regulatory and reputation risk, which might affect the company’s viability and profitability. To mitigate the potential impact, CK Asset maintains safety standards through regular construction site inspections and continuously enhances product quality with customer feedback. The company also adopts high standards across its property management and commercial property divisions. While the Li family is a majority shareholder, the company has adequate corporate framework and oversight by independent directors. It has also been timely and transparent in delivering information to shareholders. Its former chairman transitioning into a senior advisor post after retirement also highlights clear succession plans.

**Country Garden Holdings Co. Ltd. (BB+/Stable/--)**

Given Country Garden’s rapid expansion in recent years and fast turnover project cycle, environment risk factors are becoming more material but they
do not directly affect our credit analysis. We believe the company's increasing green project development and implementation of SSGF (sci-tech, safe and share, green, and fine and fast) construction system could shorten its construction cycle further, reducing consumption of overall construction resources. This should lower the environmental impact of its business while strengthening the fast turnover model. We believe quality control and building safety remain key risks to Country Garden's social reputation. Two operational accidents in 2018, with six casualties, caused significant reputational damage. These have partially led to scaled-back growth targets and new control measures of more regular site supervision, weekly safety checks by third-party inspectors, and more stringent standards on material sourcing. Country Garden's previous aggressive sales targets could also be a source of social discontent—accelerated planning and construction cycles could affect product quality, while frequent changes to pricing could cause large-scale homebuyer disputes. Although we see the company's corporate governance as neutral to credit overall, controlling ownership remains a risk because the owner family occupies six of the 14 seats on the board and could exert significant influence on its decisions.

**Longfor Group Holdings Ltd. (BBB-/Positive/--)**  
Cindy Huang

Social risks such as building quality and labor safety are ongoing risks for Longfor, though these are not material rating factors. We believe the company is better positioned than most Chinese developers to manage these risks given its track record of operational and financial prudence. Longfor has not reported material deficiencies in product quality or been involved in large-scale disputes with buyers. The company, like other developers, still bears ultimate risk for worker safety and product quality despite the outsourcing of project construction. To date, Longfor has not faced a major incident. Social cohesion risk and regulations could become tougher for developers, resulting in potentially higher costs to comply for the company, like its peers. For example, developers faces both legal and reputational risks to ensure they have full land use rights. We believe these risks are manageable for Longfor given its immaterial exposure to urban renewal or shantytown redevelopments, with most land acquisitions obtained through public tenders. Property development comes with environmental risk. The company has started applying for green building certificates of projects under construction. It also encourages contractors to reduce emissions, water discharges, and waste generation from construction work.

**PT Lippo Karawaci Tbk. (CCC+/Watch Pos/--)**  
Kah Ling Chan

Although we assess Lippo's corporate governance to be neutral to our credit assessment, the company was associated with the Meikarta project, which faced corruption allegations. Lippo has since sold down its share of the subsidiary to a minority stake, and the local corruption investigation bureau has indicted the relevant personnel involved. We also note the majority ownership from the promoter Riady family. Lippo's property development activities expose it to environmental risks, but we do not believe these are material to the rating. The company has a long track record of good development and management of townships in Indonesia. Its subsidiary, Lippo Cikarang, received three Indonesia green Awards in 2017, for efforts in biodiversity development, saving water resources and pioneering pollution prevention. On the social front, Lippo is frequently engaged in community-giveback programs, from organizing frequent health awareness seminars to collaborating with other companies within the Lippo Group to award scholarships. However, we do not believe these factors affect the rating.

**Shimao Property Holdings Ltd. (BB+/Stable/--)**  
Aeon Liang

Shimao’s property development activities expose it to environmental risks, given that construction is leading cause of air pollution in China’s smog-prone cities. However, we do not believe these risks to be material to the rating. The company has a long track record of managing its development process. Shimao has established a systematic environmental safety management system for construction, and adopted effective approach to minimize energy consumption. As an example, the ratio of energy consumption-to-total revenue for Shanghai MinMax Hotel Songjiang energy consumption improved to 9.22% in 2017 from 9.66% in 2016. From a social perspective, corporate headquarters and each region participate in safety training and organize safety checks, with emergency rescue teams set up. Shimao has established quality controls to comply with laws and regulations, and meet market standards. Apart from safety risks, the company’s property projects could be a source of social disputes due to project quality or pricing tactics. However, Shimao has not had any significant incidents recently.

**Sun Hung Kai Properties Ltd. (SHKP) (A+/Stable/--)**  
Esther Liu

SHKP focuses on applying green innovations to improve energy efficiency, material use, and waste management while developing and managing properties. Although property development exposes the company to environmental risks about its construction activities, these are not significant rating factors. As one of the largest developers in Hong Kong, SHKP has had few safety incidents. There were no fatalities or noncompliance cases reported in the fiscal year ended June 30, 2018. The company reported 27.6 accidents per 1,000 workers for contractors compared with industry average of 32.9 for 2017, mainly based on robust training programs and routine audits. Despite being exposed to product quality and customer satisfaction risks, the company has had few incidents. Although largely owned and managed by the Kwok family, SHKP has strong independent representation on its board and clear succession plans. Governance factors are neutral to our analysis because the company has clear public disclosures and has proven stable operations through legal cases involving its key directors.

**Europe, the Middle East, and Africa**

**Taylor Wimpey PLC (TW) (BBB-/Stable/--)**  
Jeevan Doohot

TW is committed to be a responsible and sustainable homebuilder. In 2018, the company reported a 38.7% reduction in direct carbon emissions intensity since 2013. TW is on track to meet its target of 50% reduction in direct emissions by 2023. It incorporates environmental risks at the home design stage by using energy-efficient fixtures and fittings, including 100% low energy light fittings, LED recessed-down lights, and A-rated energy efficiency appliances. TW is moderately exposed to social risks. In the U.K., there is an intense shortage of affordable housing, affecting younger generations in particular. About 20% of the company's annual home completions are affordable housing (23% in 2018), and first-time buyers accounted for 34% of sales. The U.K. housing challenge is very complex and requires collaboration between the government, local authorities, the
housebuilding sector, and many other stakeholders.

D.H. Horton Inc. (DHI) (BBB+/Stable/--)  

DHI's homebuilding and land development operations are subject to an extensive array of local, state and federal statutes, exposing it to environmental factors. These are not material drivers of our rating; however, DHI has received Notices of Violation from the Environmental Protection Agency (EPA) related to stormwater compliance at sites in its Southeast region. This could result in additional compliance requirements and fines. However, the company does not believe this would have a material impact on its financial position and we do not see this as being a key rating factor. In addition, DHI recently settled with the EPA an alleged violation of the wetlands provisions of the Clean Water Act at a Southeast region site. Upon finalizing the agreement, the company expects a penalty of $267,000, which is not significant to credit quality. We view the homebuilders as having a moderate exposure to social risks and we see the competition for skilled labor as possibly affecting homebuilder profitability, which we evaluated as part of DHI's business risk. In addition, the current administration's crackdown on undocumented construction workers also affects the availability of labor. To maintain a reliable source of labor, DHI has had to increase its labor cost and offset these increases with reduced incentives or higher prices. Affordability risks have also affected demand and a slowing of new orders.

PulteGroup Inc. (PHM) (BB+/Stable/--)  

Environmental factors are an ongoing risk for homebuilders and PHM is subject to a variety of local, state and federal laws and regulations about protecting the environment. In July 2017, CalAtlantic Group Inc., a subsidiary of LEN, was notified by the San Francisco Regional Water Quality Control Board of its noncompliance with the Clean Water Act at a development in San Ramon, Calif. The company expects to pay a fine it believes will be nonmaterial. In general, environmental risk factors are not a material rating factor. We view homebuilders as having a moderate exposure to social risks, including labor and demographics. Although homebuilders throughout the country have recently encountered shortages of skilled labor, because of LEN's size, the company has been less affected than many competitors. It believes the current sources and availability of labor to its subcontractors are, in most locations, adequate for its planned levels of operation. Affordability risks permeate the industry because home prices have exceeded wage growth, with new orders falling in some markets. Visibility into new orders for 2019 is uncertain, but demographic trends, such as household formations, lend some support for the housing recovery to continue.

Lennar Corp. (LEN) (BB+/Stable/--)  

Environmental factors are an ongoing risk for homebuilders and LEN is subject to a variety of local, state and federal laws and regulations about protecting the environment. In July 2017, CalAtlantic Group Inc., a subsidiary of LEN, was notified by the San Francisco Regional Water Quality Control Board of its noncompliance with the Clean Water Act at a development in San Ramon, Calif. The company expects to pay a fine it believes will be nonmaterial. In general, environmental risk factors are not a material rating factor. We view homebuilders as having a moderate exposure to social risks, including labor and demographics. Although homebuilders throughout the country have recently encountered shortages of skilled labor, because of LEN's size, the company has been less affected than many competitors. It believes the current sources and availability of labor to its subcontractors are, in most locations, adequate for its planned levels of operation. Affordability risks permeate the industry because home prices have exceeded wage growth, with new orders falling in some markets. Visibility into new orders for 2019 is uncertain, but demographic trends, such as household formations, lend some support for the housing recovery to continue.

Toll Brothers Inc. (TOL) (BB+/Positive/--)  

We view Toll Brothers as having a moderate exposure to environmental risks because homebuilders are subject to a variety of local, state, and federal statutes, ordinances, rules, and regulations concerning health and environmental protection. We believe the company's communities in California are especially susceptible to restrictive regulations and environmental laws, particularly surrounding water usage due to the continuing drought conditions in that state. That said, Toll Brothers doesn't typically close its land purchases before securing all necessary environmental approvals. Such environmental risks have not been a material driver of our ratings because they tend to affect all homebuilders to varying degrees depending on their geographic footprint and are inherent to the industry. Like most homebuilders, shortages of qualified tradespeople have constrained Toll Brothers' ability to develop residential communities. This has caused the company to rely on local subcontractors who may not be adequately capitalized or insured. In addition, the current presidential administration's stepped-up immigration restrictions will likely further reduce the availability of labor. Any of these factors could lead to project delays or increased costs.
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.