

## **Japanese and Global Energy Outlook for 2020**

Ken Koyama, PhD  
Chief Economist, Managing Director  
The Institute of Energy Economics, Japan

On July 23, the Institute of Energy Economics, Japan, held its 432nd forum on research works, dealing with the Economic and Energy Outlook of Japan for FY2020 and reports on the latest international oil, natural gas and coal situations and on the Japanese and global renewable energy outlook. As indicated by these reports, we at the forum analyzed and made projections on the supply-demand balance and prices for international oil, natural gas, coal and renewable energy markets for 2020 and provided Japan's short-term economic and energy outlook for FY2020. In the following, I would like to comment on key points of the outlook and summarize Japanese and global energy situations up to 2020.

First, the international oil market and crude oil prices could wildly fluctuate depending on future developments regarding Middle Eastern geopolitical risks, global economic slowdown risks and other factors exerting great influence on the future. In the reference scenario excluding these risk factors, we predict that global oil demand would increase mainly in Asian emerging countries under global economic expansion, that U.S. shale oil production expansion would drive substantial non-OPEC oil production growth continuing to exceed global oil demand growth, and that global oil supply would be balanced with demand as the OPEC-plus group maintains a coordinated production cut.

In the reference scenario, the average Brent crude oil price would fluctuate mainly in a \$60-70/bbl range in the second half of 2019 and 2020. As non-OPEC production expansion raises oil supply pressure in 2020, however, the price is predicted to fluctuate within the lower half of the range. In a higher oil price case in which oil supply would be disrupted by some military clash caused by geopolitical risks amid growing tensions over Iran, the international oil market is projected to see a tighter supply-demand balance that would push the crude oil price up by some \$15/bbl from the reference scenario. In the lower price case in which the global economy would decelerate on the deterioration of the U.S.-China trade war, however, the crude oil price would be some \$10/bbl lower than in the reference scenario. Given that there are great uncertainties about the future course of the international oil market, we must keep close watch on future developments.

Second, our international natural gas market report focused on an analysis of supply and demand and a price outlook for the LNG market. As global natural gas demand continues increasing, LNG is expected to maintain robust expansion driven by growing demand in China. However, LNG demand growth has slackened in Japan and South Korea, the first and third largest LNG consumers. Asian LNG demand growth has thus been patchy. Global LNG demand would expand to 356 million tons in 2020 due to demand growth in China and other Asian emerging countries and increasing

imports into Europe. However, global LNG supply would substantially increase to 388 million tons as new U.S. and Australian LNG projects reach production phases. In this way, supply expansion through capacity growth is driving LNG market growth.

Under such situation, spot LNG prices reflecting the international market supply-demand balance are projected to fluctuate in a \$5.5-6.0/MMBtu range in the East Asian market amid abundant supply. As LNG prices under long-term contracts in Asia are indexed to crude oil prices, however, deviations between spot LNG prices and long-term contract prices indexed to oil prices would be kept or expand depending on some developments. In such case, improving terms and conditions of long-term LNG transaction contracts would become a very important challenge for buyers.

Third, we analyzed supply and demand, and prices for steam coal for power generation and coking coal for steelmaking regarding the international coal market. The following outlook focuses on the steam coal market. In the steam coal market, China's consumption and import trends attract attention as the most influential factor. Spot steam coal prices have wildly fluctuated depending on the Chinese trends. In response to the easing supply-demand balance, spot steam coal prices in the Asian market have recently moved within a \$70-80/t range. The price levels also reflect the trend in Europe, another major coal consumption and import market, where prices of natural gas competing with coal have declined, exerting downward pressure on steam coal prices in the Asian market. Although attention must be paid to long-term decarbonization initiatives and their impact on coal demand, we project that spot steam coal prices in the Asian market would move in a slightly higher range around \$80/t up to 2020 as steam coal demand in China and other Asian emerging countries grows robustly.

Fourth, renewable energy excluding hydro accounted for 9.4% of global power generation in 2018 and is expected to continue expanding. In the global market, solar photovoltaics would replace wind power as the leader of renewable energy expansion. A key background factor to the expansion would be a rapid decline in renewable energy power generation costs. As intermittent renewables including wind and solar PV expand, an increase in storage battery installation, grid extension and other costs for integrating such intermittent power generation into the grid network would loom as a challenge.

Japan has rapidly expanded renewable energy power generation including solar PV under the Feed-in Tariff scheme introduced in 2012. As renewables' share of total power generation is rising close to a target for FY2030, the renewable energy surcharge on power bills under the FIT scheme has swollen. If 90 GW in renewable energy power generation capacity approved under the FIT scheme is all in operation, the cumulative surcharge on power bills would reach 60 trillion yen, pushing up power costs substantially. Japan will have to fundamentally modify the FIT scheme, explore measures for resolving renewable power generation problems efficiently under the so-called "connect and manage" approach and consider fundamental measures such as grid enhancement. Japan is required to develop renewable energy into a major economically independent electricity source, as urged in its Fifth Strategic Energy Plan.

Fifth, Japan's primary energy supply is projected to level off by increasing by 0.3% in FY2019 and decreasing by 0.3% in FY2020 due partly to temperature changes as its economic growth decelerates from 0.7% in FY2019 to 0.5% in FY2020. Although coal's share of primary energy supply would rise due to the launch of new coal-fired power plants, Japan would generally and gradually switch from fossil fuels to non-fossil fuels. In FY2020, Japan's energy-related CO<sub>2</sub> emissions would decline to the lowest level since FY1990.

Nuclear power generation would clearly influence Japan's so-called 3E's – energy security, economic efficiency and environmental protection. If the restart of nuclear power plants makes progress through functional safety examinations, it would contribute to the 3E's. If crude oil prices rise by \$15/bbl on the destabilization of the Middle Eastern situation, the Japanese economy would shrink by 0.2%, with primary energy supply cut by 0.4%. If global GDP declines by 0.8% on the deterioration of the U.S.-China trade war, global coal consumption would decrease by 1.1% and oil and natural gas consumption by 0.7%, exerting great downward pressure on the international energy market.

Contact: [report@tky.iej.or.jp](mailto:report@tky.iej.or.jp)

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