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## How Environmental And Climate Risks Factor Into Global Corporate Ratings

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Related Criteria And Research

# How Environmental And Climate Risks Factor Into Global Corporate Ratings

With climate change and severe weather events garnering rising numbers of headlines, lenders and institutional investors have become more interested in how Standard & Poor's Ratings Services incorporates environmental and climate (E&C) risks into its corporate credit ratings, and the impact these risks have had on our ratings of late. To provide some clarity, we conducted a lookback review of all of our global corporate rating actions and published surveillance reports since Nov. 19, 2013 (the launch date of our updated corporate ratings methodology, which provides increased transparency into our ratings process) to discern the impact of extreme weather events and E&C risks.

Altogether, in our review of all 38 corporate subsectors, we identified 299 cases in which these risks have either resulted in or contributed to a corporate rating revision or have been a significant factor in our rating analysis. In 56 of these cases, E&C risks have had a direct and material impact on credit quality, resulting in a rating, outlook, or CreditWatch action or notching of the rating--nearly 80% of which were negative in direction. The lion's share of these ratings were in the oil refining and marketing, regulated utilities, and unregulated power and gas subsectors. As the severity and frequency of E&C risks continue to rise, we believe related rating actions could also accelerate in coming years.

A recent high profile rating action was the downgrade of the German Automaker Volkswagen AG (VW) on Oct. 12 2015 and continued CreditWatch placement. The action reflects our view that VW continues to face wide-ranging negative credit consequences following its admission that it installed software designed to manipulate diesel engine exhaust emissions in 11 million passenger cars and commercial vehicles and the related global recall of these vehicles.

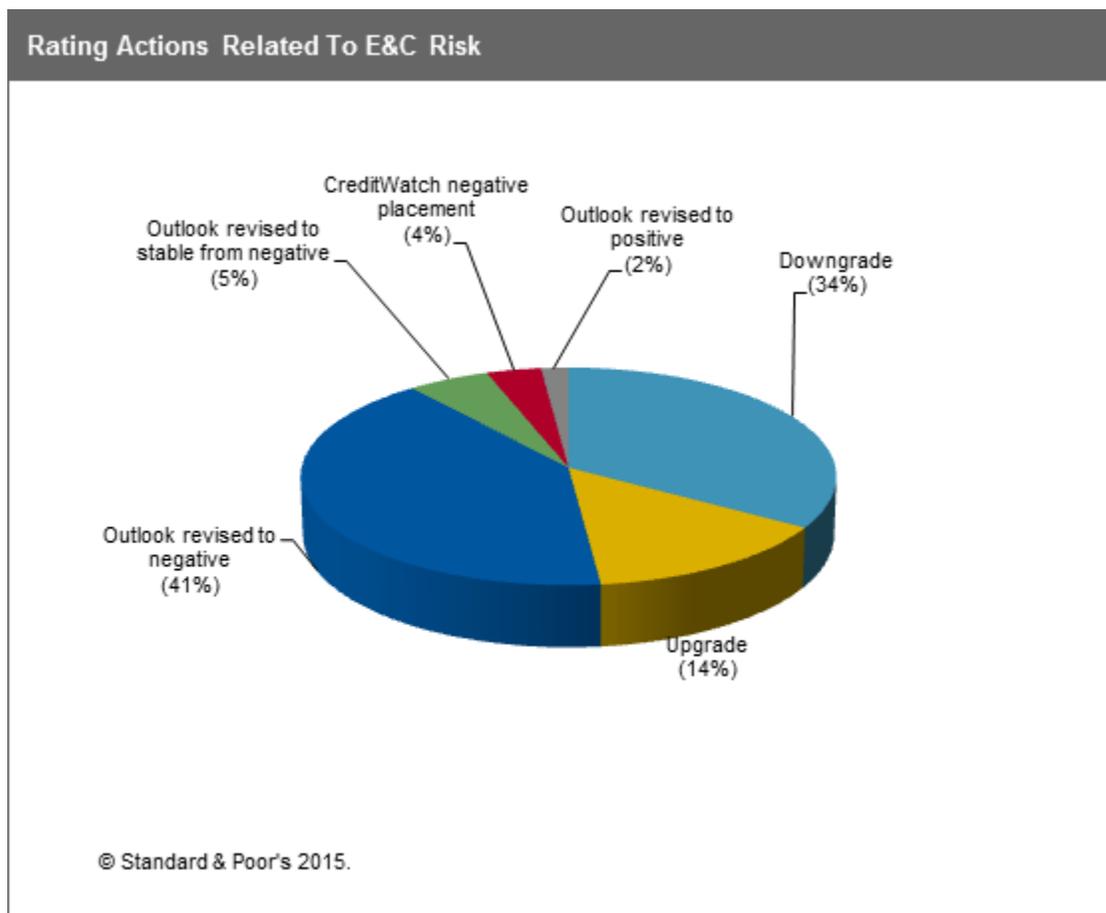
## Overview

- To provide some clarity into how Standard & Poor's incorporates environmental and climate (E&C) risks into its corporate credit ratings, and the impact these risks have had on our ratings, we conducted a lookback review of corporate rating actions and surveillance reports over the past two years. Our research identified 299 cases in which these factors either contributed to a rating revision or were a significant factor in our rating analysis.
- Fifty-six of these cases resulted in a rating action, CreditWatch placement, or outlook revision, 44 of which (close to 80%) were negative in direction.
- The subsectors with the greatest exposure to E&C risk thus far have been the oil refining and marketing, regulated utilities, and unregulated power and gas subsectors, and the greater focus on E&C risk in our criteria for these segments reflects this.
- As the severity and frequency of E&C risks continue to rise, we expect the numbers of E&C-related corporate rating actions to accelerate in coming years.

## The Rating Impact Of E&C Risks

To date, a relatively small proportion of overall corporate rating actions have resulted directly from environmental and climate risks, but their number is increasing. Fifty-six of the close to 300 instances over the lookback period in which E&C risk was a corporate credit factor resulted in rating actions that could be directly linked to E&C risk and traced to our criteria for that specific sector. Of these, 44 were negative actions (downgrades, negative outlook revisions, or CreditWatch negative placements) and 12 were positive actions (upgrades, or outlook revisions to positive or to stable from negative). In the remaining 243 cases identified in our review, we considered E&C risk factors significant to the credit analysis but they did not lead to a specific rating action (see table 1 and chart 1).

**Chart 1**



**Table 1**

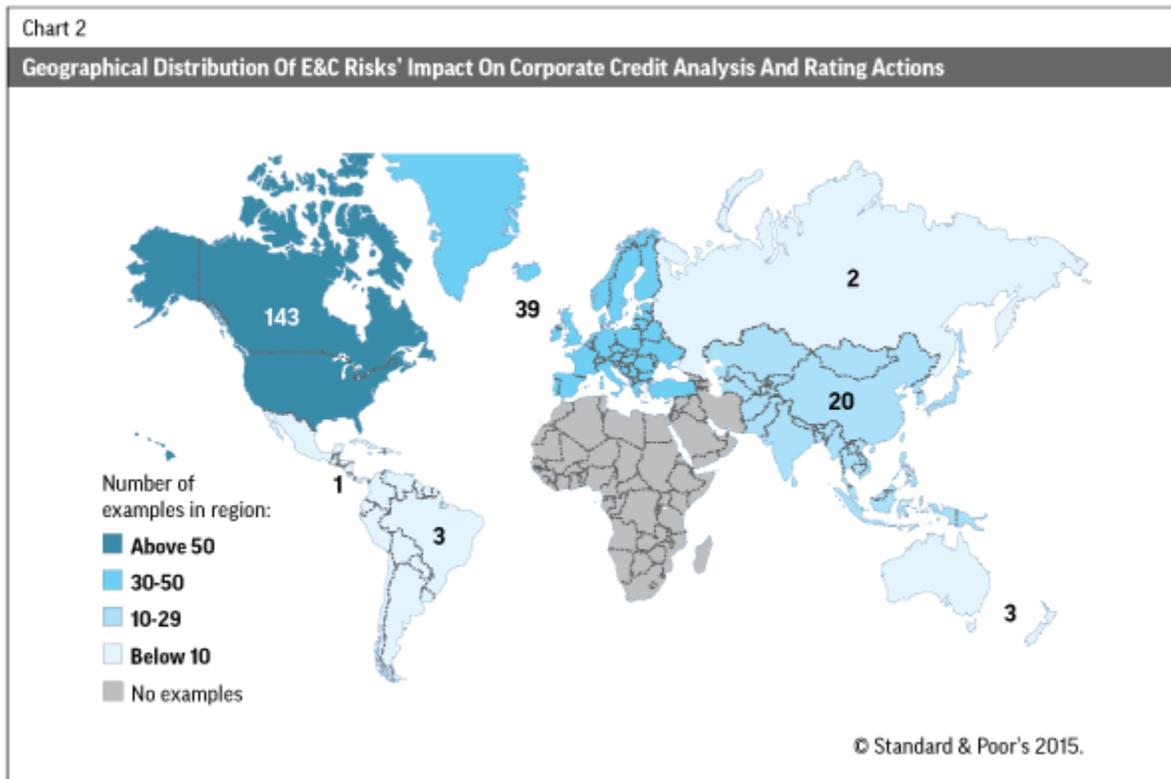
E&C Risk Impact On Credit Analysis And Ratings	
Outlook revised to negative	23
Downgrade	19
CreditWatch Negative placement	2
Upgrade	8
Outlook revised to stable from negative	3

**Table 1**

<b>E&amp;C Risk Impact On Credit Analysis And Ratings (cont.)</b>	
Outlook revised to positive	1
Contributed to general analysis	243

In some instances, a company's exposure to environmental regulations (such as emissions controls) and how the company complies with them has been a key consideration in our business risk profile assessments. Our October 2014 downgrade of GenOn Energy to 'B-' from 'B', for instance, resulted in large part from increasingly stringent environmental regulations on nitrogen oxide (NOx) emissions in Maryland, which could force the retirement of power plants over the next few years. Such closures would significantly hinder the company's ability to service its lease obligations. However, E&C risk considerations can also benefit corporate entities that diversify away from certain regulated business segments or which create a niche for successfully serving regulated areas in ways that other companies don't (see sidebar on Tenneco below).

North America has seen the greatest number of cases in which E&C risk has either affected ratings or contributed significantly to the credit analysis (48%), followed by Europe (10%) and Asia-Pacific (8%) (see chart 2). Among other factors, this largely reflects the increasing number of environmental regulations introduced in the U.S., as well as the concentration of corporate ratings there.



## Case Studies

### Volkswagen AG:

- Date: Oct. 12, 2015
- Action: Downgrade of long-term ratings to 'A-' from 'A'
- Key rationale: Violation of environmental laws and regulations and €6.5 billion charge, indicating material deficiencies in management & governance.

We downgraded our ratings on Volkswagen AG in October 2015 following its admission that the German auto manufacturer had manipulated diesel engine emissions, and would incur recall costs of €6.5 billion during the third quarter of 2015. We had placed our ratings on VW on CreditWatch negative the prior month at the time of the company's announcement. Alleged illegal behaviour in the U.S., the inadequacy of internal controls, and the management of environmental and social risks were factors in our revised assessment of VW's management and governance, which was the reason for the downgrade. Furthermore, because the full impact of these developments has yet to unfold, and the resulting reputational damage to the company could weaken its operational performance and credit metrics, we are keeping our long-term ratings on VW on CreditWatch negative to indicate the possibility that we may lower them further by up to two more notches.

### Tenneco Inc.

- Date: April 30, 2014
- Action: Upgrade to 'BB+' from 'BB'
- Key rationale: The company's focus on clean products benefits from increased regulation

We upgraded Tenneco Inc., a U.S.-based auto components manufacturer, in large part because of its leadership position in clear-air products, an area that stands to benefit from stricter vehicle-emissions regulation and accounts for two-thirds of the company's revenues. We believe Tenneco is in a strong position to answer the increased demand for clean-air products amid tightening regulation worldwide, which gives them a competitive advantage over more traditional auto suppliers and will likely boost their profitability. Currently Tenneco is the No. 1 supplier of emissions control products and is No. 2 in ride control equipment in North America and Europe, both markets that are likely to see increased regulation. Moreover, we believe the current management's well-timed leveraging of technology to provide emissions-related solutions to customers has bolstered the company's strategic standing.

### Energy XXI:

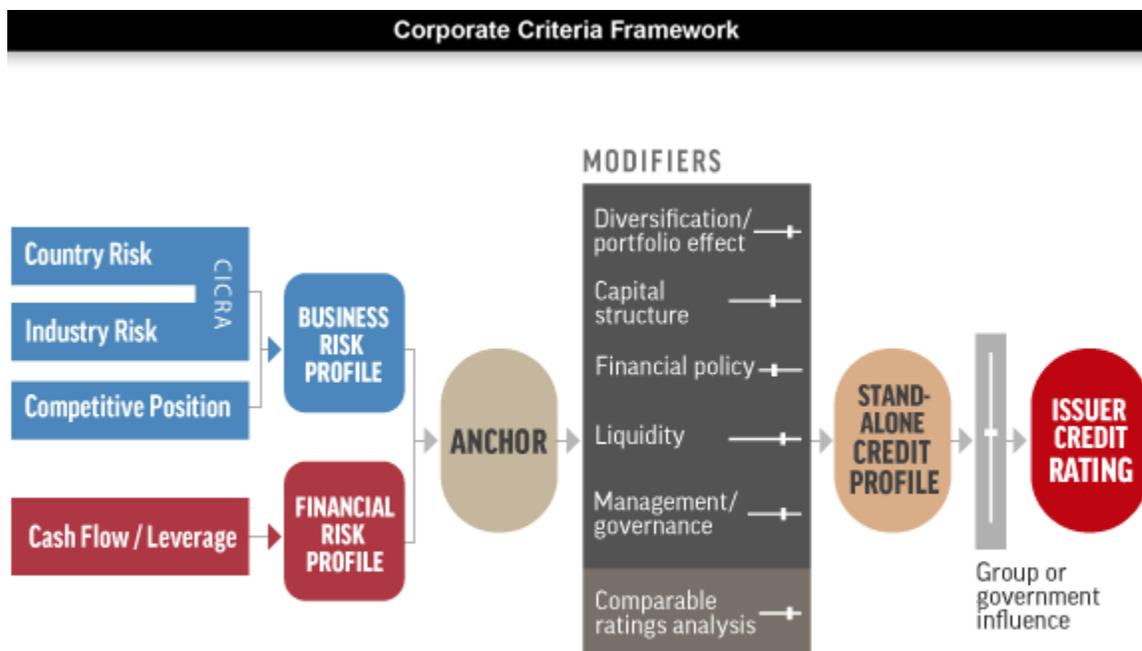
- Date: March 3, 2015
- Action: Downgrade to 'B-' from 'B'
- Key rationale: Concentration in the U.S. Gulf Coast, where disruptions due to hurricanes and other weather events are probable

We downgraded Energy XXI, an oil and gas operator in the southeastern U.S. coast, and maintained our negative outlook in light of its geographical concentration in the Gulf of Mexico, where the risk of well damage and operational disruptions resulting from hurricanes and other environmental factors is high. The company already experienced weather-related operational difficulties in 2014, and we expect this risk to keep growing. Furthermore, we believe significant reinvestment will be necessary to maintain current production levels following these difficulties. Falling crude oil prices, which increase the risk of offshore operations even further, were another key factor in our analysis.

## Where E&C Risk Comes Into Our Corporate Rating Methodology And Key Credit Factors

Our corporate analytical methodology incorporates various elements that, taken together, yield our rating on a given company (see chart 3). Our assessment of a corporate issuer's business risk profile combines our individual assessments of the company's industry risk, country risk, and competitive position, while our financial risk profile assessment reflects our cash flow/leverage analysis. We combine the issuer's business and financial risk profile assessments to determine its anchor. We apply additional factors--namely, diversification/portfolio effect, capital structure, financial policy, liquidity, management and governance, and the comparable ratings analysis--to modify the anchor. We apply additional factors--namely, diversification/portfolio effect, capital structure, financial policy, liquidity, management and governance, and the comparable ratings analysis--to modify the anchor.

Chart 3

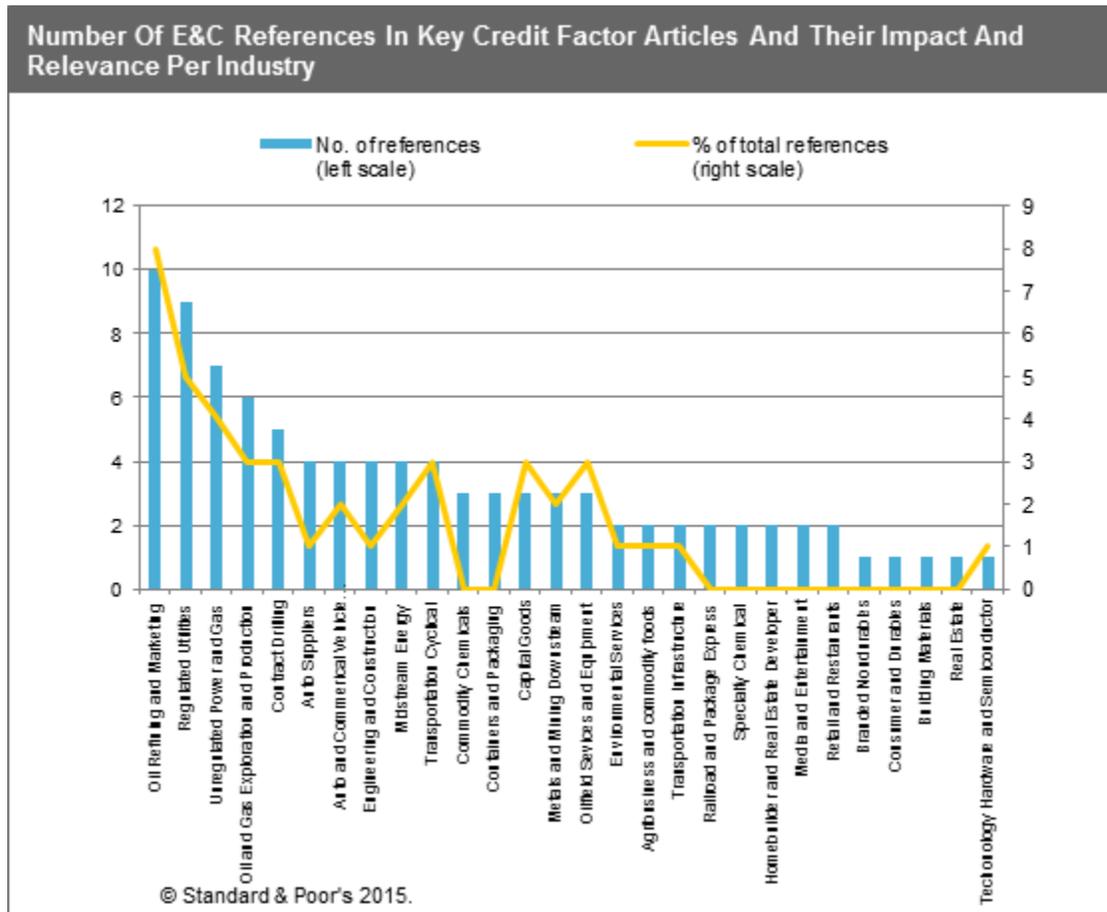


We also apply industry-specific criteria, which we refer to as key credit factors (KCFs), to complement our corporate methodology. The KCFs in rare circumstances may supersede certain sections of our broader corporate methodology. The KCFs provide complementary detail as regards how for example industry risk factors are assessed for a given industry and are where E&C risk references predominantly appear, most often within the industry risk and competitive position portions of the business risk profile assessment and in the "management and governance" modifier.

E&C risks factor most heavily into our criteria for the oil refining and marketing, regulated utilities, and unregulated power and gas industries, where environmental regulations and weather events tend to have a more direct impact on credit quality than in other sectors, although E&C risks factor into our criteria for most industries to some degree (see

chart 4).

**Chart 4**



**E&C risk in our management and governance criteria**

Our assessment of management and governance (M&G) acts as a modifier in our corporate rating methodology and therefore can directly influence an issuer's credit rating. The modifier is an aggregation of our analysis of eight management and seven governance subfactors.

We incorporate our view of how a company's management deals with environmental and social risks into the "comprehensiveness of risk management standards and tolerances" subfactor, which is part of our general risk management analysis. That is because we believe that material unmanaged environmental and social risks can hurt a company's creditworthiness over the rating horizon.

During our review, we identified that analysts had taken either a positive or negative view of environmental or social risk management for 117 corporate issuers, although the resulting impact on the overall M&G modifier has resulted in just one rating action to date (the downgrade of Volkswagen AG).

## Accounting for extreme weather and natural catastrophes

Our corporate criteria consider the impact of unfavorable weather on the rating profiles in many industries. The impact of weather includes extreme weather events, such as storms and floods, and unseasonal weather, including cold spells and heat waves.

Although unfavorable weather can result in property losses and production and market disruptions for companies, such events have not been frequent contributors to rating actions over the past decade (see "Climate Change Will Likely Test The Resilience Of Corporates' Creditworthiness To Natural Catastrophes," April 15, 2015). Overall, we have found that companies' liquidity management, insurance protection, natural disaster risk management, and post-event recovery measures have been adequate to mitigate the impact of natural catastrophes on their rating profiles during the period. Looking ahead, however, the picture is less certain. Climate change may increase the frequency and severity of weather events. And indeed, scientific evidence, as summarized in the 2014 Intergovernmental Panel on Climate Change (IPCC) report, points in that direction.

Our criteria consider the impact of unfavorable weather through direct property and production losses, as well as supply-chain and market disruptions:

**Direct impact.** Extreme weather events can directly damage a company's production facilities, leading to disruptions in its operations. This is of particular concern for companies with limited geographical diversification, which are less able to offset the impact of a weather event by ramping up production elsewhere, and thus could face major production disruptions or shutdowns and significant financial damage.

**Supply chain disruptions.** Natural catastrophes can cause major supply-chain disruptions, as we saw in 2011 following the Tohoku earthquake and tsunami in Japan and floods in Thailand. Again, suppliers' level of geographical diversification is an important factor in determining the extent of the impact. In the future, the increasing integration of the world economy through complex global supply chains may exacerbate the impact of natural catastrophes.

While insurance can provide some protection against weather-related losses, companies may find it harder to insure against these risks following a major event. For instance, following the large insurance losses from contingent business interruption resulting from the Japan earthquake and the Thai floods in 2011, insurers tightened up their policy conditions, increased rates, and, in some cases, reduced the insurance coverage for certain companies.

**Market impact.** Market conditions in certain industries may deteriorate following severe weather. For instance, supply and demand disruptions could lead to abrupt price movements and volatility. A major event affecting an important link in the economy, such as power and energy distribution, is likely to have a widespread and long-lasting impact on supply and demand and lead to price volatility.

In particular, a number of our industry-specific criteria consider exposure to volatility in raw materials prices. Natural catastrophes can have a considerable impact on the cost of raw materials, particularly when they hurt harvests or damage production facilities (e.g., when hurricanes force the shutdown of oil refineries).

For some segments, such as oil refining and marketing and the midstream energy industry, the adequacy and cost of insurance can be important risk factors. Therefore, a major market and price disruption in the insurance industry could have an impact on a company's cost of insurance. Because the cost and availability of insurance depends on the expected impact of extreme weather events, the potential negative impact of climate change on the impact of extreme

events may increase the cost of insurance or restrict its availability.

## **E&C Risks Vary By Sector**

Government regulations regarding emissions and environmental remedies could present material barriers to entry in a given industry, which can help incumbents that have already invested in meeting these standards. For example, in the oil refining and marketing industry, the government regulates refinery emissions (into the air and water) and environmental remediation of spills. However, restrictions on refinery emissions, along with standards for gasoline and diesel fuel and blending mandates to produce cleaner-burning fossil fuels, can also add significant costs and investment requirements to refiners, thereby constraining refining margins.

Environmental standards play an important role in assessing an affected company's operating efficiency. For example, in the regulated utilities industry, we analyze how successfully a utility's management achieves compliance with environmental standards while preserving cash flow stability. We also consider how management of these factors reduces the prospect of penalties for noncompliance.

Increased political and social emphasis on demand management and energy efficiency effectively represent, in economic terms, substitution risk (the risk that cleaner resources will take share from existing "dirtier" technologies) that could affect demand, rather than complete displacement. In the unregulated power and gas industry, we observe a modest trend in more affluent markets for a small but increasingly material number of residential consumers and small and midsize enterprises to migrate to on- and off-grid energy supplements (i.e., distributed or self-generation). Government mandates can accelerate this trend (and are already doing so in many areas, especially the U.S.), and subsidies to promote certain environmental policies can bolster demand for specific asset types (including gas-fired resources, renewables such as wind and solar, and distributed generation through rooftop solar panels, for example) while harming others (like traditional coal-fired generation).

Environmental and climate issues can also influence a company's competitive advantage in various ways. Take the unregulated power and gas industry, for example, where the markets in which a given company operates have a profound impact on risk. Specifically, we assess how public policies (including energy and environmental policies) affect an unregulated power and gas company's operating stability. The relative supportiveness and effectiveness of public policies and the likelihood of weather volatility influence our view of a market's attractiveness. For example, many European markets have been fully liberalized (with the breakup of monopolies and an opening to competition and cross-border trading) and are influenced not only by national energy policies (such as the hard turn by Germany away from nuclear energy), but also by EU-wide initiatives. The EU's "20-20-20" targets (for a 20% reduction in greenhouse gas emissions compared with 1990 levels, an increase in energy consumption produced from renewable resources to 20%, and a 20% improvement in energy efficiency by 2020), for instance, have dramatically reduced profitability for Europe's traditional power and gas companies.

## **E&C Risks Will Likely Grow**

Corporate exposure to E&C and extreme weather risk has generally been relatively modest to date, but is increasing. We believe the future could usher in significantly more devastating events than we've seen recently. Likewise, we believe that environmental regulations and the impact of climate change-related policies could lead to a more widespread weakening of corporate credit profiles and subsequently to more downgrades than in the past. As demonstrated by the past two years of rating actions, our corporate ratings methodology, whether through the KCF criteria or the application of the M&G modifier, is well equipped to pick up on these risks as they emerge and pose a threat to credit quality.

## **Appendix: Criteria Review Methodology And Findings**

Our industry-specific criteria (or KCFs) cover 38 corporate subsectors and contain numerous E&C risk-related references, such as those related to weather, emissions, natural disasters, etc. Out of these references, we identified 94 as directly relevant to the way we consider E&C risk in our analysis.

For illustrative purposes, we further subdivided the 94 analytically pertinent references in our criteria in order to rank their credit relevance (whether high, medium, or low) and their impact (direct or indirect).

We based our assessment of the relevance of a given E&C-related criteria reference on whether it would have a significant effect on a company's business or financial profile. For instance, references related to industries subject to environmental regulations and standards would likely have greater credit relevance than those related to companies and business lines that would only face disruptions to their business due weather volatility.

The assessment of impact reflects whether environmental and climate risks have had a direct effect on a company's operations and profitability or an indirect effect through its upstream or downstream activities.

After assessing the relevance and impact of the 94 references in our KFCs, we ranked nearly two-thirds in the "high" relevance and "direct" impact categories (62 and 60 of the references, respectively), with the greatest numbers of "high" relevance and "direct" impact references related to the regulated utilities, oil refining and marketing, and unregulated power and gas industries.

We incorporate E&C risks primarily into our assessments of companies' business risk profiles, and they have the biggest influence on the industry risk and competitive factors portions of this analysis (see appendix charts 1 and 2 below).

## **Appendix**

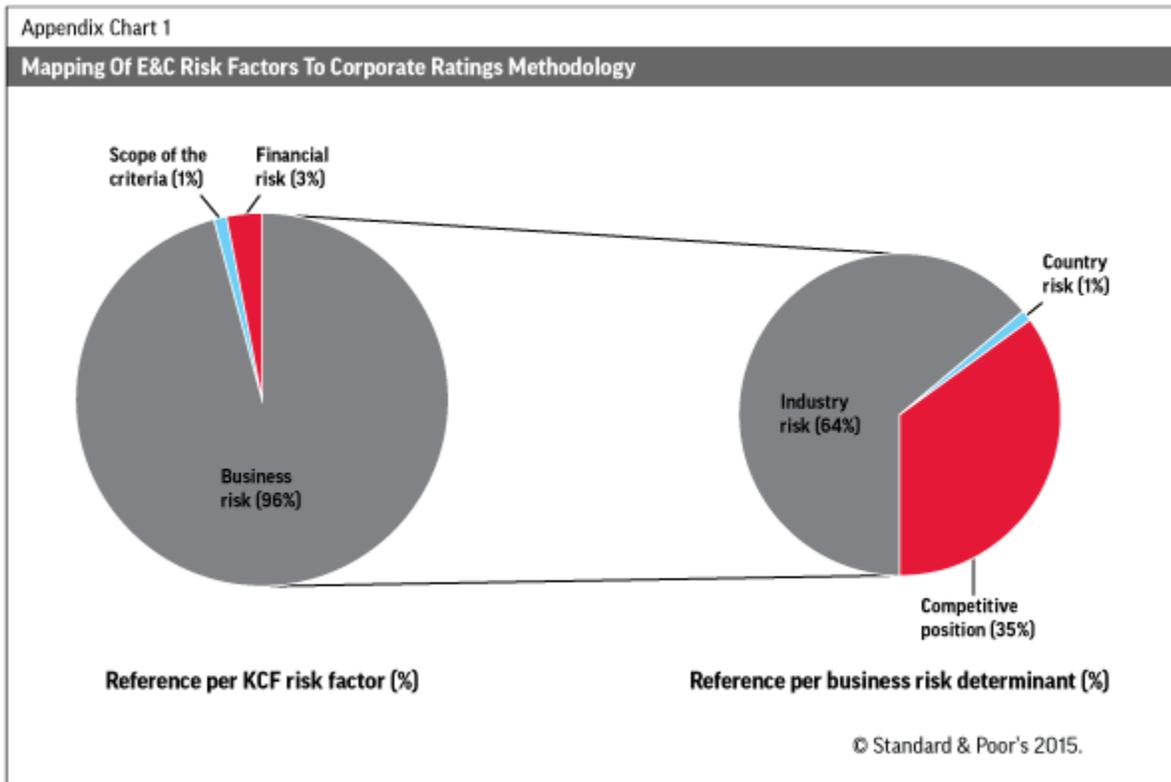
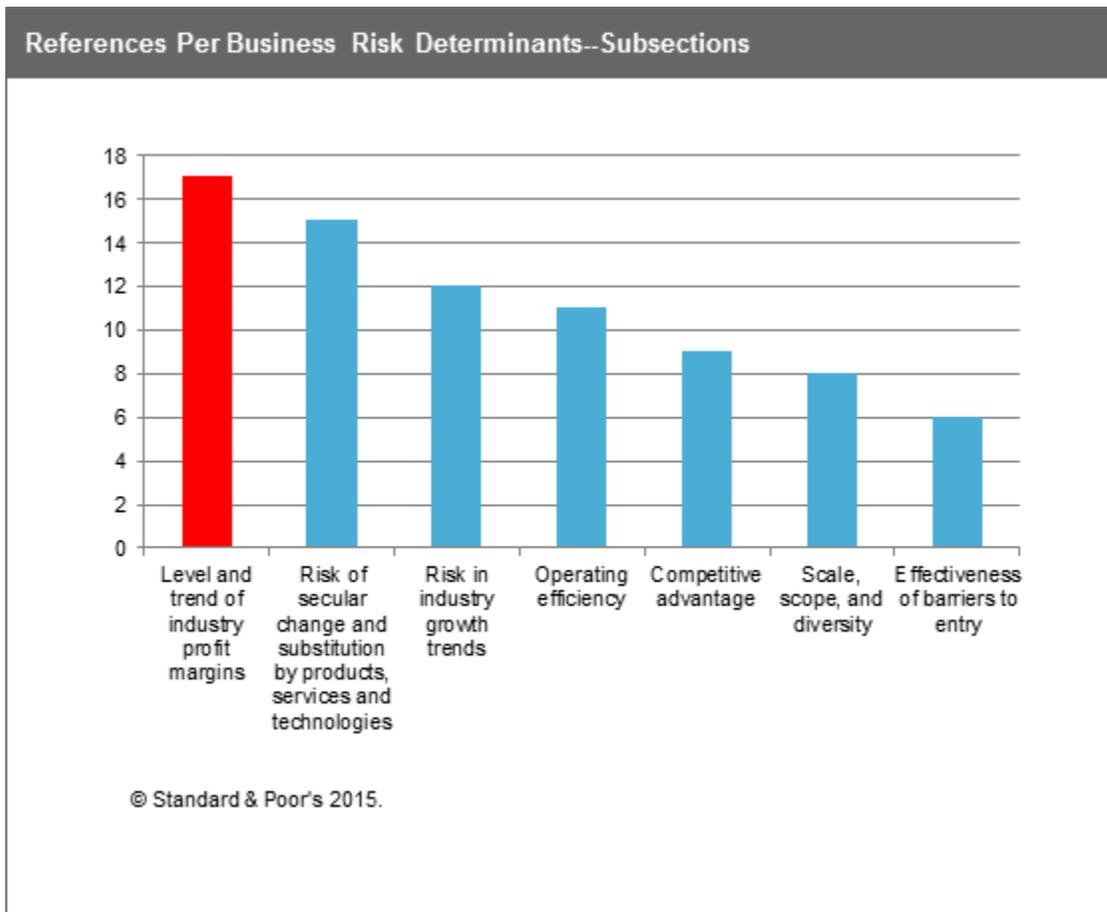


Chart 2



## Related Criteria And Research

### Related criteria:

- Corporate Methodology, Nov. 19, 2013
- Management And Governance Credit Factors For Corporate Entities And Insurers, Nov. 13, 2012

### Related research:

- Climate Change Will Likely Test The Resilience Of Corporates' Creditworthiness To Natural Catastrophes, April 20, 2015
- For The U.S. Economy, Climate Change Is A Case Of Pay Now--Or Pay More Later, Sept. 18, 2014
- Climate Change Could Sting Reinsurers That Underestimate Its Impact, Sept. 3, 2014
- Working With Governments To Increase Disaster Resilience Can Open New Doors For Reinsurers, Aug. 27, 2014
- Dealing With Disaster: How Companies Are Starting To Assess Their Climate Event Risks, May 21, 2014
- Are Insurers Prepared For The Extreme Weather Climate Change May Bring?, May 19, 2014

The authors would like to acknowledge the contribution of Adele Bertolino of Bocconi University, Milan, to this research.

We have determined, based solely on the developments described herein, that no rating actions are currently warranted. Only a rating

committee may determine a rating action and, as these developments were not viewed as material to the ratings, neither they nor this report were reviewed by a rating committee.

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