

2021 Energy Outlook in Japan and World

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The New Year 2021 opened after 2020 ended as a year of unprecedented turbulence. In the following, I would like to forecast the Japanese and global energy situations in 2021 while referring to an energy outlook and other reports published by the Institute of Energy Economics, Japan, on December 24-25 last year.

First, key points regarding the international oil situation include the fate of the COVID-19 pandemic and the global economy, U.S. shale oil production trends, Iran's potential comeback to the international oil market, and supply-demand balance adjustments by the Organization of the Petroleum Exporting Countries and some of the major non-OPEC oil-producing countries such as Russia. If the pandemic gradually ends, with the global economy following a recovery path, global oil demand will slowly increase toward the second half of this year. If the OPEC-plus group effectively micro-manages supply-demand balance adjustments while watching U.S. shale oil production trends and Iran's potential comeback to the market, the benchmark Brent crude oil price will average \$50 per barrel in 2021. A delay in the termination of the pandemic, U.S. shale oil production expansion, Iran's comeback to the market and export expansion, or a division in the OPEC-plus group could lower the average Brent price by up to \$5/bbl. Any earlier-than-expected end to the pandemic, stagnant U.S. shale oil production or the destabilization of the Middle East could push the price up by up to \$5/bbl.

Second, global natural gas and LNG demand will basically increase while being influenced by the fate of the COVID-19 pandemic. Playing a central role in expanding natural gas and LNG demand will be Asian emerging market and developing economies including China, India, and Southeast Asia. With LNG production growth due to the start-up of some LNG projects, global LNG demand will grow to 380 million tons, driven by Asian demand expansion. However, LNG supply capacity will reach some 400 million tons, leading supply to stay above demand. After rising on a tighter supply-demand balance due to short-term factors, the average spot LNG price will come to around \$8 per million British thermal units in the first quarter of this year, to around \$5/MMBtu in the second and third, and to \$6-7/MMBtu in the fourth. LNG import prices for Japan, which are mostly indexed to crude oil prices, will average \$7.0-7.3/MMBtu in 2021 against \$7.8/MMBtu in 2020 in line with the abovementioned crude oil price trends. The LNG supply-demand balance in the future could be affected by final investment decisions on new LNG projects responding to demand growth, as well as environmental constraints such as regulations on methane emissions.

Third, coal market prices are forecast to range from \$70 per ton to \$80/t for steam coal and from \$130/t to \$150/t for coking coal this year, following wild fluctuations under the pandemic last year. While European and U.S. coal demand declines amid the enhancement of climate change countermeasures, Asian demand will remain robust. Particularly, Indian and Southeast Asian demand growth will drive global demand expansion. China's demand for coal imports will be brisk as prices of domestically produced coal remain high under domestic regulations. In the future, we may have to

pay attention to the impact of the incoming U.S. Biden administration's enhanced climate change countermeasures, coal's position in China's 14th five-year plan, and the fate of the COVID-19 pandemic.

Fourth, the announcement and notification of revised or renewed greenhouse gas emission reduction targets for 2030 by the European Union, China, the United States, and other major countries, as well as specifics of these targets and initiatives for achieving them, will attract attention towards the 26th conference of parties to the United Nations Framework Convention on Climate Change in Glasgow, the United Kingdom, in November 2021. The COP26 meeting, originally scheduled to be held in 2020, has been postponed due to the COVID-19 disaster. After major countries announced their respective carbon neutral status targets in 2020, their measures to achieve these targets will attract global attention this year. Key points include whether the incoming U.S. Biden administration could get congressional approval on large-scale spending for enhancing climate change policies, what path to the carbon neutral status target for 2060 would be depicted in China's 14th five-year plan, and what target energy mix would be set for the 2050 carbon neutral status target in Japan's sixth Strategic Energy Plan. Given that hydrogen and other innovative energy technologies are required to play a key role in realizing carbon neutral status, major countries' hydrogen strategies and relevant initiatives will attract global attention in 2021.

Fifth, renewable energy continued global expansion even under the COVID-19 pandemic in 2020, supported by renewable energy incentives such as priority dispatch and utilities' obligation to buy electricity from renewables, as well as the fact that renewable energy power generation projects with marginal cost close to zero are favored in a competitive wholesale power market. This trend will be kept in 2021, boosting global renewable energy power generation capacity to 3,100 gigawatts (comprising 1,350 GW in hydro capacity and 1,750 GW in non-hydro capacity). Of total electricity generation in 2019, however, renewable energy accounted for 26% comprising 16 percentage points for hydro and 10 points for non-hydro renewables such as solar photovoltaics and wind. Renewable energy will expand in Japan as well. In addition to solar PV power generation, onshore and offshore wind power generation will increase. Given the possibility that cumulative feed-in tariff surcharges could reach 60 trillion yen in Japan, however, the economic efficiency of renewable energy power generation will become more important.

Sixth, restarting nuclear power plants will continue to attract attention in Japan. Some restarted plants have been suspended as a five-year moratorium on the requirement for each plant to have a counterterrorism facility has expired. Some others have resumed operation on the completion of such facilities. There are some uncertainties regarding judicial problems and local governments' approval on the restart of nuclear plants. In addition to nine plants that have been restarted, four will be restarted by the end of FY2021. Regarding sites for the final disposal of high-level radioactive waste, first-stage investigations have started for the town of Suttu and the village of Kamoenai in Hokkaido Prefecture, which have offered to host the first-stage investigation for the disposal. Attention will be paid to the literature-based investigations and initiatives by the Nuclear Waste Management Organization of Japan, or NUMO, to implement geological disposal of nuclear waste. Outside Japan, Chinese and Russian initiatives to build nuclear power plants at home and abroad will attract global interest along with the development of small module reactors in the United States and other countries.

Seventh, attention regarding the power market in Japan will be paid to how the profitability of power generation capacity and retail competition would be affected by prices for day-ahead spot electricity transactions that now account for more than 30% of total power sales.

Such spot prices are expected to remain weak in FY2021, making it difficult for power plant operators to recover fixed costs or allowing power producer and supplier companies to become competitive if they procure power in the spot market. Conventional power generation capacity has begun to decrease in some advanced economies due to increasing renewable energy power generation and stagnant wholesale electricity prices. Under such circumstances, the risk is growing that heat or cold waves and other contingencies would tighten the power supply-demand balance. Mainly in advanced economies, the power generation sector's surplus investment capacity has been declining due to slack power demand and weak electricity wholesale prices under the pandemic. Responses are required to various new problems that are surfacing in regard to stable electricity supply that is growing important.

Eighth, gross domestic product and energy demand in Japan will increase in FY2021 in reaction to drops in FY2020 but fall short of restoring levels before the COVID-19 pandemic. GDP will score a 3.4% increase in FY2021 but remain below the FY2019 level. Primary energy supply in FY2021 will increase by 2.6% from the previous year but be limited to the lowest level since FY1987. Renewable energy supply will continue to increase. Nuclear energy supply will also grow as nuclear power plants are restarted. Coal supply will also increase as new coal-fired power generation facilities start operation. However, LNG supply will decline substantially. Japan's CO₂ emissions in FY2021 will decline by 23% from FY2013 to 960 million tons, achieving about 90% of the target reduction of 26% for FY2030.

While watching the 2021 Japanese and foreign energy situations including the abovementioned points, I would like to follow up on these situations through this bulletin.

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