

The Paris Agreement, adopted at the 21st yearly session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21) in December 2015, set the long-term goal of limiting global warming to well below 2°C compared with pre-industrial levels.

Furthermore, Japan has set the medium-term target of a 26% reduction in greenhouse gas (GHG) emissions in 2030 compared with 2013 levels, as well as the long-term target of an 80% reduction by 2050.

The J-POWER Group owns many coal-fired thermal power plants, which emit a relatively large amount of CO₂. As such, we believe that helping to address climate change proactively, as we increase corporate value, is a material issue and have prepared scenarios and strategies regarding the use of coal-fired thermal power going forward.

Energy Mix Scenarios

The energy mix is seen as particularly influential and important in addressing climate change, and is a significant factor impacting the J-POWER Group's power generation business strategy.

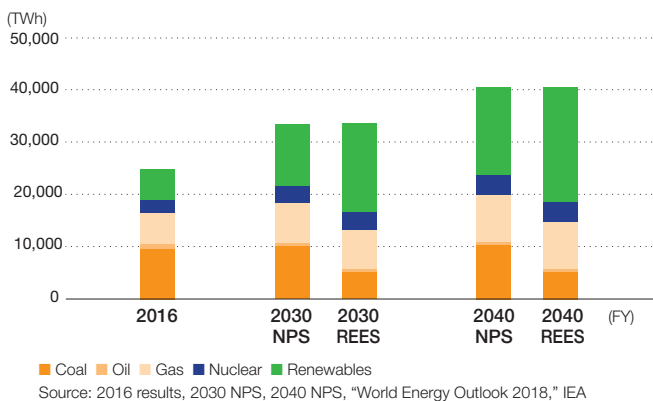
A wide range of possible scenarios exist for the future energy mix of any country, impacted by such factors as government policy, technological development, and cost. It is therefore impossible to predict the exact energy mix at any point in the future.

The International Energy Agency (IEA) publishes the World Energy Outlook (WEO), which includes a New Policies

Scenario (NPS) that is regarded as the WEO's main scenario. Building on this, the J-POWER Group created its own scenario, the Renewable Energy Expansion Scenario (REES), in which the adoption of renewable energy accelerates further, and half of the coal-fired thermal power assumed in the NPS is replaced with renewable energy.

In addition, the Japanese government has established the Long-Term Energy Supply and Demand Outlook, which lays out an energy mix for 2030; we also took this into account.

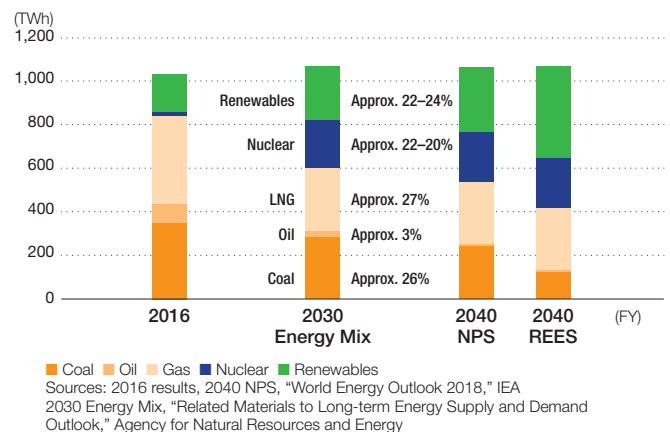
World Energy Mix



Under the NPS, the worldwide amount of coal-fired thermal power generation is expected to stay roughly flat until 2040. Under the REES, by 2040, it would decrease by half, but remain at approximately 5,200 TWh per year, or around 13% of the total energy mix.

Japan has few mineral resources, depends on imports for almost all its fossil fuels, and is not connected to any other country through an international power grid. As such, from an energy security perspective, a certain amount of coal-fired thermal power will remain necessary for the nation into the

Japan's Energy Mix



future. Japan's government therefore assumes that coal-fired thermal power will account for approximately 26% of total energy mix, or 281 TWh, in 2030.

Looking further to 2040, Japan's coal-fired thermal power is projected to decrease to approximately two-thirds of its current amount, or 240 TWh, under the NPS, and to approximately one-third of its current level, or 120 TWh, under the REES. As such, even under the REES, Japan's total reliance on coal-fired thermal power will be roughly twice the amount of power currently generated by the J-POWER Group's domestic coal-fired thermal power plants.

Risks Related to the Coal-Fired Thermal Power Business

In both the NPS and the REES, coal-fired thermal power is expected to retain a place in the energy mix. However, continuing to operate coal-fired thermal power businesses pres-

ents the following risks, to which it is necessary to implement forward-looking countermeasures.

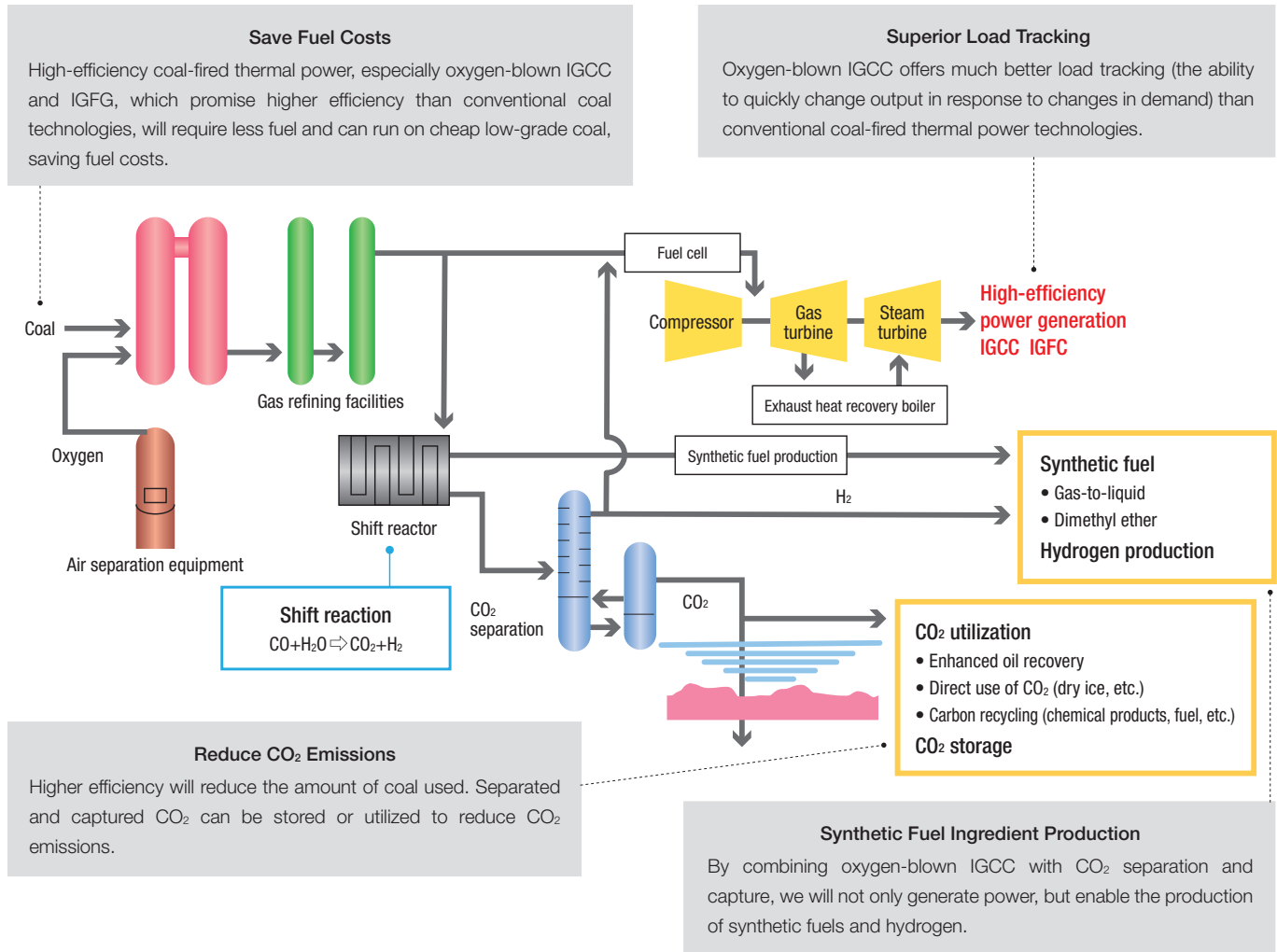
Risk	Possible Developments
Decrease in sales volume	Intensifying competition between coal-fired thermal power plants due to decreased demand for electricity generated from coal
Decrease in sales prices	Falling prices in electricity markets due to increases in renewable energy
Increase in cost	Increasing costs associated with carbon pricing, such as carbon taxes and cap-and-trade
Regulations	Banning of new power plants that do not incorporate technologies for ensuring the lowest possible CO ₂ levels
Funding	Lower share price due to decline in investment in stocks of companies that conduct coal-fired thermal power businesses, or decrease in available financing

Initiatives Aimed at Carbon Reduction and Decarbonization

The J-POWER Group is currently taking steps on many fronts to reduce and eliminate carbon emissions in its coal-fired thermal power business. These include the development of high-efficiency coal-fired thermal power, the development of oxygen-blown IGCC and IGFC technologies, and the develop-

ment of technologies to separate and capture CO₂ from power generation and store it underground (CCS) or utilize it (CCU; jointly "CCUS").

These initiatives present a wide range of merits beyond reducing CO₂ emissions.



Through these initiatives, we will prevent negative impacts from risks related to the coal-fired thermal power business and

increase the competitiveness of the J-POWER Group's coal-fired thermal power business.

Risk	Effects of J-POWER Group's Initiatives
Decrease in sales volume	Because reducing fuel costs will secure cost competitiveness, demand is expected to remain strong among coal-fired thermal power.
Decrease in sales prices	Even if prices in electricity markets fall due to increases in renewable energy, decreased fuel costs will make it easier to secure a profit. Furthermore, sales of synthetic fuel ingredients will contribute to profit.
Increase in cost	Significant reductions in CO ₂ emissions will allow the J-POWER Group to avoid costs related to carbon pricing, such as carbon taxes and cap-and-trade.
Regulations	By applying cutting-edge coal-fired thermal power generation technologies that reduce CO ₂ emissions, we will meet regulatory requirements.
Funding	Significantly reducing CO ₂ emissions and increasing competitiveness in coal-fired thermal power will remove the reasons behind coal-related reductions in investment and available financing.

Addressing Climate Change and Increasing Corporate Value

Coal will continue to be necessary to Japan and the world going forward. Given this, the J-POWER Group believes that significantly reducing carbon emissions from coal-fired thermal power using our cutting-edge initiatives will contribute greatly to addressing climate change.

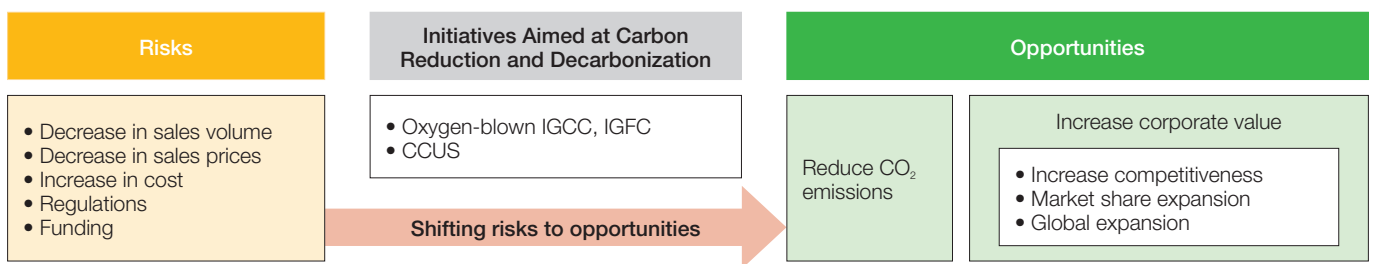
In addition, because oxygen-blown IGCC offers better load tracking than conventional coal-fired thermal power, it is well suited to help stabilize the power grid, enabling greater use of renewable energy, such as solar and wind, which produce significantly varying output depending on weather conditions.

At the same time, by taking the lead in developing oxygen-blow IGCC and IGFC technologies, the J-POWER Group will be able to increase its market share in the coal-fired thermal power business, as these technologies will offer significant

advantages in terms of meeting regulatory requirements and cost competitiveness.

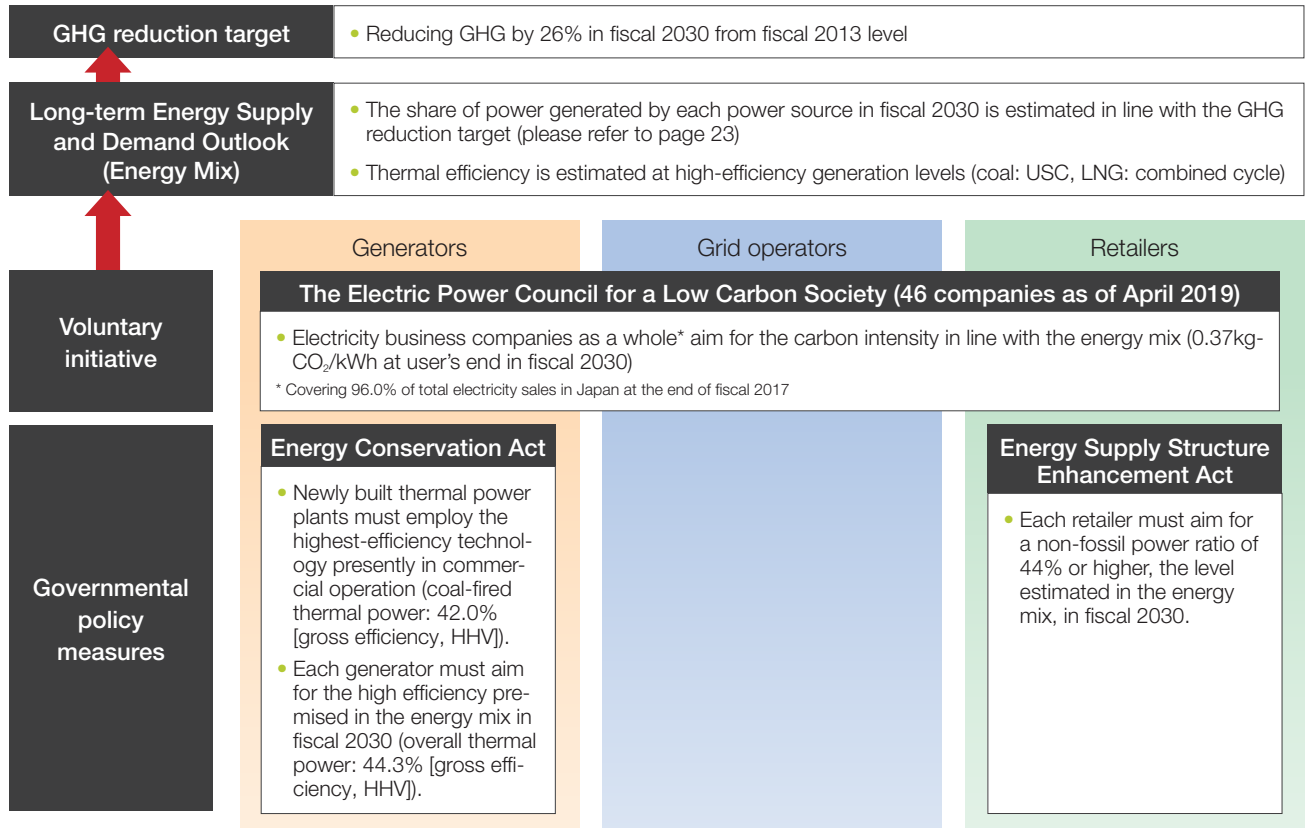
Furthermore, by applying our low-CO₂ technologies to overseas coal-fired thermal power plants, we will contribute to reducing global CO₂ emissions while further increasing our corporate value.

The J-POWER Group's initiatives aimed at carbon reduction and decarbonization in coal-fired thermal power will help enhance its competitiveness. As such, even if coal-fired thermal power demand were to fall to the level assumed in the REES, we believe that we would be able to raise our corporate value by increasing our market share while contributing greatly to addressing climate change worldwide.



Reference: Initiatives to Reduce CO₂ in Japan

As one of Japan's electricity business operators, J-POWER takes part in the Electric Power Council for a Low Carbon Society and is contributing to the achievement of its targets.



Note: The number of members of the Electric Power Council for a Low Carbon Society and the electricity sales coverage rate given above are from the council's publications.