

Power Generators

ESG Evaluation Key Sustainability Factors

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ANALYTICAL CONTACTS

Michael T Ferguson, CPA, CFA

New York

(1) 212-438-7670;

michael.ferguson@spglobal.com

Luisina Berberian

Madrid

+34-91-788-7200

luisina.berberian@spglobal.com

Claire Mauduit-Le Clercq

Paris

+ 33 14 420 7201;

claire.mauduit@spglobal.com



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Approach

Our key sustainability factors identify the most material environmental and social risks assessed in our ESG Evaluation. We assess the materiality¹ of those risks across the industry's value chain and reflect them in the weighting of our environmental and social factors. We also provide the quantitative indicators² used to assess a company's performance relative to its industry peers on each of those factors. For further information, please refer to our ["Environmental, Social, And Governance Evaluation: Analytical Approach."](#)

Scope

The Power Generators industry includes companies that own and operate facilities that generate electricity from diverse sources, including coal, natural gas, nuclear energy, hydropower, solar, and wind, among others. Companies may operate as part of regulated utilities or as independent power producers that sell energy to a utility or wholesale market.

Material Environmental Risks





Power generator companies are exposed to the following material environmental risks and opportunities across their value chain:

- **Transition to a low carbon economy:** The industry's combustion of fossil fuels to generate electricity contributes an estimated 40% of global carbon dioxide (CO₂) emissions as well as other greenhouse gasses (GHGs). The industry's greatest challenge is to navigate the ongoing transition to less carbon-intensive power generation. Renewable energy operators--though significantly less exposed to GHG emission risks than the rest of the power-generation industry--will also have to manage CO₂ emissions throughout the value chain; for example, during the manufacturing process and transportation phase. Increasingly stringent regulations will likely result in substantial compliance costs, while companies also face reputational risk.
- **Waste and pollution:** The combustion of fossil fuels generates other air emissions--notably, sulphur oxides (Sox), nitrogen oxides (NOx), particulates, and volatile organic compounds (VOCs)--and regulated waste (especially for coal generators), creating significant regulatory risk, additional operating costs, and potential legal liabilities. Additionally, end-of-life management--the dismantling, and recycling or processing of waste--exposes companies to financial, reputational, or litigation risks if not properly planned and provisioned, especially for nuclear plants and renewable energy operators.
- **Physical effects of climate change:** Acute risks such as flooding and storm surges can cause operational disruption and increase capital and maintenance costs for power generating companies, while wildfires and storms can damage assets or affect energy production.
- **Water use:** Most forms of thermoelectric power generation (including fossil- and nuclear-powered) are water-intensive, with substantial volumes required for steam generation and in cooling condensers. Water use and scarcity can create serious operational, regulatory, and reputational risks.

Environmental Factors: Weighting And KPIs

We apply the highest weighting to GHG emissions because the ongoing transition to low-carbon forms of energy is the biggest issue facing the industry, owing to global regulatory developments, economic factors, and societal pressure. We assign a lower weighting to the waste factor since exposure to operating and financial effects, while material, is less than for carbon risk. The weighting on water is lower than that on waste, because water has relatively less impact in the short term--although it will likely have a greater influence in the longer term. The transition to low-carbon energy could have related benefits, since renewable or alternative sources of energy may be less water- and waste-intensive. The low weighting on land use and biodiversity reflects relatively minor effects and risks for most participants in this industry.

In our ESG Evaluation, we use qualitative and quantitative indicators to inform our opinion on an entity's management of its environmental impact relative to industry peers. Examples of qualitative indicators include an entity's policies and commitments to transitioning to low-carbon forms of power generation. The main quantitative performance indicators are listed in the table below.

	Weight	Key performance indicators	Other indicators, if applicable
 Greenhouse gas emissions	50%	<ul style="list-style-type: none"> – Scope 1 emissions (tons of carbon dioxide equivalent [tCO₂-e] absolute, and by megawatt hours [MWh]) – Scope 2 emissions intensity (tCO₂-e absolute, and by MWh) – % of energy that is sourced from renewable sources 	<ul style="list-style-type: none"> – Purchased electricity (MWh) and as % of total generation – % of energy that is sourced from fossil-fuel sources – Source and amount of Scope 3 emissions (CO₂-e)
 Waste and pollution	25%	<ul style="list-style-type: none"> – Total waste (metric tons of waste) – % of waste that is recycled/reused/recovered – % of waste that is hazardous – Coal combustion residuals (ash) generated (metric tons) 	<ul style="list-style-type: none"> – Sulphur oxides (SO_x) intensity (metric tons SO_x per MWh) – Nitrogen oxides (NO_x) intensity (metric tons NO_x per MWh) – Particulate matter (PM; metric tons PM per MWh) – Incidents of noncompliance with water quality regulations
 Water	15%	<ul style="list-style-type: none"> – Water use intensity (cubic meters [m³] withdrawn per MWh) – Water recycling rate – Exposure of direct operations to water stress (MWh capacity in areas of medium or high baseline water stress) 	<ul style="list-style-type: none"> – Water withdrawn (m³) – Water consumed (m³) – Water discharged (m³)
 Land use and biodiversity	10%	<ul style="list-style-type: none"> – Proportion of energy-generating operations located in areas with extremely or very high exposure to endangered species – Proportion of generating sites with biodiversity management plans 	

Material Social Risks

Power generators are exposed to material social risks across their value chain:





- **Workforce:** Health and safety remains a primary concern for most operators in the sector, with the potential for occupational injuries occurring during the operation of facilities and maintenance of infrastructure. A low-probability but high-impact severe process-safety incident could jeopardize a company's license to operate. Recruiting and developing a diverse and skilled workforce is increasingly important to this industry, currently characterized by an older and male-dominated talent pool, because shifting technologies and regulatory developments are rapidly reshaping the energy sector and require new skills and attributes.
- **Communities:** Power facility locations near communities can result in adverse health impacts and associated regulatory and reputational impacts, while project development can be disruptive to local populations.
- **Network reliability and access:** Due to power companies' role as providers of essential services, network reliability is linked to an operator's market share, customer satisfaction, and brand equity. Additionally, affordability of and access to services is subject to growing regulatory and public scrutiny.

Social Factors: Weighting And KPIs

We apply the highest weighting to communities and safety management, since companies in this sector are exposed to material disruption, regulatory, and financial risk from workforce and process safety. Power reliability and energy pricing, including for low-income populations, also attract high and increasing regulatory and public scrutiny, with potential reputational or regulatory impacts. Ensuring security of supply is essential for communities and customer relations. The lower equal weightings on workforce and diversity, and customer engagement, reflect relatively less significant exposure to these factors across the sector's value chain.

In our ESG Evaluation, we use qualitative and quantitative indicators to inform our opinion on an entity's management of its social impact relative to industry peers. Examples of qualitative indicators include the quality and effectiveness of an entity's policies on recruiting, developing,

retaining, and reskilling workers. The main quantitative performance indicators are listed in the table below.

	Weight	Key performance indicators	Other indicators, if applicable
 Communities	30%	<ul style="list-style-type: none"> – % of total corporate citizenship contributions that are directed toward community investments – Amount of cash contributions, employee volunteering, and in-kind giving converted in reporting currency 	<ul style="list-style-type: none"> – Number of project delays as a result of community opposition
 Safety management	30%	<ul style="list-style-type: none"> – Number of fatalities (onsite and vehicular) – Total recordable injury frequency rate by contractors and employees 	<ul style="list-style-type: none"> – Occupational injury frequency rate
 Workforce and diversity	20%	<ul style="list-style-type: none"> – Voluntary/involuntary turnover rate (%) – % of women and minority groups in total workforce, junior, and senior management positions, at the board and in revenue-generating functions – Gender pay gap ratio – Average and median age of employees 	<ul style="list-style-type: none"> – % of part-time employees, temporary employees, and contractors in the workforce – % of employees represented by an independent trade union or covered by collective bargaining agreements – Average hour and amount per full-time equivalent of training and development
 Customer engagement	20%	<ul style="list-style-type: none"> – Average electricity prices for residential, commercial, and industrial customers (\$/kWh) – System Average Interruption Duration Index – System Average Interruption Frequency Index 	<ul style="list-style-type: none"> – Number of data privacy breaches and number of customers affected

Submit Feedback

You can submit your feedback [online](#) or by [email](#).

Please specify which sector you are commenting on when submitting feedback.

We would particularly like to hear from you regarding:

1. Which risks are missing or not relevant?
2. Which KPIs are missing, could be enhanced, or are not relevant?
3. What views do you have on the suggested factor weights for the environmental and social analysis?
4. Do you have additional feedback(s) on this document?

Endnotes

¹ Events and issues are material for the ESG Evaluation when in our view they could meaningfully affect the entity's business operations, cash flows, legal or regulatory liabilities, access to capital, reputation, or relationships with key stakeholders and society more generally, either directly or through its value chain (upstream or downstream).

² We are mindful that some may be produced using different methodologies and scopes.

Related Research

- [The ESG Risk Atlas: Sector And Regional Rationales And Scores.](#) July 22, 2020
- [Our Updated ESG Risk Atlas And Key Sustainability Factors: A Companion Guide.](#) July 22, 2020
- [Environmental, Social, And Governance Evaluation: Analytical Approach.](#) June 17, 2020
- [How We Apply Our ESG Evaluation Analytical Approach: Part 2.](#) June 17, 2020

Analytical Contacts

David N Bodek

U.S. Public Finance
New York
(1) 212-438-7969;
david.bodek@
spglobal.com

Michael T Ferguson, CFA, CPA

Sustainable Finance
New York
(1) 212-438-7670;
michael.ferguson@
spglobal.com

Claire Mauduit-Le Clercq

EMEA Utilities
Paris
+ 33 14 420 7201;
claire.mauduit
@spglobal.com

Corinne Bendersky

Sustainable Finance
London
+54-11-4891-2141
corinne.bendersky
@spglobal.com

Luisina Berberian

Sustainable Finance
Madrid
+ 34-91-788-7200
luisina.berberian
@spglobal.com

Henrik Cotran

Sustainable Finance
San Francisco
+1-415-371-5018
henrik.cotran
@spglobal.com

Bernard de Longevialle

Sustainable Finance
Paris
+33-1-40-75-25-17
bernard.delongevialle
@spglobal.com

Hans Wright

Sustainable Finance
London
+44-20-7176-7015
hans.wright
@spglobal.com

Florence Devevey

Sustainable Finance
Paris
+33-1-4075-2501
florence.devevey
@spglobal.com

Paul Munday

Sustainable Finance
London
+44-20-7176-0511
paul.munday
@spglobal.com

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