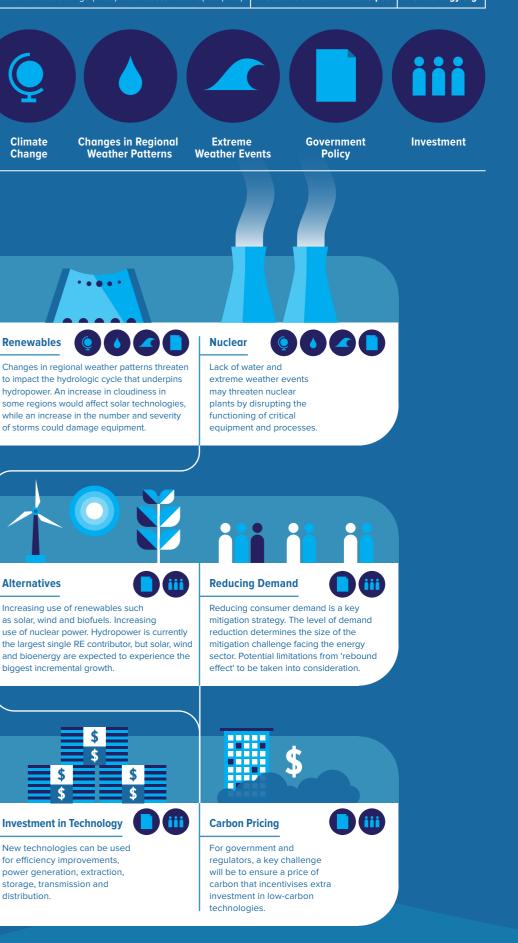
**Energy Sector Faces Major Challenges from Climate Change** Without strong mitigation policies, the global average temperature is likely to rise above the internationally agreed 2°C target. As a major source of carbon emissions, the energy sector will be affected by mitigation policies as well as by climate impacts in multiple ways.

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Global warming, changing regional weather patterns and extreme weather events will affect demand and impact energy production and transmission. Strong global policy action would also have major implications on investments.



----**Power Stations Pipelines** Renewables Impacts Power lines and Thermal power plants will be affected by the Energy transport infrastructure is at risk, with oil Extreme weather events, especially strong decreasing efficiency of thermal conversion and gas pipelines in coastal areas affected by wind, could damage power lines. Standards **Adaptations** as a result of rising ambient temperatures. rising sea levels and those in cold climes by thawing can be amended to implement appropriate Reduced water for cooling and increasing permafrost. May require new land zoning codes adaptation measures, including re-routing water temperatures could lead to reduced and risk-based design and construction standards lines away from high-risk areas. power operations or temporary shutdowns. and structural upgrades to infrastructure. of storms could damage equipment. Increasing Efficiency **Switching Fuels** Alternatives Emission Carbon Capture & Storage Reduction Adoption of carbon capture and storage (CCS) for fossil Energy efficiency can be improved by retrofitting Switching to lower-carbon fuels (eg from Increasing use of renewables such fuel plants can reduce emissions. CO, storage capacity coal to gas) can reduce emissions. Moving as solar, wind and biofuels. Increasing existing plants and adopting efficient new ones: Options is large and all parts of the technology have been improving transmission and distribution and from world-average efficiency coal plant demonstrated. CCS units burning bioenergy (BECCS) through technology improvements in fossil fuel to state-of-the-art gas can halve emissions can draw CO, from the air. But barriers to CCS and extraction and conversion. if fugitive methane release is controlled, BECCS remain, including cost. and can act as a 'bridging technology'. biggest incremental growth. R - 80 CO, emissions (GtCO) Business-as-usual emissions trajectory issions trajectory **Policy Framework Regulatory Frameworks** Investment in Technology Largest GHG Contributor ikely to keep globo 40 arming below 2°C Additional investments, which could New technologies can be used The energy sector is the largest source of Governments may facilitate an be bolstered by fiscal measures and/or - 20 greenhouse gas (GHG) emissions. Meeting the 2°C increased use of emission reduction for efficiency improvements, subsidies are required in the energy target implies swiftly halting the rise in emissions for power generation, extraction, options by creating an attractive supply sector to keep the global storage, transmission and the full energy system and bringing them to zero fiscal and regulatory framework. temperature increase below 2°C. 1950 2000 2050 2100 distribution. before the end of the century, with a likely need for 'negative emissions' technology such as BECCS.

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