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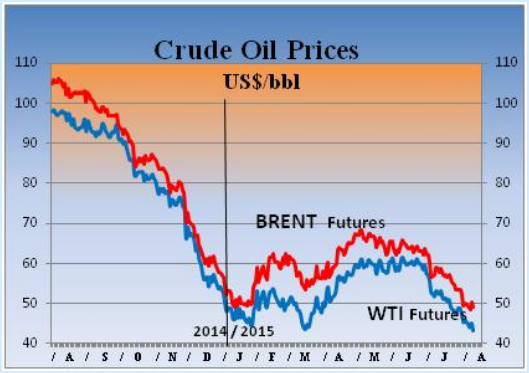
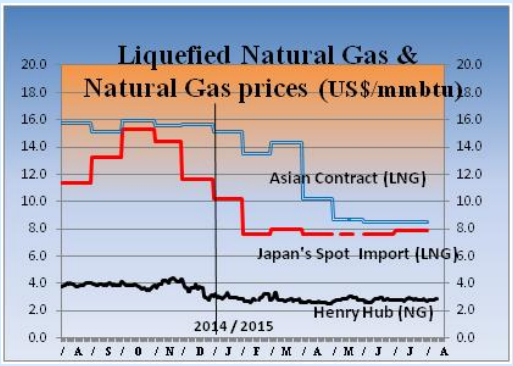
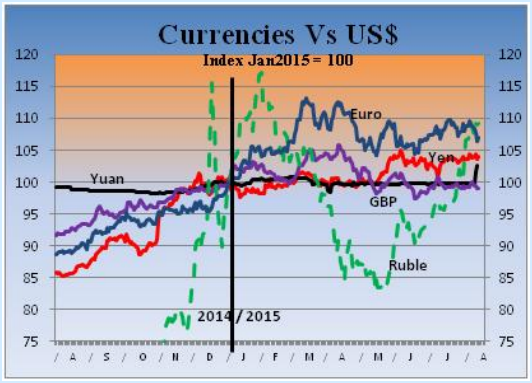


Source: Financial Times



Sources: NG/DOE-EIA, LNG spot/METI, LNG contract/WB



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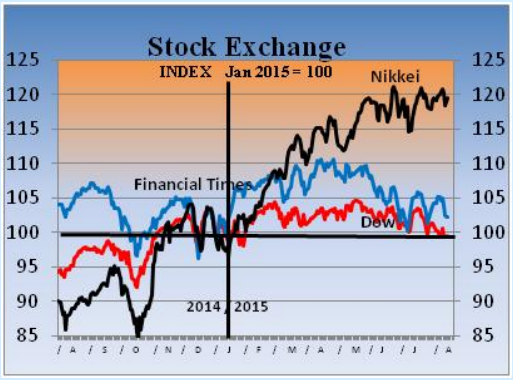

Source: Financial Times

Contents

Summary

【Energy Market and Policy Trends】

1. Energy Mix and the Short-term Supply-Demand Outlook

On July 16, the eleventh meeting of the Subcommittee on Long-term Energy Supply-Demand Outlook was held, and the Outlook was officially adopted, with public comments reflected.

2. Developments in Nuclear Power

Sendai Unit 1 began starting up on August 11, and has reached to the criticality. A council meeting to discuss the backend issues has begun, and is due to indicate a policy direction at year-end.

3. Recent Developments in the Oil and LNG Markets

The Brent Crude price has recently dropped to the mid $50 range due to speculation of demand easing. The LNG price is also falling in line with oil prices. The Brent price is estimated to be $65/bbl for 2016.

4. Developments in the Energy Efficiency and Conservation Policy

The new Long-term Energy Supply-Demand Outlook for Japan takes into account an extremely high energy saving target. Approximately half of the energy saving is expected to be achieved by the residential/commercial sector; how to achieve this target is a policy challenge for the future.

5. Post-FIT: Maintaining the Level of Renewable Electricity Sources

Renewable electricity producers may pull out of the power generation business or stop investing in it when the purchase period of FIT system ends or the system itself is discontinued. To continue to decarbonize power sources, discussions must be held on how to maintain renewable electricity sources after the FIT system has ended.

1. Energy Mix and the Short-term Supply-Demand Outlook

Akira Yanagisawa, Senior Economist
The Energy Data and Modelling Center

On July 16, the eleventh meeting of the Subcommittee on Long-term Energy Supply-Demand Outlook was held. The purpose of the meeting was to adjust the Long-term Energy Supply-Demand Outlook based on the 2,060 public comments, and to finalize it.

Changes and additions were made mainly to those sections which required further explanation or might be misleading to readers. Further, an introduction was added to explain the background for formulating the Outlook, and to emphasize the efforts in dealing with the Fukushima NPS issue and the importance of rebuilding Fukushima. Many of the changes and additions had already been addressed in the Strategic Energy Plan which the Cabinet had approved in April 2014.

As evidenced by the divided comments of the members, with one stating that "the important thing is the figures (remain unchanged)" and another stating that "I remain opposed because the figures remain unchanged", the quantitative targets that had been indicated up to the tenth meeting were retained. Though unanimous approval was not obtained to the end, a majority of the members supported the Outlook. The new Outlook has now been officially fixed, and Chairman Sakane was asked to make the final touches with minor corrections to the wording. On the next day, the seventeenth, the Global Warming Prevention Headquarters officially approved the target to cut GHG emissions in 2030, including that of energy-related carbon dioxide by the Outlook, by 26% from 2013 levels.

More members commented on the way forward, saying "the important thing is how to achieve the target", rather than demanding that the Outlook be revised. The assumptions on which the visions of the Outlook are based are extremely ambitious, while the available policy options to achieve them are likely to become increasingly indirect due to changes in the environment such as energy system reforms. For example, Japan would have to cut its domestic primary energy supply (Japan's total energy consumption) by 0.6% per annum between FY2013 and FY2030 despite a rather high economic growth rate of 1.7% per annum. The growth of final electricity consumption will have to be kept as low as 1.5% over the 17-year period, not per year.

I do not wish to confuse the medium- to long-term target with short-term trends. However, to get a feeling for the scale of the target set by the Outlook, let us compare it with the current situation. "Economic and Energy Outlook of Japan through 2016"[1] released by the IEEJ on July 10 estimates an annual economic growth rate of 1.8% in this and the next years, similar to that of the Long-term Outlook. However, the IEEJ estimates that the domestic primary energy supply will grow by 0.4% and final electricity consumption by a cumulative 2.3%. Although short-term energy demand depends on the temperature, frankly speaking, we are likely to start off very badly toward the target. The road ahead is tough.

[1] Available at http://eneken.ieej.or.jp/en/press/.

2. Developments in Nuclear Power

Tomoko Murakami, Manager
Nuclear Energy Group, Strategy Research Unit

On August 11, Sendai Nuclear Power Unit 1 started up for the first time after Fukushima accident in 2011. The unit connected to the grid on August 14, and then to gradually raise the output from partial power to the rated thermal output operation. Safe and steady progress with restarting is crucial.

While all eyes are on restarting the nuclear power plants, discussions have also begun on the direction of the backend business, including the reprocessing and final disposal of spent fuel and plant decommissioning. On July 14, at the first meeting of the expert working group for improving the nuclear business environment set up under the Electricity and Gas Industry Committee, at METI's Advisory Committee for Natural Resources and Energy, topics such as the backend business system, financing framework, and the characteristics required of business entities under the ongoing electricity deregulation and lower nuclear dependency were raised. The working group is due to announce a desirable policy direction at the end of the year after several meetings. The meetings are expected to discuss, with reference to the cases in other countries, how to ensure compatibility between the reality, in which expertise on the backend business is held by private electric power companies, and the principle that the government is responsible for carrying out the business.

Overseas, there was a shift in the business structure of the international nuclear firm Areva. On June 30, Areva and the French electric utility EDF agreed with the Chinese nuclear firms CNNC and CGN to collaborate on the civilian use of reactor and nuclear fuel cycle technologies. China is actively constructing domestic model reactors, but facing delays in foreign technology projects, such as the Sanmen Project with US Westinghouse's AP-1000 and the Taishan Project with Areva's EPR. The agreement with Areva and EDF is expected to spur these projects. Meanwhile, the relationship between the two advanced PWRs, Areva's ATMEA1 and Kerena and CGN's Hualong-1, must also be noted. Having similar output, the reactors are competing with each other. In the business collaboration with China, it will be interesting to see which model Areva deploys and how, and which models customers choose considering the economic efficiency and safety of the reactors.

The delay and rising cost of Finland's Olkiluoto Unit 3 are starting to impact the energy policy and industry. On June 24, the plant owner TVO announced that it will not apply for the construction of Unit 4 for the time being. Meanwhile the Ministry of Employment and the Economy has accepted the construction application for Hanhikivi Unit 1 which Fennovoima had submitted on June 30, as it has been confirmed that 60% of the funds come from European companies. Having similar policy issues with Japan such as the energy self-sufficiency rate, Finland continues to face difficulties in constructing new nuclear power plants.

3. Recent Developments in the Oil and LNG Markets

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

After hovering in the mid $60/bbl range since May for Brent Crude, international oil prices tumbled by roughly $10/bbl going into July, and are currently around the mid $50/bbl range for Brent at the time of writing. A major factor behind this price drop is the market view that the Greek debt crisis will trigger economic slowdown and that the oil supply will ease as Iran returns to the oil market following the conclusion of its nuclear development negotiations. In particular, regarding Iranian oil exports, there is a growing belief that the estimated 20 million barrels of the country's offshore inventory will start to be exported in small quantities without waiting for the official lifting of sanctions expected at year-end at the earliest. The market movements and the possibility of further falls in prices must be closely monitored as there are numerous bearish factors for oil prices: the increase in production by Saudi Arabia and Iraq, the steady trend in the number of operating rigs in the US, and the expected dollar appreciation associated with the rise in US interest rates.

Though for only a short time, oil prices remained steady from May to June this year. Interestingly, in the interim, the market had begun to share the consensus that US shale oil production will flatten out (no longer increase or decrease) when the WTI price is between $60/bbl to $65/bbl. The reason why oil prices have not yet crashed, in addition to the robust global oil demand due to the summer demand peak, including in the US, is because the market players are trying to determine the direction of shale oil production in response to the oil price drop. In forecasting oil prices ahead, we must continue to monitor the output and inventory of oil and the number of rigs in the US.

In May, Japan's LNG import price reached $9/MMBtu, the lowest since October 2010. This is because the low oil prices were reflected in the LNG price for the first time in 2015; as oil prices have risen since then, the LNG import price is expected to gradually rise from June. The prices of spot cargoes arriving in May to June were presumably between $7-8/MMBtu. As of late July, the spot cargoes arriving in September appear to be traded at similar prices. The problem of the Asia premium, whereby LNG prices in Asia are much higher than in other regions, has improved significantly, but the future depends on oil prices.

The IEEJ held a regular research report meeting on July 10, and announced its oil and LNG price forecasts for 2016. Oil prices are estimated to be $65/bbl for Brent and $63/bbl for Dubai for 2016. In the latter half of this year, the supply-demand balance is likely to tighten, though the market will remain weak due to the high inventory levels of developed countries, the possibility of increased production by OPEC, and the strong dollar. In 2016, prices are likely to rise as the supply-demand balance tightens with the continued growth in demand and the weaker growth of non-OPEC production, but the increase in Iranian oil exports is likely to act as a limiting factor. Based on these oil price forecasts, the average LNG import price of Japan is estimated at approx. $9.3-9.7/MMBtu for 2016.

4. Developments in the Energy Efficiency and Conservation Policy

Naoko Doi, Senior Economist, Manager
Global Environment and Sustainable Development Unit

On July 16, the METI's Long-term Energy Supply-Demand Outlook for Japan was finalized. The Outlook presents a forecast of the energy supply-demand structure for 2030 achieved by implementing various energy policies. The Outlook takes into account a substantial energy saving of 50.3 million kl by 2030 compared to the reference scenario by improving energy efficiency through introducing advanced technologies and improvements in operational measures. As a result, the energy intensity – measured as final energy demand per GDP – is estimated to improve by 35% from current levels by 2030, a dramatic improvement that matches the rate achieved between 1970 and 1990 with the two oil crises in between.

By sector, the Outlook projects that the residential/commercial sector will make the greatest contribution to energy savings in 2030, accounting for 49%. To realize the estimated energy savings potential, Japan will be required to implement bold policy measures, while enhancing consumer awareness of energy efficiency and conservation and translating that awareness into actions.

Accordingly, a law to ensure compliance with the energy efficiency standards for buildings[2], the Act on the Improvement of Energy Consumption Performance of Buildings, was legislated on July 1, 2015 as a key means of improving energy efficiency in the residential/commercial sector. In the past, it was required for a building owner to report the energy consumption plan of a commercial building with floor space larger than 300 m^2, it was not mandatory to observe energy efficiency standards. The new act requires any new large commercial buildings with an area of 2,000 m^2 or more to comply with the standards. The scope of the act will be gradually expanded to include small- and medium-sized commercial buildings and houses, to promote energy saving and to reduce carbon-dioxide emissions in the residential/business sector where energy consumption is increasing significantly.

The key point of the Act, in addition to ensuring the commercial buildings' compliant with the standards, is that it also covers existing houses and commercial buildings. A renovated existing building that is energy efficient and meets the energy conservation standards of a new building will be allowed to display a label of compliance upon being approved by the prefecture. Further, a new or renovated building whose energy efficiency exceeds the standards will be allowed a favorable floor-area ratio as an exception. These measures are expected to encourage energy saving while boosting the property value.

The requirement to comply with the energy conservation standards will be expanded to include houses and small- and medium-sized commercial buildings. However, the cost to owners will be a challenge. For example, an IEEJ analysis on installing thermal insulation to save energy consumption for air-conditioning showed that it would take more than 30 years for houses and over 10 years for commercial buildings to recoup the cost in the form of lower electricity and gas bills. This is a high hurdle for investment. Thus, to promote better insulation, it may be necessary to emphasize the benefits other than saving energy, such as the health effects for houses and more comfortable work environments for commercial buildings.

[2] The energy conservation standards evaluate the primary energy consumption of the entire building on insulation performance and facilities of both houses and commercial buildings.

5. Post-FIT: Maintaining the Level of Renewable Electricity Sources

Yoshiaki Shibata, Senior Economist
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New and Renewable Energy & International Cooperation Unit

The twelfth meeting of METI's New and Renewable Energy Subcommittee held on June 24 discussed how to secure a stable amount of renewable electricity over the long term.

Three areas were identified as the main challenges: maintenance, scrapping and recycling of renewable power generation facilities, and business continuity after the end of the purchase period under the Feed-in-Tariff (FIT) system. First, regarding maintenance, the issues include developing better technologies to prevent failures and performance degradation, early detection of malfunctions through monitoring, and building an appropriate management system; thus, the necessary actions are clear. Next, regarding scrapping and recycling, in response to the large amounts of wastes such as solar PV panels which will emerge in the 2030s, measures such as the appropriate handling of toxic substances in such wastes, recycling silver and copper, and improving the second-hand markets must be addressed. However, the ministries concerned have already decided to jointly build a system for scrapping and recycling, and so the direction of the measures is clear.

In contrast, no specific measures have been agreed for the business continuity of power generation facilities after the end of the purchase period. This is the greatest problem among the three areas, since if all the power producers were to pull out when the purchase period ends, the cumulative renewable capacity would drop drastically, making it impossible to maintain the decarbonization level of the power sources. This looming issue is not that far ahead. For residential solar PV panel systems (purchase of excess electricity launched in 2009) and RPS systems (launched in 2003) that have migrated to the FIT system, the purchase period will start to expire from as early as 2019.

After the purchase period ends, a renewable electricity producer may sign an individual contract with a power company, with purchase conditions set at the discretion of the parties. For renewable electricity producers who have already made profits under the FIT system, the incentive to continue the business will shrink as profits will no longer be guaranteed. However, renewables such as solar PV, the costs of which have been recovered with no fuel cost required, could serve as an extremely low-cost, low-carbon source of electricity. It would thus be highly beneficial for society to introduce policies to keep them in business, such as promoting self-use of electricity which is more economically beneficial than purchasing electricity, and devising a system to cover the minimum required operation and management fees.

The same problem with business continuity could also occur if the FIT system itself is discontinued in the future as a result of change in policy. If further investments are not made at that time, the total plant capacity will inevitably decline.

The FIT system is driving the decarbonization of electricity sources at public cost. Thus, it is important to maintain the renewable electricity sources for a long time after the end of the FIT system. In-depth discussions must be held to determine the direction after the FIT system has ended.

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Energy Indicators of Japan

IEEJ Homepage Top

Back Numbers of *IEEJ e-Newsletter*

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