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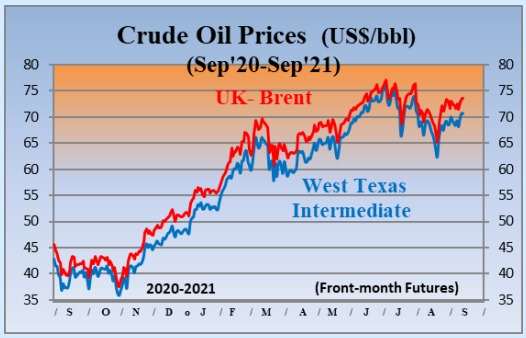
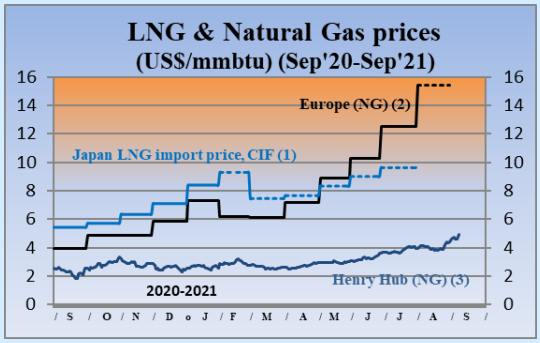
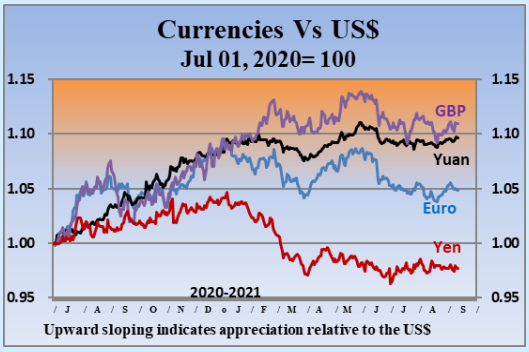


Sources:
(1) DOE-EIA
(2) Investing.com



Sources:
(1) Ministry of Finance "Japan Trade Statistics"
(2) Ministry of Economy, Trade and Industry (arrival month basis)
(3) Estimated by World Bank (Netherland 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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The draft Sixth Strategic Energy Plan was agreed on at the Strategic Policy Committee and any further adjustments to expressions and numbers were left to the Committee Chair's discretion. The Plan will be offered for public comment, with the aim of gaining Cabinet approval before COP26.

2. Developments in Nuclear Energy

The draft Sixth Strategic Energy Plan calls for "minimizing nuclear dependence" but also "utilizing (…) the necessary capacity of nuclear power." A straightforward and convincing explanation is strongly desired.

3. Recent Developments in the Oil and LNG Markets

Oil prices are becoming unstable due to the Covid-19 pandemic and the anticipation of US monetary tightening. Spot LNG prices for Asia could rise further.

4. Update on Policies Related to Climate Change

The Intergovernmental Panel on Climate Change (IPCC) released the Working Group I Contribution to the Sixth Assessment Report. In Japan, revisions to the Global Warming Countermeasures Plan and the Long-term Strategy, as well as carbon pricing were discussed.

5. Update on Renewable Energies

Progress is being made on the system reform for facilitating renewable energy development on unclaimed land plots. It is hoped that discussions will include the utilization of enormous biomass reserves in woodlands, as well as solar PV on farmlands.

1. Energy Policies

Shigeru Suehiro, Senior Economist, Manager
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A Strategic Policy Committee meeting was held on August 4, bringing discussions on the Sixth Strategic Energy Plan to a close. The draft plan submitted by the Secretariat has two essential themes: (1) presenting the policy program for achieving carbon neutrality in 2050 and the new emissions reduction goal of 46% by 2030 as pledged by PM Suga, and (2) resolving the challenges of Japan's energy supply-demand structure. Japan will work on securing a stable energy supply and reducing energy costs with top priority on ensuring safety, while simultaneously implementing climate change countermeasures. Also, amid the global movement toward decarbonization, the Plan stresses the importance for Japan to lead international rule-making efforts and become more internationally competitive, leveraging the decarbonization technologies it has cultivated so far and new innovations that will contribute to decarbonization.

Most of the members expressed support for the draft Plan, and any further adjustments to expressions and numbers were left to the Committee Chair's discretion (by a majority vote, though one member strongly argued that the discussions should continue). The draft Plan will undergo a public comment period and aim to gain Cabinet approval before COP26.

To mark the closing of the Committee deliberations, the Committee Chair Takashi Shiraishi, Chancellor of the Prefectural University of Kumamoto, wrapped up the discussions so far with the comment: "Ambitious targets were set for 2030 and 2050. Unlike past energy initiatives and climate targets, which were based on forecasts, a backcast-based approach had to be taken this time. I believe we combined both deductive and inductive approaches through trial and error to ensure feasibility. The Strategic Energy Plan has changed greatly in nature and I hope many people will be made aware of this."

At the Committee, the Power Generation Cost Verification Working Group also presented the estimated generation cost that reflects some of the integration costs (tentatively called LCOE*). According to the estimate, the levelized cost of electricity (LCOE) for commercial solar PV is 11.2 yen/kWh but its LCOE* is higher at 18.9 yen. The LCOE* for other power sources was 18.5 yen for land-based wind power, 14.4 yen for nuclear, 11.2 yen for gas-fired thermal power, and 13.9 yen for coal-fired thermal power, indicating the high costs of variable power sources.

Committee member and IEEJ Special Advisor Masakazu Toyoda commented as follows:

- Although the importance of setting multiple scenarios for 2050 was mentioned, it is difficult to see what kinds of scenarios they are. For countries around the world including Asian countries that seek to learn from Japan, costs and impacts should be incorporated into the main text of the Plan to make the scenarios clearer.
- The report from the Power Generation Cost Verification Working Group should preferably be incorporated into the Plan's main text, or at least a summary thereof, rather than being attached as reference material.
- It is necessary to use expressions that fully represent Asia's energy situation, which is not precisely the same as Europe's. The importance of transition finance and the views collected through dialog between Japan and other Asian countries should be incorporated into the Plan, to form an international consensus.

2. Developments in Nuclear Energy

Tomoko Murakami, Senior Economist, Manager
Nuclear Energy Group, Strategy Research Unit

On August 4, the draft Sixth Strategic Energy Plan ("the draft Plan") was presented at the 48th Strategic Policy Committee. Main references to nuclear power are indicated below. The page numbers correspond to those of the draft Plan.

(4. Challenges in and measures for achieving carbon neutrality in 2050)
(P24) Having experienced the accident at TEPCO's Fukushima Daiichi Nuclear Power Plant, Japan shall give utmost priority to safety and minimize its dependency on nuclear, while striving to expand economically independent and decarbonized renewable energies.
(P25) Efforts will be made to strengthen human resources, technologies, and the industrial platform; develop reactors with superior safety, economic efficiency, and mobility; and proceed with technological development to resolve backend issues.

(5. Policy responses toward 2030 with a view to 2050)
(P34) With safety as top priority, nuclear power is an essential baseload electricity source that contributes to the long-term stability of the energy supply-demand structure, owing to its overwhelmingly large energy output per unit of fuel input, (…) excellent supply stability and efficiency, low and constant operating costs, and the absence of any GHG emissions from operation.
(P103) For the electricity supply sector, with top priority on the S + 3E principle, (…) efforts will be made under the basic principle of minimizing Japan's dependency on nuclear.

The draft Plan declares that "the dependency on nuclear will be minimized toward 2030 and 2050," while also stating that nuclear plant restarts will be accelerated and the issues related to long-term plant operation will be considered toward 2030. Toward 2050, the draft Plan mentions "continuing to use the necessary scale of nuclear capacity" and "advance technological development." There are many contradictory expressions that may raise questions over the Plan's consistency. The expression "minimize dependency" has been used since the Fourth Strategic Energy Plan issued in 2014, but even then, the question as to why Japan must "reduce dependency on nuclear power when it is called an essential baseload power source" was not explained. This issue remains in this draft Plan, and this oddity perhaps led to the comment (by Prof. Kikkawa) that "no responsibility for the future of nuclear power can be read (from the Plan)." It is sincerely hoped that stakeholders will be given a straightforward and convincing explanation as to why the dependency on nuclear should be minimized even though it is "an option for decarbonization in the practical use stage (P.25)."

In other countries, there are many cases of long-term maintenance toward operating beyond 40 years. On August 10, the annealing of the reactor vessel was completed for Armenia's Metsamor Unit 2 (451 MW, started operation in 1980), making it possible to operate until 2026 or for another 10 years. Maintenance by annealing has been done mainly for Russian reactors that began operating in the 1980s. Long-term maintenance of reactors in other countries should provide valuable input also to the nuclear industry in Japan.

3. Recent Developments in the Oil and LNG Markets

Tetsuo Morikawa, PhD
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Oil Group
Fossil energies & International Cooperation Unit

Oil prices are becoming unstable. Brent marked $76/bbl on July 30, then dropped to $65 on August 20, and bounced back to $71 on the 24th. The instability is due to the Covid-19 pandemic and expectations for monetary tightening.

The number of new Covid-19 cases worldwide increased from around 2–3 million/week in June to over 4 million/week in August. The virus is spreading particularly rapidly in Europe and the US, where the vaccine rollout was well underway and economic activity was restarting. The US is preparing to start the third round of vaccinations. China has been leading the recovery of global oil demand after taming the pandemic ahead of others, but recovery in demand is slowing down due partly to lockdowns in Guangzhou and other areas to contain the Delta variant. As of now, there is little possibility of strict national lockdowns in many countries, as were done early in 2020, but some countries including China are being forced to impose regional lockdowns, raising concerns that the recovery of oil demand will be delayed. These concerns caused the International Energy Agency to cut its 2021 oil demand outlook by 0.2 mb/d month-on-month to 96.2 mb/d in its August 12 Oil Market Report. Regarding monetary policy in the US, the market is keenly eyeing the possibility that the Federal Reserve Bureau may make a decision on tapering in September, causing gyrations in stock prices. Factors adding to unstable oil prices include greater oil price volatility caused by stock price fluctuations and the trend toward a stronger US dollar associated with expectations for monetary tightening.

The supply situation is mostly unchanged. OPEC Plus has returned to moderate easing of production cuts, and the compliance rate is extremely high at 110% as of July. US production is gradually increasing but not as sharply as it did during the 2017–2018 period of rising prices and is not posing any threat to OPEC. The US is tightening controls on Iranian oil exports once again, making it less likely for an early agreement to be reached on the Iran nuclear negotiations or for the ban on Iranian oil to be lifted soon. With the US and Iran unlikely to increase production rapidly, it is easier for OPEC Plus to adjust its output and maintain prices. Taking into account the pandemic and US monetary policy, which tend to push down prices, OPEC Plus could consider slowing the easing of the production cuts at the meeting on September 1.

Meanwhile, the spot LNG price for Asia continues to rally and is at $15–16/Mbtu as of August. This increase is driven not only in Asia but in Europe partly due to a fire at a Russian gas processing plant. Japanese buyers are already buying spot cargoes for the winter. However, with an estimated 60–70% of imports being oil-indexed, the impact of soaring spot prices on Japan's overall import price should be relatively mild, with the average import price for the second half of the year estimated at around $9–10/Mbtu. However, with Europe's gas stocks nearing the lowest level in five years, there are already fears over natural gas shortages in the winter in Europe and higher spot LNG prices in Asia.

4. Update on Policies Related to Climate Change

Takahiko Tagami, Senior Coordinator, Manager
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Climate Change and Energy Efficiency Unit

On August 9, the Intergovernmental Panel on Climate Change (IPCC) released the Working Group I Contribution to the Sixth Assessment Report (AR6). IPCC comprises three Working Groups, and the report this time was that of Working Group 1, which assesses the physical science basis of climate change. The two other Working Groups are due to release their reports in February and March next year, and the synthesis report is scheduled for August.

The report stated that evidence of observed changes in extremes such as heatwaves, heavy precipitation, droughts, and tropical cyclones, and, in particular, their attribution to human influence, has strengthened since the Fifth Assessment Report (AR5) issued in 2013. Further, the AR6 assessed the best estimate of the equilibrium climate sensitivity (the equilibrium change in surface temperature following a doubling of the atmospheric CO_2 concentration from pre-industrial conditions) is 3℃ with a 66% probability range of 2.5℃ to 4℃, a narrower range compared to 1.5℃ to 4.5℃ in AR5, which did not provide the best estimate. Further, the report states that over the period 1850-2019, a total of 2390 $GtCO_2$ of anthropogenic CO_2 was emitted. The remaining carbon budget (the maximum amount of cumulative net global anthropogenic CO_2 emissions that would result in limiting global warming to a given level) from the beginning of 2020 is estimated to be 500 $GtCO_2$ for limiting global warming to 1.5℃ relative to 1850–1900, and 1.35 $GtCO_2$ for limiting it to 2℃, both with a 50% probability. The estimated remaining carbon budget is nearly the same as that of the 2018 IPCC Special Report on Global Warming of 1.5℃ (580 $GtCO_2$ from 1 January 2018 for 1.5℃ and 1.5 $GtCO_2$ for 2℃). An annual average of 42 $GtCO_2$ was emitted between 2015 and 2019. This means that if emissions continue at their current pace, the budget for limiting the rise to 1.5℃ would be used up in just over 10 years.

In Japan, the joint meeting of the Subcommittee to Study the Medium- to Long-term Climate Actions (Central Environment Council) and the Working Group to Study Global Warming Countermeasures (Industrial Structure Council) was convened three times between July 29 and August 18 to discuss the revisions to the Global Warming Countermeasures Plan and the Long-Term Strategy under the Paris Agreement. These revisions are made to keep the Plan and the Strategy consistent with the FY2030 GHG emission reduction target of 46%, the revised Strategic Energy Plan, the 2050 carbon neutrality declaration, the Green Growth Strategy towards 2050 Carbon Neutrality, and others. The Global Warming Countermeasures Plan and the Long-Term Strategy are now being offered for public comment, and the Long-Term Strategy and Japan's NDC (nationally determined contribution) are scheduled to be submitted to the UNFCCC Secretariat in time for COP26.

Since February this year, discussions on carbon pricing have been underway at the Subcommittee on the Utilization of Carbon Pricing of the Central Environment Council ("the Subcommittee") and the METI study group on economic instruments for achieving global carbon neutrality ("the study group"). Each group released an interim report in August. The Subcommittee's report summarized the discussions on the various carbon pricing systems. Meanwhile, the study group's interim report suggested launching a "Carbon Neutral Top League" of pioneering companies, which set emission reduction targets and implement emissions trading through the market. Going forward, carbon pricing will be considered within the government including METI and the Ministry of the Environment, as well as in the Subcommittee and the study group.

5. Update on Renewable Energies

Yoshiaki Shibata, Senior Economist, Manager
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Electric Power Industry & New and Renewable Energy Unit

At the 48th Strategic Policy Committee in August, Japan's energy supply-demand outlook for 2030 was presented in draft form. Renewable energy will account for 36–38% of electricity generation, but to meet this level, the outlook calls for more efforts from relevant ministries. One notable effort is the system reform for facilitating renewable energy business on land plots with unknown owners.

Securing suitable land is a major challenge for expanding renewable energy. The idea behind this move is to utilize the vast areas of unclaimed land for renewables. According to a 2017 investigative report released by a study group on land plots with unknown owners (of the National Land Planning Association), unclaimed land plots amounted to 4.1 million hectares in FY2016, equivalent to the area of mainland Kyushu (around 10% of the area of Japan). These land plots need leveling and cannot be used for renewables immediately, but their total acreage is immense.

Utilizing unclaimed land plots has been considered in the past. A law to facilitate the use of unclaimed land plots was enacted in 2018, granting governors discretion to use such land for public projects that enhance regional welfare. The law was applicable also to the power generation business but with a capacity requirement of at least 1 MW based on the Expropriation of Land Act. However, the Ministry of Land, Infrastructure, Transport and Tourism is going to consider expanding the scope of business to below 1 MW as per the regulatory reform plan passed by the Cabinet in June. Expansion of the scope is expected to spur the introduction of small renewable plants, contributing to the "local production for local consumption" movement.

Unclaimed land plots are expected to continue to increase, causing large economic losses. According to a report by the study group mentioned earlier, the increase in deaths due to population aging and the associated number of inheritance cases will push up the total area of unclaimed land plots to 7.2 million hectares in 2040, nearly equivalent to the area of mainland Hokkaido. The loss of economic profit that would have been earned from doing business on unclaimed land and from public interest functions that would otherwise have been attained is estimated to reach 6 trillion yen by 2040.

There are many issues to resolve in order to develop renewables on unclaimed land plots, including facilitating access to basic data, including landowner information, and extending the term of land use rights, as well as preserving the landscape and building a consensus with local residents. Nevertheless, the idea of utilizing such land plots for developing renewables is attractive as such land will only increase if nothing is done, causing even more economic losses.

There are three categories of unclaimed land plots, namely residential, farmland, and woodland, and one option is to install solar PV on farmland that accounts for 24% of such land plots. Meanwhile, woodland, which accounts for the largest portion with 65%, is an enormous store of biomass. Constraints on using unclaimed land plots have been one of the long-standing issues for utilizing domestic biomass resources, alongside the biggest problem of reducing the cost of gathering biomass. While expanding solar PV with a short lead-time is the main option in striving for carbon neutrality, it is also necessary to discuss how to utilize unclaimed land plots to produce new value, including utilizing biomass, a valuable domestic resource, as well as creating forestry jobs.

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