

1. Energy Group

Energy is a critical element in the economy, serving as a primary or necessary input in most economic activities. This group comprises organizations extracting, processing, producing, and distributing fossil fuels or electric energy to other sectors of the economy. It includes, but is not limited to, industries listed in [Figure 10](#).

While many climate-related issues impact the Energy Group, organizations in this group should consider providing disclosures related to financial implications of potential physical impacts (e.g., reliance on water in areas of high water stress, severe storm/flood mitigations) and transition impacts (e.g., policy requirements, carbon prices, new technology, changes in market demand) of climate-related risks and opportunities.

As fossil fuel and electricity providers, the organizations in this group generally have significant financial exposure around transition issues related to GHG emissions and, in many cases, are dependent on the availability of water. For example, a majority of the current electricity supply comes from non-renewable fossil fuel resources, resulting in a significant exposure to transitions around global GHG emissions—either directly through utility companies' own energy use for production or indirectly through combustion of fossil fuels.⁴⁵ Electric utilities, therefore, face significant transition risk (i.e., the financial risk arising from the changes in asset valuations caused by the structural shift toward a low-carbon energy system). This is because the utility sector's asset valuations are at risk from the disruptive impact of the policy, technology, and portfolio changes that will occur over the next two to three decades as policies, technology, and markets shift to a low-carbon energy system.

In addition to GHG emissions, both hydroelectric power generation and cooling for nuclear and non-nuclear power generation use large quantities of water.⁴⁶ Physical risks affecting water supplies creates a potentially important exposure for this industry.

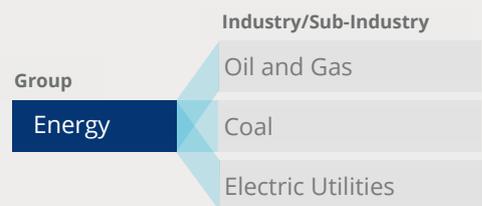
Oil, gas, and coal extraction face similar transition risks as key suppliers to electric utilities. These industries also rely on water to a significant degree.^{47,48,49}

These characteristics make the Energy Group particularly sensitive to physical, policy, or technological changes affecting fossil fuel demand, energy production and usage, emission constraints, and water availability. The regulatory and competitive landscape that surrounds electric utilities also differs significantly between jurisdictions, thus making assessment of climate-related risks very challenging.

As a result, both the transition risks and physical risks associated with climate change may impact the operating costs and asset valuation of organizations engaged in energy activities. In particular, organizations within the Energy Group are generally capital intensive, require major financial investments in fixed assets and supply chain management, and have longer business strategy/capital

Figure 10

Energy Group



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⁴⁵ According to International Energy Agency (IEA) data, CO₂ emissions from fuel combustion across all energy sectors and activities totaled 32.2 Gigatons (Gt) in 2015, thereby accounting for 60 percent of total anthropogenic GHG emissions. The power-generation sector on its own accounted for 13.6Gt, representing 42 percent of all CO₂ emissions from energy and 25 percent of all anthropogenic GHG emissions. To put this into context, the next most important industrial sector was transportation, which accounted for 7.4Gt (23 percent of all CO₂ emissions from fuel combustion, and 14 percent of total anthropogenic GHG emissions). IEA, *CO₂ Emissions from Fuel Combustion: Highlights*. 2015.

⁴⁶ Michelle T.H. van Vilet, et al., "Power-generation system vulnerability and adaptation to changes in climate and water resources." *Nature Climate Change* 6 (2016): 375-380.

⁴⁷ IPIECA, *Water Resource Management in the Petroleum Industry*, 2005.

⁴⁸ International Council on Mining and Metals (ICMM), *In Brief: Water stewardship framework*, London: International Council on Mining and Metals, 2014.

⁴⁹ World Resources Institute (WRI), *Water-Energy Nexus: Business Risks and Rewards*, Washington, DC, 2016.

allocation planning horizons relative to many other sectors—horizons that may be particularly affected by climate-related risks and opportunities. This requires careful assessment of climate-related risks and opportunities to inform decisions about future sustainability and profitability.

Transparent and decision-useful climate-related disclosures are crucial to fully understand the impact of climate change on business strategy and financial plans in energy activities. Consequently, disclosures should focus on qualitative and quantitative assessments and potential impacts of the following:

- changes in compliance and operating costs, risks, or opportunities (e.g., older, less-efficient facilities or un-exploitable fossil fuel reserves in the ground);
- exposure to regulatory changes or changing consumer and investor expectations (e.g., expansion of renewable energy in the mix of energy supply); and
- changes in investment strategies (e.g., opportunities for increased investment in renewable energy, carbon-capture technologies, and more efficient water usage).

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