ESG Research

ESG Materiality Map
Power Generators

May 18, 2022

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This report does not constitute a rating action

Sustainable Finance

Corinne Bendersky
New York
corinne.bendersky
@spglobal.com

Credit Ratings

Pierre Georges
Paris
pierre.georges
@spglobal.com

Contributor

Lai Ly
Paris
lai.ly
@spglobal.com

S&P Global
Ratings

ESG Materiality Map Power Generators

In line with the research report "Materiality Mapping: Providing Insights Into The Relative Materiality Of ESG Factors," published on May 18, 2022, S&P Global Ratings is publishing research on the ESG materiality map for the power generators sector. We provide an illustration, at a point in time, of our findings on the relative materiality of certain environmental and social (E&S) factors, from both the stakeholder and credit perspectives, for the sector. The materiality map research does not represent any new analytical approach to the treatment of E&S factors in our credit ratings. See our ESG criteria for more information on how we incorporate the impact of ESG credit factors into our credit ratings analysis.

Power Generators Sector

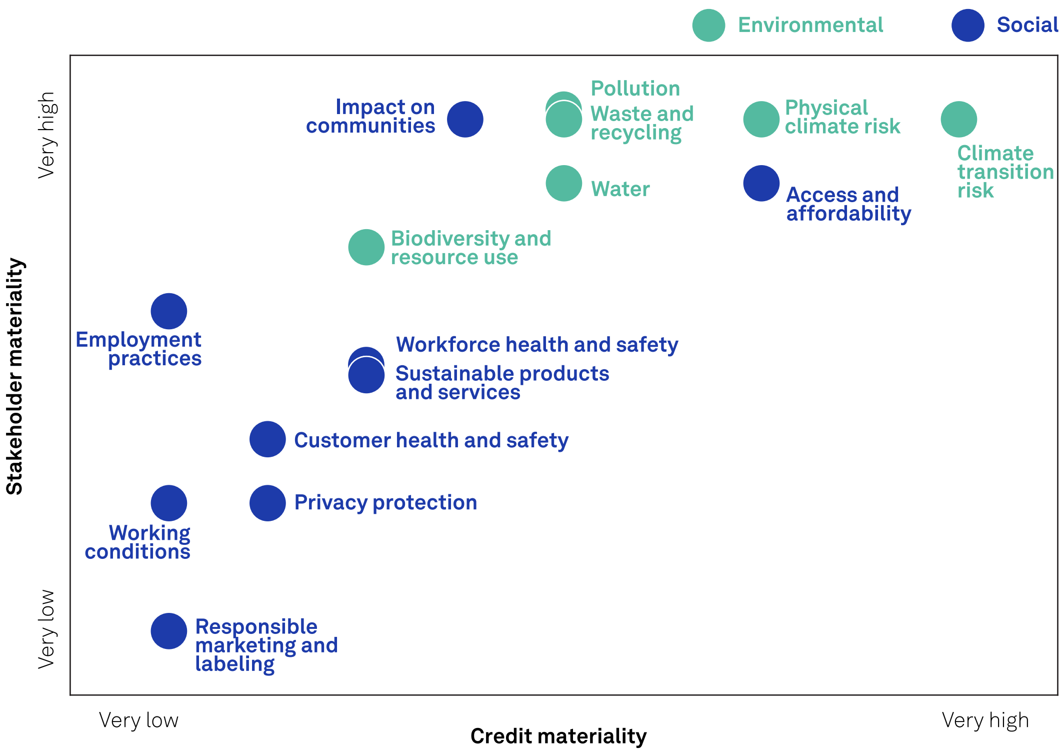
Power generators include companies that own and operate facilities that generate electricity from diverse sources including coal, natural gas, nuclear energy, hydropower, solar, and wind. Power generators may operate as part of integrated utilities (both in regulated and deregulated markets) or as independent power producers.

Key Takeaways

- Environmental issues facing power generators, especially climate transition and physical risks, are highly material for both stakeholders and credit. This is due to the sector's high carbon intensity and heightened public and regulatory pressure to transition to low-carbon energy and make systems more resilient to meet climate goals.
- Climate risks have spillover effects that elevate the materiality of other factors, such as access and affordability, both from a credit and stakeholder perspective, as climate-related efforts may exacerbate other environmental and social concerns.
- Key considerations with relatively high impact on stakeholders but with fewer material financial impacts relate to impact on communities, employment practices, and biodiversity and resource use. While these factors are material for the sector's stakeholders due to their large local workforces and the land use and community health impacts of power plants, these dynamics tend to be well managed and we expect they will continue to have limited bearing on credit quality.

See materiality map on the following page.

ESG Materiality Map For The Power Generators Sector



The materiality map provides an illustration at a point in time, of our findings on the relative materiality of certain environmental and social (E&S) factors, from both the stakeholder and credit perspectives, for the sector. It does not represent any new analytical approach to the treatment of E&S factors in our credit ratings. See our ESG Criteria for more information on how we incorporate the impact of ESG credit factors into our credit ratings analysis. Source: S&P Global Ratings.

How To Read The ESG Materiality Map

The stakeholder materiality (Y axis) reflects our assessment of the relative level of impacts and dependencies of the sector on the environment, society, and economy.

The credit materiality (X axis) reflects our assessment of the relative level of potential and actual credit impact for the sector. The credit implications for the factors positioned on the left side to the middle of the X-axis would be more limited and absorbable. On the right side, there is higher potential for these implications to be more disruptive. We assess credit implications for an entity based on its individual characteristics.

Assessing E&S factors' materiality: We consider both the likelihood of the impact from a given factor, as well as the magnitude of the impact. The materiality of the factors varies depending on the perspective (stakeholder or credit) as well as the evolving and dynamic interactions between these two dimensions.

The main areas of the map:

- The upper-right quadrant displays the most material, on a relative basis, E&S factors identified for the sector from both a stakeholder and credit perspective.
- The upper-left quadrant presents factors that are more material from a stakeholder than credit perspective. These factors have the potential to become more material from a credit perspective.
- The bottom-left quadrant shows factors that are less material for both stakeholders and credit. Their materiality may evolve over time and this dynamic may not be linear.

Examples Of Material Factors

Below we provide the rationale of some of the material factors to illustrate the above findings.

Climate transition risk

Climate transition risk is the most impactful for the sector for both stakeholders and credit. Power generation is the largest direct source of greenhouse gas emissions globally, making this sector highly susceptible to the growing public, political, legal, and regulatory pressure to accelerate climate goals. Public awareness of the urgency for climate action has reached a turning point, especially among the younger generation, investors, and other key stakeholders globally. In turn, policymakers and regulators are pushing for faster transition to lower-carbon energy. Over the past decade, we have seen multibillion-dollar impairments for most polluting assets, reflecting their weaker economics as taxes increase and they are displaced by new, cleaner technologies. In addition, more stringent climate rules may restrict their license to operate.

Physical climate risk

Given fixed assets, generators are highly exposed to physical climate risks, which makes physical climate risks highly material to stakeholders and credit. For stakeholders, extreme weather events, including wildfires, hurricanes, and storms, are becoming more frequent and severe and can result in power outages for large populations of users. In turn, these dynamics, coupled with regulatory pressure, are driving players to enhance the resilience of assets, which translates into greater short-term credit risk. The credit impacts generally involve significant financial losses for operators due to repairs, but more importantly from exposure to extreme power price spikes or claims due to business disruption. We expect these dynamics to continue but vary regionally depending on regulatory responses.

Access and affordability

The affordability and reliability of power systems are under pressure from climate-related efforts, exacerbating the high impacts for stakeholders and credit. Power generation is an essential service that must remain accessible, affordable, and reliable for end users given its critical role in supporting human well-being and global economic development. Service disruptions or steep price increases, which may be amplified by the necessary investments for the energy transition and physical climate risks, will likely drive up energy costs, affecting households' purchasing power and the competitive strengths of local industries, and can result in local and regional public opposition. We believe this affordability pressure adds both complexity and uncertainty to the roll-out of the energy transition. The business model for power plants may evolve depending on the pace and extent of the transformation of the energy mix and the necessary evolution of the market design and regulation.

Biodiversity and resource use

Biodiversity and resource use has less credit impact but remains a stakeholder concern as renewables expand. Renewable power, which is growing to meet climate goals, requires large land areas that are often in sensitive habitats where they can alter ecosystems, harm threatened species, and compete with other valuable land uses (e.g., agriculture). The sector also contributes to biodiversity loss through its climate impact. Growing awareness over biodiversity's link to global productivity, coupled with significant biodiversity loss, makes it a material stakeholder topic. For credit, this hurdle can lead to delayed execution of growth pipeline, additional costs, political intervention, or future claims, but these dynamics tend to be well managed. The energy transition also relies on critical raw materials, and growing demand introduces scarcity risks that could stall climate goals. While current availability of these resources makes this less impactful to credit, this may become an increasing concern, depending on the pace of the transition.

Waste and recycling

Waste and recycling is highly impactful for stakeholders and to a lesser degree also for credit, especially for nuclear and coal-fired generators. Nuclear power generates hazardous radioactive waste that has a long half-life and lacks viable disposal options, which can prompt community resistance for disposal sites. While nuclear operations tend to be well managed with few incidents globally, high-profile events such as those at Fukushima in 2011, have spotlighted nuclear safety issues and triggered public concern about waste management, although local acceptance varies across jurisdictions. The limited visibility on the technical and financial impact of nuclear storage remains an important credit risk, with high amounts of asset retirement provisions on balance sheets (unless transferred to the state, in some countries). Coal-fired power generates toxic coal ash waste, which if mismanaged can contaminate water and harm community health, leading to public opposition. But this is typically localized and coal ash waste is often recycled via beneficial reuses. This translates to credit risk as regulatory scrutiny increases and generators must bear the costs of penalties, legal action, and remediation. However, these impacts are mostly isolated and the magnitude will depend on the stringency of the regulatory response, which somewhat moderates credit materiality.

Impact on communities

Power generators' impact on communities and employment practices have more pronounced stakeholder impacts. Fossil fuel plant retirements and renewable development related to climate goals plus the adverse community health impacts from fossil plant emissions intensifies the materiality for stakeholders. Fossil fuel retirements can upend local economies and garner wide public attention. While toxic air emissions from plants can lead to severe and long-lasting health consequences for local communities, including premature death. Moreover, sites with high renewable potential are often in or near communities unaccustomed to power technology and near indigenous groups, which can prompt strong local opposition. These community-related issues are relevant but less material to credit as they are generally well managed.

Employment practices

Power generators are also large local employers, and given the technological and digital transformations in the sector, we see scarcity of skilled workers as an emerging risk. So far, we believe this employment practices risk is well managed with ongoing training and reconversion programs. As the sector advances, diminished availability of a skilled workforce throughout the supply chain may lead to operating issues such as project delays or cost overruns due to poorer project management or strategic execution, making this a looming but currently unrealized credit impact.

What is our approach to research on the ESG materiality map?

Referring to the research report "Materiality Mapping: Providing Insights Into The Relative Materiality Of ESG Factors," published on May 18, 2022, this research is built on the ESG materiality concept that considers ESG issues as material when they could affect stakeholders, potentially leading to material direct or indirect credit impact on entities. It considers that all businesses, through their activities and interactions, impact and depend, directly or indirectly, on stakeholders such as the environment (natural capital), society (human and social capital), and economy (financial capital). Using this ESG materiality concept, S&P Global Ratings has worked toward identifying a common, global, cross-sector set of E&S factors that we believe are material to stakeholders, and either are already, or have the potential to become, credit material for entities. The materiality map we propose provides an illustration at a point in time, of our findings on the relative materiality of those factors, from both the stakeholder and credit perspectives.

How does the sector ESG materiality map relate to credit ratings or ESG evaluations?

The sector materiality map is a visual representation of the factors that we consider impactful to the sector from a stakeholder and credit perspective for the purposes of this research. It does not represent any new analytical approach to the E&S factors in our credit ratings.

The relative materiality of the factors indicated on the materiality maps may inform the E&S Risk Atlas scores and the weights of the E&S factors used in ESG evaluations.

They may also inform our discussions with issuers on those factors' existing or potential credit materiality.

Related Research

- Materiality Mapping: Providing Insights Into The Relative Materiality Of ESG Factors, May 18, 2022
- Environmental, Social, And Governance Principles In Credit Ratings, Oct. 10, 2021
- ESG Evaluation Analytical Approach, Dec. 15, 2020