

IEEJ e-NEWSLETTER

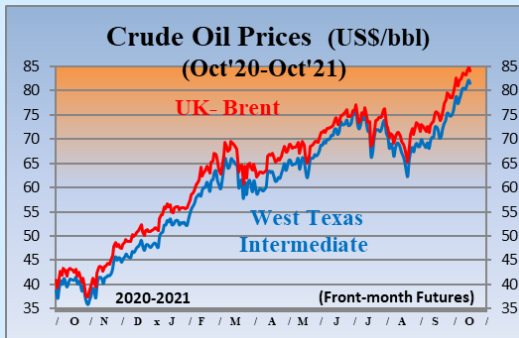
No. 218

(Based on Japanese No. 217)

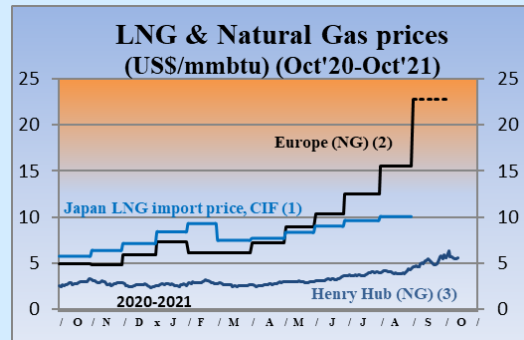
Published: October 18, 2021

The Institute of Energy Economics, Japan

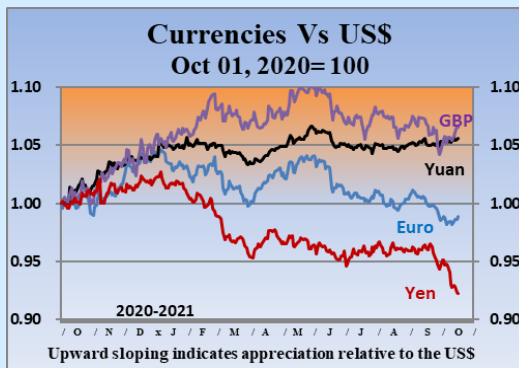
(As of October 18, 2021)



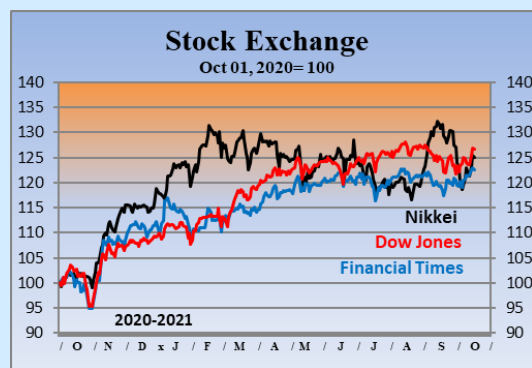
Sources:
(1) DOE-EIA
(2) Investing.com



Sources:
(1) Ministry of Finance "Japan Trade Statistics"
(2) Ministry of Economy, Trade and Industry (arrival month basis)
(3) Estimated by World Bank (Netherlands Title Transfer Facility)
(4) DOE-EIA, NYMEX (Front-month Futures)



Source: x-rates.com



Sources:
(1) Finance. Yahoo.com
(2) Investing.com

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Summary

【Energy Market and Policy Trends】

1. Energy Policies

The discussions on the Sixth Strategic Energy Policy have closed and the Policy is due to be approved by the Cabinet in autumn following a public comment period. METI has begun to examine a new framework for meeting the reduction target that involves companies.

2. Developments in Nuclear Energy

Financially-troubled nuclear power plants in Illinois that were on the verge of being retired can now continue to operate. A new PWR was launched in the UAE and a demonstration high-temperature gas-cooled reactor was introduced in China. Japan's Shimane Unit 2 obtained permission for changes in reactor installation.

3. Recent Developments in the Oil and LNG Markets

In Europe, soaring gas prices are starting to hurt the economy. Energy majors are turning toward two types of investment strategy: combining fossil fuels and renewables as a package, and selecting and concentrating on the decarbonization of fossil fuels.

4. Update on Policies Related to Climate Change and Energy Conservation

EU-ETS carbon prices may be contributing to soaring natural gas prices in Europe. China and the United States each unveiled their climate-related support policy for other countries at the UN General Assembly.

5. Update on Renewable Energies

Amid calls to accelerate the introduction of renewable energy, a METI Subcommittee clarified the system design policy for transforming the electricity networks nationwide into next-generation networks to address grid constraints.

1. Energy Policies

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The Strategic Policy Committee discussions on the Sixth Strategic Energy Policy that began in October last year closed in August, and the draft proposal is being offered for public comment until October 4. Thereafter, the final proposal is scheduled to be created and approved by the Cabinet in time for COP26 in November. Meanwhile, the leadership election of the ruling Liberal Democratic Party is scheduled for September 29, with the results due to come out on the same day. The results and subsequent appointment of the new prime minister and cabinet deserve attention, and their impact on future energy policies must be carefully analyzed.

The Agency for Natural Resources and Energy has also published a document detailing specific grounds for the figures in the 2030 power mix and the means to achieve them. The key challenges are the ambitious introduction of non-fossil power sources and energy conservation, as has been pointed out in the discussions to date.

Non-fossil power sources account for 59% of the proposed 2030 power mix, a sizeable jump from 44% in the previous plan. These consist mostly of renewable energies (36–38%), with solar PV, with its short lead-time, showing a particularly large increase in its target (14–16%) backed by the positive zoning initiative under the revised Act on Promotion of Global Warming Countermeasures and its active adoption in the public sector and at airports. The share of nuclear is unchanged at 20–22% but to meet this target, 17 nuclear power plants must be restarted in addition to the ten that are now back in operation. The target for hydrogen and ammonia was set to around 1%. If this target is to be met with ammonia alone, it would be necessary to introduce 20% mixed combustion at about six 1000 MW coal-fired thermal plants and build a supply chain to provide 3 million tonnes of ammonia each year.

Meanwhile, the target for energy conservation was raised by approximately 20% from the previous mix to approximately 62 million kL (crude oil equivalent), anticipating the potential to further explore cost-effective initiatives. However, the amount of energy saved from FY2013 to FY2019 was only 16.55 million kL, just 30% of the original target before it was raised. To complete all necessary cuts by 2030, energy conservation must accelerate by 1.5 times from current levels. The document presents a detailed breakdown of the energy savings, with notable increases in the targets in the following areas: improved equipment efficiency and energy conservation for houses and buildings under the Top Runner Programs in the residential and business sectors; efficient truck transport in the transportation sector backed by policy support; and low-carbon furnaces, more efficient motors, and introduction of inverters in the industrial sector. Both the public and private sectors are required to step up their efforts.

In August, the Ministry of Economy, Trade and Industry proposed a framework to get companies voluntarily involved in the effort to achieve this target as well as the 2050 carbon neutrality target. A “carbon-neutral top league (tentative name)” of companies will be launched for companies that voluntarily set high goals and disclose them in the capital market. In addition, a “carbon credit market (tentative name)” for companies to globally trade offset credits is being considered. The Ministry aims to start a demonstration program in FY2022 following a study by experts. While the carbon neutrality target could increase costs for companies, it could also be an opportunity to display their ambitious efforts widely to the market.

2. Developments in Nuclear Energy

Kenji KIMURA, PhD

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The comprehensive energy package bill SB2408 passed the Illinois Senate in the United States on September 13 and was signed into law by the governor on the 15th. The bill includes a support program – a credit program for clean energy – for nuclear power plants in financial crisis that would save Byron and Dresden, Exelon-owned nuclear power plants in Illinois, from being retired.

Exelon, the owner of Byron and Dresden Nuclear Power Stations, had announced that it would have to retire those plants prematurely unless the support program bill was passed. September 13, the day the bill was passed, was the deadline by which Exelon had to decide whether to continue to operate Byron or to close it. According to Exelon, the support program may also enable the Braidwood Generating Station, which is also struggling financially, to continue operations, and the LaSalle nuclear power plant to operate for at least five more years.

As reported in the July edition of this Newsletter, Byron and Dresden are among the top US nuclear power plants in terms of operational record. This decision, which has successfully rescued a large-scale, highly-efficient, stable, CO₂-free electricity supply, is highly significant.

On September 14, Barakah Unit 2, a pressurized water reactor (PWR) in the UAE, went online and began to transmit electricity. Together with Unit 1, it is hoped the plant will boost the contribution of nuclear power to a stable energy supply and a departure from fossil fuels in the Middle East.

On September 12, HTR-PM, the demonstration high-temperature gas-cooled reactor plant which had been under construction in Shandong Province, China since 2012, achieved the first criticality. China also plans to construct HTR-PM600, a larger demonstration plant. The country is rapidly building PWRs, and recently surpassed Japan to become the third largest nuclear powerhouse in terms of domestic installed capacity. China is also steadily achieving results in the development of new reactors, as shown by this demonstration plant.

On September 15, the Nuclear Regulation Authority (NRA) of Japan issued permission for changes in reactor installation for Chugoku Electric's Shimane Unit 2. It is the fifth boiling water reactor (BWR) to receive such a permit following Kashiwazaki-Kariwa Units 6 and 7, Tokai Daini Nuclear Power Plant, and Onagawa Unit 2. The plant still needs to construct necessary safety measures and gain the consent of the hosting community to actually restart. As the only nuclear power plant located at the prefectural capital (Matsue city), the plant has a large number of stakeholders. A meeting has also been set up for the prefecture to exchange opinions with the three surrounding cities that do not have the right to give consent to important matters. Efforts for gaining public understanding are expected to increase momentum hereon for the plant to actually restart.

3. Recent Developments in the Oil and LNG Markets

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Spot LNG prices continue to climb. The spot price for Asia began to rise in spring and surpassed \$20/Mbtu in September. Alongside the growth in gas demand in Europe and Asia owing to the economic recovery from Covid-19, rising prices are being driven by higher demand for gas-fired thermal in Europe due to a drop in wind power generation and the delay in the launch of Nord Stream 2 connecting Russia and Germany, fueling concerns over a supply crunch in Europe and pushing up the spot LNG price for Asia, which is increasingly linked with Europe's.

In Europe, consumer energy prices are much more susceptible to higher gas prices in the international market than in Japan, where gas prices are linked closely with oil prices. One gas company in the UK has gone bankrupt because of surging gas prices, and the impact is spreading to other areas of the economy, including agriculture and the livestock industry, where fertilizer plants have been forced to reduce operations due to the high price of gas, from which fertilizers are made. Given the serious circumstances, the International Energy Agency took the extraordinary step of requesting Russia to increase production. The situation remains unpredictable as stock levels in Europe are low as the winter demand peak approaches. The focus hereafter is the extent to which prices can be controlled by factors such as the timing of starting Nord Stream 2, Russia's production increase, and climate factors including wind conditions that affect wind power.

Oil and gas majors are facing stronger calls for decarbonization amid growing interest in carbon neutrality, and in this context, TotalEnergies' investment in Iraq announced on September 6 deserves attention. The company announced a major investment plan that includes enhancing oil production by injecting water into oil reservoirs, collecting and utilizing the gas that is currently flared, and investing in 1.0 GW of solar PV. The deal combines investments in fossil fuels and renewables as a package, funding renewable energy while simultaneously boosting oil and natural gas output. This type of package investment helps reduce emissions while maintaining the existing business, and this mode of investment may also give an advantage to majors that can deal with diverse areas of investment with their business portfolio.

There was another notable investment by an energy major: on September 14, Chevron announced a decarbonization business plan to invest over \$10 billion in renewable fuels, hydrogen, and carbon capture by 2028. The key point of this plan is that it does not include investments in renewable energy such as wind and solar power, but consists mostly of fossil fuel decarbonization centered on hydrogen and CCUS. In short, Chevron has opted to select and concentrate on its business strengths while TotalEnergies chose the packaging strategy. It will be interesting to see how these different choices play out in the business and profitability of these companies.

4. Update on Policies Related to Climate Change and Energy Conservation

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EU-ETS carbon prices may be one of the causes of soaring natural gas prices in Europe. The EU-ETS carbon price fell to 20 euros/tCO₂ in the first half of 2020 due to the pandemic, but then surpassed 50 euros/tCO₂ in May 2021 and reached 60 euros/tCO₂ in early September as demand recovered and the EU's 2030 target was strengthened (from an emission reduction of 40% from 1990 levels to 55%). The soaring EU-ETS price has led to a rise in the upper limit for gas prices, which is determined by the supply-demand balance, as coal and natural gas-fired thermal power compete in the electricity sector. However, European Commission Executive Vice-President Frans Timmermans considers that this explains just one-fifth of the increase in prices at most, and that the rest is a consequence of supply shortages.

As the price of natural gas rises, there is much debate on the costs of Fit for 55, which the European Commission announced in July to achieve the emission reduction target, rather than its benefits. As an economic measure, Fit for 55 includes revising the EU-ETS and newly adding suppliers of transport fuels and building heating fuels to its scope from 2026. The soaring gas prices have triggered strong opposition against this measure from France, Poland, and Spain, which have always opposed EU-ETS revisions that would place a greater burden on consumers.

On September 22, China and the United States each presented its climate-related support policy for other countries at the UN General Assembly. Chinese President Xi Jinping said that China will support other developing countries that develop clean, low-carbon energies and will no longer fund coal-fired power plants abroad. Meanwhile, US President Joe Biden announced a plan to provide \$11 billion a year as financial aid to developing countries.

In July, Indonesia set a goal to explore opportunities to achieve net-zero emissions by 2060 in its long-term strategy submitted to the United Nations. The country will stop building new coal-fired thermal plants from 2025 and will require existing coal-fired thermal plants to introduce biomass mixed combustion, and consider introducing CCUS/CCS if costs permit. In Thailand, a policy to achieve carbon neutrality between 2065 and 2070 was incorporated into the National Energy Policy 2022, scheduled to be formulated by 2022. To help developing countries that depend on fossil fuels become carbon neutral, assistance will be needed not only for renewables but also for various technologies that minimize the economic burden in the transition phase, such as the decarbonization of fossil fuels.

On August 11, the 2022 Building Energy Efficiency Standards were adopted in the state of California. The bill encourages the use of heat pumps for space and water heating and obliges the installation of cables and hot water pipes to make new houses electric-ready. In this revision, the obligation to install solar PV facilities in new houses will be expanded to include high-rise apartments and commercial buildings (hotels, offices, educational institutions, public facilities, etc.). California's land prices and construction costs are higher than in other states, with houses themselves in short supply. Additional requirements to install solar panels and electrification would impose a burden on low- and middle-income households. Discussions are also under way on enhancing energy conservation measures in existing houses.



5. Update on Renewable Energies

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On September 3, the Subcommittee on Mass Introduction of Renewable Energy and Next-Generation Electricity Network under the Electricity and Gas Industry Committee/Committee on Energy Efficiency of the Advisory Committee for Natural Resources and Energy (“Subcommittee”) released an interim report on the next-generation electricity networks. Amid calls to accelerate the introduction of renewable energy to meet the 2050 carbon neutrality target, addressing grid constraints is considered crucial. Accordingly, to transform the electricity networks nationwide into next-generation networks that are disaster-resilient and renewable-ready, the policy for designing the system in terms of reinforcement, connection, and rules for use was clarified.

Regarding the electricity grid reinforcement, a “pull-type” approach is currently taken, which processes reinforcement requests as they come in. This has resulted in a long lead-time until completion and an inefficient grid structure. Thus, the Subcommittee adopted a policy to switch to a “push-type” approach, and reinforce the grid systematically based on a master plan, duly considering the future potential of power sources, including the locations of renewable sources, and cost-benefit analysis. The Subcommittee agreed to formulate the master plan by around the end of 2022.

As large-scale reinforcement of transmission lines takes 10 to 15 years, initiatives for existing grids, such as allowing renewables to connect to the grid under certain conditions, are also underway to expand renewables in the interim. A trial run for non-firm connection of renewables has been underway since 2019, in which new renewable capacities are allowed to connect on the condition that their output will be curtailed when the transmission network becomes congested. Non-firm connection is slated for a nationwide rollout in 2021, and the Subcommittee is also set to consider expanding the rollout to local networks and low-voltage distribution networks in the future.

As for the rules for grid usage, for all electricity networks except inter-regional transmission lines, grid connections have so far been allocated to applications on a first-come-first-served basis regardless of the type of power source. One of the issues of this rule was that renewables connected via non-firm connection are put behind thermal power capacities that gained access to the grid earlier, and therefore face a higher risk of output curtailment during network congestion. As such, the Subcommittee agreed to end the first-come-first-served rule and shift to rules based on merit order in order to accelerate the introduction of renewables, and to carry out studies to swiftly formulate feasible usage rules.

These efforts to improve grid constraints require meticulous planning and steady execution of the plan based on a vision of the future energy mix and desirable electricity network system. To achieve the 2050 carbon neutrality target, it is hoped that the necessary initiatives for expanding the renewable capacity will be implemented very soon based on the interim report.



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IEEJ : October 2021 ©IEEJ 2021