

IEEJ e-NEWSLETTER

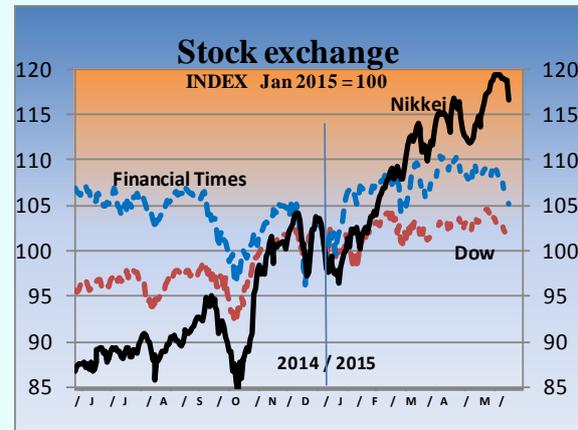
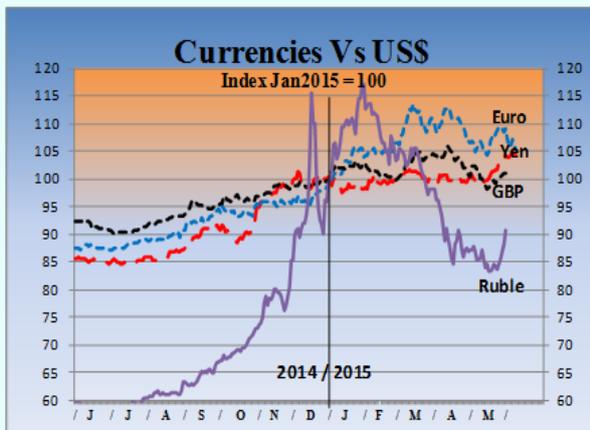
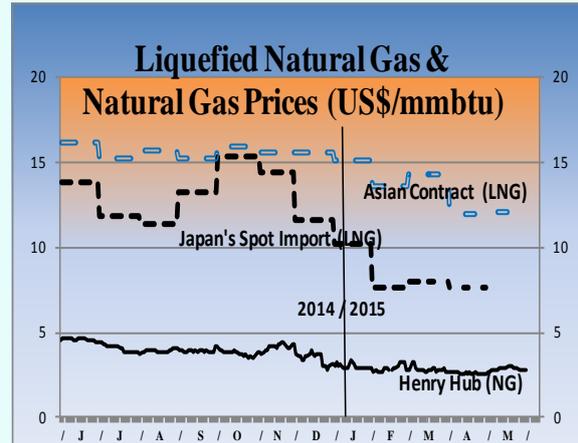
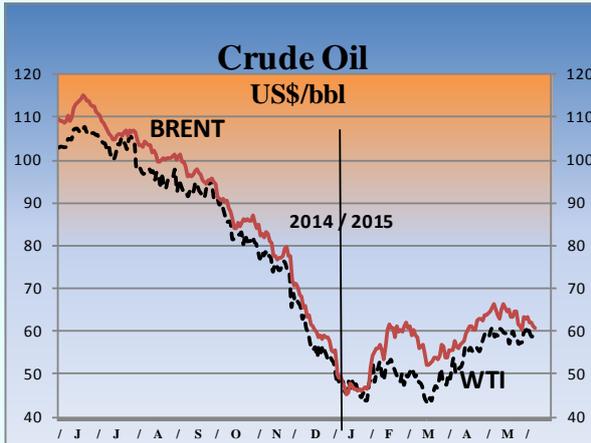
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Summary

1. Discussions on the Energy Mix

On May 26, the ninth meeting of the Subcommittee on Long-term Energy Supply-Demand Outlook was held following a one-month lull, with the aim of finalizing the Energy Supply-Demand Outlook.

2. Developments in Nuclear Power

The strategy for selecting a final repository site for high-level radioactive waste, in which the government will indicate scientifically-promising regions and request the municipalities concerned to cooperate with the survey, was approved by the Cabinet. True dialog with the public will now begin.

3. Recent Developments in the Oil and LNG Market

The international oil price, which has risen to the \$60/bbl range, is being driven by speculation and may not reflect the supply-demand fundamentals. While the market is likely to remain weak, it is important to monitor geopolitical situations in the Middle East and shale production in the US.

4. Finalizing the INDC toward COP21

Japan should review its Intended Nationally Determined Contribution (INDC) to make them persuasive even compared with other countries, by citing Japan's contributions to advanced technology development and international cooperation.

5. Hydrogen for Renewables and Renewables for Hydrogen

While both countries are working on producing hydrogen from renewables and its use, Germany and Japan have different backgrounds and approaches. The development of technology and the design of the institution and the system in the future must be closely monitored.

1. Discussions on the Energy Mix

Akira Yanagisawa, Senior Economist
The Energy Data and Modelling Center

On May 26, the ninth meeting of the Subcommittee on Long-term Energy Supply-Demand Outlook was held following a one-month lull. The purpose of the meeting was to finalize the Energy Supply-Demand Outlook, or more specifically, to discuss Japan's Intended Nationally Determined Contribution (INDC) and the power generation costs based on the Framework Proposal for the Long-term Energy Supply-Demand Outlook presented at the previous meeting, the eighth, and the working draft for the Long-term Energy Supply-Demand Outlook.

Of the topics, regarding the INDC which aims to reduce GHG emissions by 26.0% from 2013 levels in 2030 (and energy-related CO₂ emissions by 25.0% from 2013 levels), there was hardly any discussion perhaps because it had already been announced in the joint WG of the Central Environment Council and the Industrial Structure Council on the INDC, or mirroring the current social sentiment of Japan. The same was true for power generation costs, as there was virtually no impact from the changes since the previous meeting. The key topic of the meeting was the Long-term Energy Supply-Demand Outlook, particularly the power generation mix, and much of the two-hour meeting was spent on this.

Several members expressed opposition to the ratios of renewables and nuclear in the power generation mix, and an opinion statement was submitted. This opinion was countered by others who commented that “the figures in the working draft for the Long-term Energy Outlook are tough to achieve as they are, and further increasing renewables and reducing nuclear some or to zero is merely wishful thinking”, and “some say that nothing has changed since 3/11, but actually the situation has changed tremendously. Japan is now struggling to keep the S+3Es policies in balance, and has very little room for maneuver”.

In addition to the content of the Long-term Energy Outlook, the members actively asked questions and discussed the items in the reference material, including cutting the electricity costs to JPY9.2 trillion from the current JPY9.7 trillion. It became clear that further meetings are needed to finalize the Subcommittee's proposal on the Outlook. Despite many requests for modification, the working draft of the Outlook is unlikely to be changed, judging from Chairman Sakane's comment: “Was it not our consensus to increase stable renewable energy sources? I am disappointed to hear demands to increase solar PVs and wind at such a late stage”.

In the latter half of the discussion, the term “local production for local consumption (of energy)” was often heard. This term is well accepted by the public, perhaps because of its association with revitalizing local areas. However, with large capacities of solar PV being introduced under the Feed-in-Tariff (FIT) system for selling electricity to other regions, the situation is far from local production and consumption. Further, among the solar PV modules shipped within Japan, as much as 63% are foreign-made (FY 2014). This conflicts with the expectation that the FIT system would energize the domestic industry by ramping up the production of Japan-made modules. Some members commented that “electricity would be more stable under nation-wide operation if the core system were functioning properly”. In closing, Chairman Sakane commented that “local production and consumption are more applicable to heat. Money should be spent on wisdom, rather than on renewable electricity which can be produced without limit provided there is enough money and land area”.

2. Developments in Nuclear Power

Tomoko Murakami, Manager
Nuclear Energy Group, Strategy Research Unit

On May 20, a court hearing was held at the Fukui District Court on Kansai Electric's objection to the provisional ruling which bars the restart of Takahama Units 3 and 4. Considering the social impact of the case, the chief justice indicated his intention to "make a decision after accurately understanding the claims of both parties and the point of dispute". At the hearing, it was announced that the issue will be discussed in three hearings held till November after both the creditor (the residents) and the debtor (Kansai Electric) have both prepared answers to a written questionnaire from the Court. As the Court rejected on May 18 Kansai Electric's petition to suspend the execution of the order, it is very unlikely that Takahama Units 3 and 4 will restart unless the order is reversed. Considering the time constraints after the Court issues a ruling, restarting the plants in November, as Kansai Electric hopes, seems unlikely.

While the restarting of existing nuclear power plants gathers attention, there has been progress in the discussions on the backend policy of the nuclear fuel cycle. On May 22, "Basic Policy on the Final Disposal of Designated Radioactive Wastes", a document on the selection of a final repository site for high-level radioactive waste, was approved by the Cabinet. The main change is that instead of waiting for municipalities to apply for hosting, which has been the case so far, the government will indicate scientifically-promising regions, request the municipalities concerned to cooperate with the survey, and help to build regional consensus and sustainable development. This approach has been adopted in Finland and Sweden over 20 years. Considering that it took these countries 20 years after starting this approach to actually select a final repository site, it is naturally expected to take at least as long in Japan. This could mark the start of true dialog with the public.

Overseas, there have been cases in some countries where rigorous safety standards are making nuclear power economically unviable. On April 30, Vattenfall, 70% owner of Sweden's Ringhals Nuclear Power Station, announced that it would close Ringhals Units 1/2, the oldest and the smallest of its plants, between 2018 and 2020, five to seven years earlier than previously planned. The direct causes of the closures are the rising costs due to the tightening of safety standards, the Swedish environment ministry's decision to double the radioactive waste fund, and the raising of nuclear tax. Vattenfall took this decision after judging that it could not bear the cost in the deregulated electricity market unless electricity tariffs are high enough. For the power companies of Japan where full deregulation of the electricity market looms, this decision by Vattenfall, and upcoming decisions by other power companies in deregulated markets, are not just someone else's problem.

On May 18, the IEEJ co-hosted an international nuclear symposium featuring women, "Discussions on Nuclear Energy from the Female Point of View - Why is it necessary? Why is it safe enough? Why is it irreplaceable?" jointly with the Economic Research Institute for ASEAN and East Asia (ERIA), the US Breakthrough Institute, and National Graduate Institute for Policy Studies. The twelve female experts from Japan and abroad actively presented their opinions on the role of nuclear power in energy security and environmental issues, highlighting the importance of gaining the understanding of the public, particularly women.

3. Recent Developments in the Oil and LNG Market

Yoshikazu Kobayashi, Senior Economist, Manager
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International oil prices, which had been hovering in the \$50/bbl range after bottoming out in January, rose to the \$60/bbl range in April, and are approaching the \$70/bbl range for Brent crude as of end of May. It had been widely expected that international oil prices would reverse toward the second half of the year and so this change was generally anticipated, although quicker than expected.

The recent rise in oil prices, however, does not necessarily reflect the supply-demand fundamentals. The supply-demand gap is actually widening rather than shrinking, with oversupply exceeding 2 million B/D as actual OPEC production in April measured 31 million B/D compared to Call on OPEC (global demand minus non-OPEC output) for the second quarter of 28.3 million B/D.

Meanwhile, since the beginning of this year, speculative long positions had started to build in the futures markets such as ICE and NYMEX, and in particular, the net long position for Brent futures in ICE by money managers (fund managers and investment funds) has exceeded a record 280,000. Such speculative buying based on the expected cut in production of US oil, recovery of demand in the US and China, and the growing instability in Yemen and Iraq is driving up the price of oil.

Despite the impact of speculation, the near-term international oil market is likely to remain weak, due to the oversupply, a possible economic slow-down, and high inventory. Even in countries generally regarded as high-cost such as Russia, production is apparently remaining higher than expected despite the recent price situation. The decline in the number of operating rigs in the US since last year is also showing signs of slowing as oil prices pick up, and some expect the number to bottom out soon. As some US shale producers such as EOG Resources plan to restart production from the wells currently under development if prices surpass \$65/bbl, oil prices are not likely to surge any time soon.

Meanwhile, Saudi Arabia is still focusing on market share and continuing to produce at record levels. The reshuffle of Saudi Arabia's oil policy-makers is not likely to affect the near-term production strategy, as Petroleum and Mineral Resources Minister Naimi remains in office. The OPEC meeting on June 5 is unlikely to agree to cut production.

As oil prices appear to be leveling off, Japan's LNG import price is still falling. The import price for March averaged \$12/MMBtu, down \$1/MMBtu from the previous month, and the prices of spot cargoes arriving in March were between \$7-9/MMBtu, much lower than the average import price. The spot LNG cargoes for June to July are being traded at \$7-8/MMBtu as of end-May, and as the oil price drop has not yet been fully factored into the term LNG price, average import price is likely to continue to decline in the near term and fall below \$10.

4. Finalizing the INDC toward COP21

Hiroki Kudo, Assistant to Managing Director
Global Environment and Sustainable Development Unit

On April 30, the joint committee meeting of the Economy, Trade and Industry Ministry and the Environment Ministry discussed the draft INDC (Intended Nationally Determined Contribution), which sets Japan's climate actions beyond 2020 and will be submitted prior to COP 21. The draft INDC declared that Japan will cut its GHG emissions by 26% from 2013 levels in 2030. Considering the current energy supply-demand structure of Japan, this is a very ambitious target which matches that of major Western countries. The government will now conduct studies for finalizing the INDC.

Last year, COP20 decided that it expects the INDC to include, in addition to the GHG emissions reduction target, reference year and schedule (target year), the target gases and method of calculating GHG, and the studies leading to the plan. The INDC is also required, where possible, to describe the level of fairness and ambition of the target level, and its contribution to the ultimate target set forth in Article 2 of the UNFCCC. Japan's draft INDC, however, does not yet detail the level of fairness and ambition, nor its contribution to the ultimate target; the joint meetings have not yet specifically discussed these items.

Why may this be a problem? Because this information could be an important evaluation factor in the process of reviewing the new framework expected to be agreed in COP21. For instance, the level of fairness and ambition of the targets is the basis for the validity of targets presented at the negotiating table. It is essential to study how best to explain the validity of Japan's efforts to the international community using objective indexes, in addition to the procedure for setting the reference year and the reduction target. Meanwhile, regarding its contribution to the ultimate target, Japan must explain how it interpreted the emissions path toward the 2°C stabilization scenario and demonstrate the validity of its own GHG reduction path. Multiple possible reduction paths are currently being identified for contributing to the 2°C stabilization scenario, and Japan could be questioned on its choice.

According to the decision at COP20, each country can decide the contents of its INDC, and can choose to leave something out if it wishes. However, the countries that have already submitted an INDC such as the EU, the US, Norway, Russia and Canada have mentioned the relative position of their GHG emissions and the effects of their reduction on the world, the validity of their plan in terms of fairness and ambition, and the contribution to achieving the 2°C target. The target specified in Japan's draft summary is ambitious for a country whose energy efficiency is higher than those of Europe and the US. Thus, Japan should further review its INDC to make it persuasive compared with those of other countries, by citing Japan's contributions to advanced technology development and international cooperation, taking into account the INDCs of other countries.

5. Hydrogen for Renewables and Renewables for Hydrogen

Yoshiaki Shibata, Senior Economist
New and Renewable Energy Group
and Energy Demand, Supply and Forecast Analysis Group

Last April, a new hydrogen demonstration test was launched on Kabashima in the Goto Islands, Nagasaki Prefecture. The test uses the excess electricity from a prototype floating offshore wind turbine to generate hydrogen by electrolysis, and then fixes the hydrogen to toluene for storage and transportation at normal temperature. This marks a new attempt for grid integration for wind power whose output fluctuates.

Producing hydrogen from renewable energies by electrolysis or methanation by reacting hydrogen with carbon dioxide is not a new technology. Known as Power to Gas, the technology has been tested in Germany since around 2010, with more than 20 projects in total in the operating, planned and construction stages. Germany has set an ambitious goal of raising the percentage of renewables in power generation to 80% by 2050. This would result in large amounts of electricity overflowing from the grid, and thus the active use of Power to Gas is being considered for mopping up the excess power, while monitoring the progress and constraints of other grid integration measures such as the construction of new transmission lines. Apart from the use of hydrogen for fuel cells, feeding hydrogen and methane into natural gas pipelines is being considered. Here, the focus is on dealing with the expanding renewable energy capacity rather than building a hydrogen economy.

Meanwhile, in Japan where efforts are being made to build a hydrogen economy, hydrogen production from renewable energies is being highlighted as a domestic way of producing extremely low-carbon hydrogen rather than for grid integration.

For instance, positioning the decarbonization of hydrogen and its full-scale utilization as one of its global warming countermeasures, the Ministry of Environment is running a demo of a supply chain for low-carbon hydrogen under its regional collaboration program for 2015. Four projects were selected in April, which will use the hydrogen from renewable or untapped energies for fuel cells, by means including wind power, biogas, by-product hydrogen from caustic soda and used plastics. Further, Kawasaki city and Toshiba launched in April a joint demonstration of an independent energy supply system using renewable energies and hydrogen. These initiatives were launched in accordance with METI's Strategic Road Map for Hydrogen and Fuel Cells formulated in June 2014 and Tokyo Metropolitan Government's hydrogen society roadmap established in February 2015, and all actively utilize renewable energies to produce low-carbon hydrogen.

Although Germany and Japan have different backgrounds and focuses in approaching hydrogen production from renewables, they share the view that the combination of renewable energies and hydrogen is a promising option for achieving a low-carbon economy. Thus, Japan needs to approach the development and demonstration of the technology from a long-term perspective. However, in doing so, careful discussions are necessary in designing the system based on the analysis and comparison of its economic efficiency with other grid integration measures and hydrogen production technologies, as producing and using renewables-derived hydrogen requires building new infrastructure and coordination with existing infrastructure, including the electricity trade with the power grid, injecting hydrogen and methane into gas pipelines, and building hydrogen storage and transportation systems.

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