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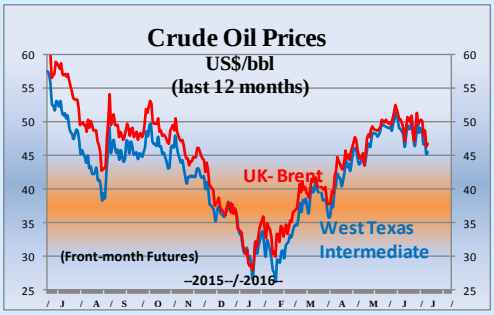
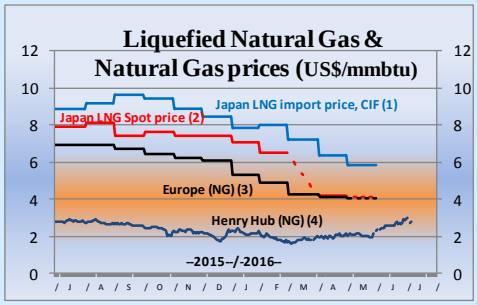
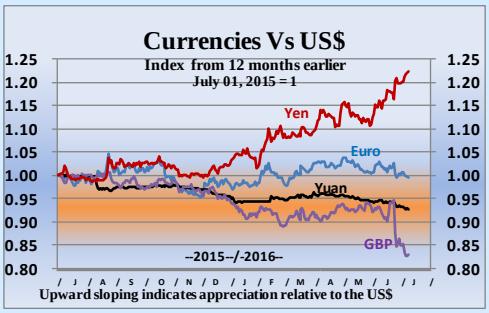


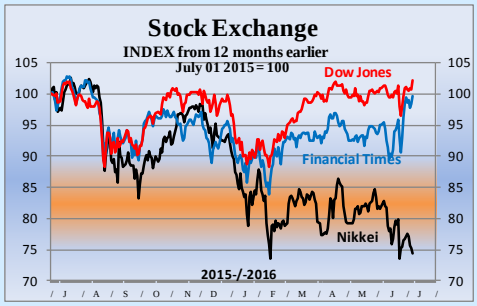
Source: DOE-EIA, Financial Times, NASDAQ



Sources:
(1) Ministry of Finance "Japan Trade Statistics"
(2) Ministry of Economy, Trade and Industry
(contract month basis)
(3) Estimated by World Bank and World Gas Intelligence
(4) DOE-EIA, NYMEX (Front-month Futures)



Source: x-rates.com



Source: Financial Times

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Permission was given to extend the operating period of Takahama Units 1 and 2, which will become the first plants after Fukushima to operate beyond 40 years. In the US, the situation remains difficult for existing plants to continue to operate.

2. Recent Developments in the Oil Market

It will be important to monitor to what extent Brexit will put downward pressure on oil prices through turmoil in the money market, as well as the impact on the real economy and demand for oil.

3. Recent Developments in the LNG and Gas Markets

In forecasting the turning point of LNG market balance, attention must be paid to the demand of developing Asian countries. Discussions at METI's advisory commissions for gas system reform have ended, but detailed policy studies on promoting real competition will continue.

4. Update on Climate Policies

The inaugural Mission Innovation Ministerial and the first Strategic Dialogue of Carbon Market Platform, both referred to in the Ise-Shima Summit Leaders' Declaration, were held in San Francisco and in Tokyo respectively

5. Developments in Energy Storage Technology

As variable renewable energies increase, the use of battery cells for grid stabilization is increasing worldwide. Japan should also consider using thermal storage devices, which are already installed in large numbers, for grid stabilization.

1. Developments in Nuclear Power

Tomoko Murakami, Manager
Nuclear Energy Group, Strategy Research Unit

On June 20, the Nuclear Regulation Authority (NRA) approved an extension of the lifetime of Kansai Electric's Takahama Units 1 and 2 to 60 years. The decision came approximately 14 months after the application for extension was submitted on April 30 last year. During this period, Kansai Electric made great efforts throughout the company, performing an aging management technical evaluation that included the results of special inspections, establishing long-term maintenance and management policies, and confirming that the extension will not cause any problems. The fact that a nuclear power plant was permitted to extend its operation period for the first time under the new regulation standards is good news for Japan's long-term energy mix, which has a target of a "20-22% share for nuclear power in 2030". Meanwhile, the hard truth remains that the NRA could not find the time to assess any other plant while reviewing Takahama Units 1 and 2. There is no guarantee that the power companies of other plants that are approaching 40 years old will be able to provide the same company-wide support for the reviews as Kansai. It may be worth considering rationalizing and standardizing the assessment procedure.

In the US, which leads Japan by a decade in terms of operating beyond 40 years, there are moves to apply for a second lifetime extension of up to 80 years. On June 6, US power company Exelon announced that it will apply to the US Nuclear Regulatory Commission (NRC) for a second extension of its Peach Bottom Units 2 and 3 in Pennsylvania. If approved, Unit 2 and Unit 3 will be allowed to operate to 2053 and 2054, respectively. With appropriate maintenance, operating up to 80 years is considered technically feasible; nevertheless, the response and decision of the operator and NRC are receiving international attention.

Meanwhile, due to the worsening economy caused by lower electricity prices and the declining demand for electricity, a series of decisions has been made to decommission plants. On June 2, Exelon announced that it will close its Quad Cities Units 1 and 2 and Clinton in Illinois. This was followed by similar announcements by Omaha Public Power District on its Fort Calhoun Power Plant in Nebraska on June 16 and by PG&E on Diablo Canyon Units 1 and 2 in California on June 21. While continuing to operate in a competitive environment involves risks that do not exist in regulated states, plants can survive even under competition, as evidenced by Peach Bottom Units 2 and 3. The current difference in competitiveness between the plants might be the result of how much effort a plant made to reduce costs and improve operational performance during the period when gas was not as cheap as now, renewables did not receive government support, and nuclear power was a preferred option. This situation provides valuable lessons also for Japanese operators.

At Ikata Unit 3, which has completed the safety assessment and is currently undergoing pre-service inspection, fuel loading began on June 24 and was completed on 27. The plant is expected to restart smoothly ahead of the summer peak demand period.

2. Recent Developments in the Oil Market

Tetsuo Morikawa, Senior Economist, Manager
Oil Group
Fossil Fuels & Electric Power Industry Unit

The UK referendum held on June 23 over Britain's exit from the EU ("Brexit") resulted in a narrow victory in favor of leaving. The Brent price, which was around $50/barrel before the vote, tumbled as Leave gained momentum, due to concerns about the impact on the global economy and to avoid risks, falling to $47/barrel on the 24th. In view of the result of the referendum, currency and stock markets are expected to remain turbulent, and the turmoil in the financial market could affect the real economy. Risk aversion in the financial market and concerns about deterioration in the real economy will inevitably put downward pressure on oil prices.

In its Oil Market Report published on June 14, the International Energy Agency (IEA) forecasted that demand will grow faster than production, and that supply and demand will largely even out in the oil market in 2017. The Report forecasts that global demand will increase from 94.7 million barrels/day (mb/d) in 2015 to 96.1 mb/d in 2016 and 97.4 mb/d in 2017. The Report does not forecast global supply, but considering that non-OPEC supplies are estimated at 57.6 mb/d in 2015, 56.8 mb/d in 2016, and 57 mb/d in 2017, the amount of OPEC oil required for supply-demand equilibrium (so-called "Call on OPEC"), excluding OPEC's NGL output, will expand from 32.5 mb/d in 2016 to 33.4 mb/d in 2017. Thus, if OPEC maintains the current output level (around 32.6 mb/d), demand will surpass supply in 2017.

IEA is estimating the excess supply for the first quarter of 2016 at 1.3 mb/d. Assuming that OPEC's production remains at the level of the April-May average, it means that excess supply for the second quarter has already shrunk to around 0.2 mb/d. Thus, from a fundamentals perspective, the momentum to rebalance the market will push oil prices upward, but it should be monitored how Brexit will exert downward pressure on prices through the money market and the supply and demand for oil. Further, if the recovery of shale oil output in the US, where the rig count has bottomed out, is stronger than expected, this too would limit the rise in oil prices.

In Japan, the 18th meeting of Natural Resources and Fuel Committee, Advisory Committee for Natural Resources and Energy was held on June 15. Regarding petroleum, the topics discussed included storing petroleum jointly with oil-producing countries to improve the efficiency of the storage business, measures for mitigating the appraisal loss of private inventory, such as price hedging and ownership transfer (off-balancing), cooperation with other Asian countries in emergencies, and normalizing the storage level of LPG. Further, based on the discussions to date, an interim conclusion was drawn about the development of energy and mineral resources, and procurement and logistics. Regarding petroleum development, members expressed expectations for the government's role, such as expanding the risk money supply, and resource diplomacy. While oil prices remain low, the government should carry out strategic diplomatic policies that strengthen JOGMEC's capabilities and help diversify the economies of oil-producing countries.

3. Recent Developments in the LNG and Gas Markets

Yoshikazu Kobayashi, Senior Economist, Manager
Gas Group Fossil Fuels & Electric Power Industry Unit

In the international LNG market, the consensus is that the current oversupply will continue at least until 2020. What factors then might reduce that supply glut earlier?

According to the Medium-Term Gas Market Report released by the International Energy Agency on June 8, the trend of demand of China and other developing Asian countries could accelerate the supply-demand "rebalancing" of the international LNG market.

In China, the demand for natural gas, after a significant slowdown in 2015, might increase due to lower domestic gas prices reflecting the international market situation, government policy to switch from coal-fired thermal to gas, and efforts by state-run oil companies to develop domestic demand as LNG procurement increases. The demand for natural gas also slowed in India in 2015 and almost flattened out, but could now grow faster due to low international LNG prices and increased domestic demand for fertilizer raw materials, and the government policy to promote the use of gas in residential and transportation sectors.

This scenario for increasing demand is just a possibility. Indeed, expansion could remain slow in China depending on the macroeconomic trends and competition with coal and renewable energies, as well as in India where, like in China, competition with other energies and infrastructure bottlenecks could stifle demand. However, in terms of the global supply and demand for natural gas, Asia is the only market that might be able to absorb the current supply glut. Thus, in determining the "turning point" of the supply-demand balance in future, the demand in developing Asian countries must be watched closely.

Regarding the domestic gas systems reform, the discussions on system design ended with the Gas Systems Reform Subcommittee on June 16. The meeting proposed establishing a neutral organization, similar to the Organization for Cross-regional Coordination of Transmission Operators, to discuss the construction of a nationwide pipeline network. Run by business operators, the pipeline construction project will need economic incentives. Thus, it will be necessary to build a mechanism to cover the construction cost through business remuneration rates and leased transmission fees. A series of decisions on specific issues are due to follow, including setting leased transmission fees and selecting transitional operators, for which regulated fees will continue to apply beyond next April. Efforts to promote competition, which is the fundamental objective of the system reforms, will continue to accelerate.

4. Update on Climate Policies

Takahiko Tagami, Senior Coordinator, Manager
Climate Change Policy Research Group
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The Leaders' Declaration from the G7 Ise-Shima Summit held on May 26 and 27 intended “to play a leading role in Mission Innovation" and welcomed “the establishment of the Carbon Market Platform and its first strategic dialogue to be held in Tokyo", while committed “to formulating and communicating mid-century long-term low GHG emission development strategies (as set forth in the Paris Agreement) well ahead of the 2020 deadline".

On June 1 and 2, “the inaugural Mission Innovation Ministerial” was held in San Francisco. At the meeting, the 21 partners pledged to double state-directed investment in clean energy R&D in five years, to total 30 billion dollars by 2021. Further, ministers met with the Breakthrough Energy Coalition of private-sector leaders, which includes Bill Gates and Son Masayoshi, on the link between government innovation and entrepreneurship. Among the 21 partners, 20 countries including Japan, the US, European countries, China, India, and Saudi Arabia had already announced Mission Innovation on November 30, 2015, aiming to accelerate clean energy innovation; the countries were newly joined by the EU at this meeting. The countries are working in four subgroups: Joint Research and Capacity Building, Innovation Analysis and Roadmapping, Information Sharing, and Business and Investor Engagement.

Japan defined “clean energy” as the eight areas of the National Energy and Environment Innovation Strategy towards 2050 and set the goal of doubling the budget for FY2016 of 45 billion yen in five years. The focus areas of Mission Innovation differ by country, but in terms of the target budget after five years, the US ranks first at 12.83 billion US dollars, followed by China at 7.6 billion US dollars. Japan stands seventh at 820 million US dollars after South Korea, as Japan’s focus areas do not include nuclear and fossil fuels.

On June 16 and 17, “the first Strategic Dialogue of Carbon Market Platform” was held in Tokyo, attended by the director-general level officials of G7 countries, eight non-G7 countries and four international organizations including the World Bank. The Platform was established based on the Leaders' Declaration at the 2015 G7 Elmau Summit which was committed “to establishing a platform for a strategic dialogue on these issues (effective policies and actions throughout the global economy, including carbon market-based and regulatory instruments) based on voluntary participation and in cooperation with relevant partners, including the World Bank." In the Dialogue, participants presented their experiences regarding carbon markets, carbon pricing and regulatory instruments for incentivizing emissions reduction activities, not limited to emissions trading systems. Participants also discussed topics such as the internationally transferred mitigation outcomes (such as JCM credits) and the CDM-succeeding mechanism which were set forth in Article 6 of the Paris Agreement, and how the Platform should support and complement the UNFCCC process in developing guidance, rules, modalities and procedures. The details of this first Strategic Dialogue will be shared at a side event of COP22 in Marrakech, Morocco.

5. Revised FIT Act to Reduce Purchase Cost Burden

S Yoshiaki Shibata, Senior Economist
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The Act for Partial Revision of the Act on Special Measures Concerning Procurement of Electricity from Renewable Energy Sources by Electricity Utilities (Revised Act on Special Measures for Renewable Energy) was voted and passed by the Diet on May 25 and announced on June 3. The Act amends the FIT Act, which has boosted the renewable energy capacities of Japan but which has involved various issues. Ahead of the Act's enforcement on April 1, 2017, discussions have begun in the Subcommittee for Reforming Systems Related to Introduction of Renewable Energy and the New and Renewable Energy Subcommittee to design the system within this fiscal year.

The key point of the Revised FIT Act is that it aims to rectify the imbalance in capacity between the various energies, to ensure that the grid connection of renewable energies is compatible with the reforms of the electric power system, and to reduce the public cost burden of purchases. There are two new measures for reducing the public burden that are particularly notable: prevention of non-operating projects and reduction of purchase price.

First is resolving the issue of non-operating projects which emerged under the old system. As power system restrictions increase, the accumulation of non-operating projects hampers the entry of high-performance, low-cost late-comers into the business and increases the potential public burden. Under the new system, all licensed projects will be required to sign a connection contract with a power company by March 31, 2017 in order to maintain their license. Requirements for awarding new licenses have also changed. Under the old system, it was possible to receive a license by submitting a project plan. Under the new system, licenses will not be granted until a grid connection contract is signed and a purchase price is decided, increasing the possibility that the project will actually go ahead. Still, as a backstop to prevent new non-operating projects, a proposal was made by the Subcommittees to set a time limit between licensing and start of operation (three years for commercial solar PV systems and one year for residential ones). If a project fails to start operating within the time limit, the purchase price could be cut by a certain yearly percentage, or the purchase period could be shortened.

Next is reducing the purchase price. The purchase price has fallen significantly from the initial level at the launch of the FIT system of 40 yen/kWh for commercial solar power and 42 yen/kWh for residential in FY2012 to 24 yen/kWh and 31 yen/kWh, respectively, in FY2016. However, during this period, the surcharge shouldered by consumers has actually risen ten-fold from 0.22 yen/kWh to 2.25 yen/kWh. This necessitated further measures, and a decision was made to introduce bidding for commercial solar power and a price reduction schedule for residential. While Japan's high purchase price, which is twice that of other major countries, is attributed to the high costs of plant, operation and maintenance which are also twice those of other countries, the IEA suggests that the high purchase price is hindering efforts to cut plant costs. These suggestions have been reflected in the Revised FIT Act.

The new system aims to reduce the public burden and to build up renewable capacities in an economically rational manner by consistently removing non-operating projects and introducing purchase price reduction targets and the bid system. The achievement of these goals is keenly awaited.

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