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Summary

【Energy Market and Policy Trends】

1. Developments in Energy Policies

The 26th and 27th meetings of the Strategic Policy Committee convened in swift succession on April 27 and May 16 to discuss the outline and draft proposal of the Fifth Strategic Energy Plan.

2. Developments in Nuclear Power

The Draft Fifth Strategic Energy Plan newly states that the development of innovative reactors should be pursued under a long-term government vision while ensuring strategic flexibility. Commercializing the creativity of the private sector will be the key.

3. Recent Developments in the Oil and LNG Markets

With the de facto accomplishment of supply-demand rebalancing and the increasing likelihood of a production drop in Iran and Venezuela, oil prices face upward pressure.

4. Update on Policies Related to Climate Change

The Ad Hoc Working Group on the Paris Agreement (APA) was convened to consider the rulebook for the Paris Agreement towards COP24 at the end of the year. Discussions will continue at the session in Bangkok in September.

5. Update on Renewable Energies

Initiatives are being pursued in and outside Japan to establish a certification system for hydrogen based on the CO₂ generated during production. These initiatives are part of important measures for promoting the use of low-carbon hydrogen and must be monitored.



1. Developments in Energy Policies

Akira Yanagisawa, Senior Economist, Manager
Energy and Economic Analysis Group
Energy Data and Modelling Center

The 26th and 27th meetings of the Strategic Policy Committee convened in swift succession on April 27 and May 16 to discuss the outline and draft proposal of the Fifth Strategic Energy Plan. Though there were some objections regarding nuclear power generation, members agreed to ask the Committee Chairman to draw a conclusion. The draft proposal is open for public comment until June 17.

At the start of this Committee in August of last year, METI Minister Hiroshige Seko commented, “Our efforts to achieve the target are still unfinished, and we are not at the stage of changing the framework of the Strategic Energy Plan.” Accordingly, the proposal now open for public comment declares the continuation of the quantitative target, stating “every effort will be made to achieve the 2030 energy mix,” and follows the basic principles of the Fourth Strategic Plan. Meanwhile, a new chapter on “the energy transformation challenge toward 2050” was added as chapter three, reflecting the proposals of the Round Table for Studying Energy Situations toward 2050, increasing the number of pages by more than 30%.

As a policy measure toward 2030, the proposal points out the need for “efforts to make renewables a key power source,” and continues to position nuclear and coal as base load power sources.

As preparatory measures ahead of 2050, the proposal stresses the importance of a multi-track scenario that will be reviewed as appropriate through a scientific review mechanism. The multi-track scenario includes (1) combining intermittent power sources with battery cells/hydrogen, (2) obtaining hydrogen gas from overseas resources, (3) existing decarbonized power sources including nuclear, and (4) digitally-integrated dispersed systems. It also presents a clear policy to make renewables a key power source through them. Though no nuclear new builds or replacement were mentioned, it clearly states that “reactors with high safety, economic efficiency, and maneuverability should be pursued” as a key point for the future. It also notes that improving technological self-sufficiency is the key for achieving decarbonization, and that Japan needs to lead other countries in areas such as battery cells and hydrogen in which it is already a world leader, and must start development immediately.

IEEJ President and CEO Masakazu Toyoda commented as follows:

(1) The proposal is valuable for stating that, rather than changing the target energy mix, it must be achieved with certainty, despite the increasingly uncertain circumstances. (2) It is important to optimize nuclear regulations. An airplane that cannot fly due to the weight of excessive safety equipment may be the safest but not practical. (3) Regarding the policy to make renewables a key power source, it is also necessary to communicate the associated conditions. (4) Other countries seem to be critical of Japan’s policy to use coal for 26% of its power until 2030. The proposal should stress Japan’s excellent per-GDP carbon emissions level even when using coal-fired thermal power. (5) Upstream investment is being put on hold due to uncertainty about the future, though oil, coal, and natural gas will continue to be used. Japan should break this atmosphere and invest.



2. Developments in Nuclear Power

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

On May 16, the 27th Strategic Policy Committee presented the Draft Fifth Strategic Energy Policy, which was offered for public comment on May 19 (until June 17). For an overview of the draft proposals and discussions, please refer to the previous article "Developments in Energy Policies."

Needless to say, using nuclear power requires constant efforts to improve safety. Accordingly, the Draft Strategic Energy Plan declares that "taking to heart the experience, problems, and lessons of the Fukushima Daiichi accident is the starting point" for rebuilding Japan's nuclear policy. At the same time, under Chapter 2.3.2 "Technological Issues to be Addressed", the proposal suggests the importance of developing innovative reactors including high-temperature gas-cooled reactors, small modular reactors (SMRs), and molten salt reactors (MSRs) from the perspective of "promoting nuclear-related innovations taking into account the rising needs of society for co-existence with renewable energies, hydrogen production, and the use of heat" and "developing new technologies that fundamentally enhance the safety, reliability, and efficiency of nuclear power." It also refers to the development methodology, stating that "the government must present a long-term development vision and the private sector should offer creative ideas and wisdom ... and advance the effort with strategic flexibility."

"The long-term vision for the development of innovative reactors" has been mentioned countless times in the past in the Long-Term Program for Research, Development and Utilization of Nuclear Energy (the Long-Term Program). The significance of the high-temperature gas-cooled reactor was mentioned in the Long-term Program already in 1972 under the title "multi-purpose use of nuclear reactors" including for heat supply. The Long-Term Program advised that "efforts to achieve the technology must be pursued comprehensively and systematically through close cooperation between the government and private sector," an expression similar to that of the current Draft Strategic Energy Plan. However, the reality is that none of these innovative reactors is in commercial use even today. Unless the causes of this situation are identified accurately and measures are taken, the current development vision will not materialize. To figure out how to commercialize the creative ideas and wisdom of the private sector, it is necessary to start by understanding the difference between innovative reactors and light-water reactors.

In other countries, more practical efforts to develop and commercialize innovative reactors are under way. On April 17, Canadian Nuclear Laboratories (CNL) began to collect proposals for a project to construct and operate a demonstration small modular reactor (SMR) in its premises. CNL has already disclosed the screening criteria for the proposals, which are of utmost importance to operators, giving them some predictability regarding the criteria. In the US, where the Department of Energy has been sponsoring advanced reactor development since the 2000s, GE Hitachi Nuclear Energy announced on May 21 that US power company, Dominion, will invest in the development project for BWRX-300, an SMR based on the ESBWR light-water reactor design which GE Hitachi has been developing on its own. It will be interesting to see how serious CNL and the operators are about achieving this project.



3. Recent Developments in the Oil and LNG Markets

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

Oil prices are at their highest level for three and a half years. Brent tested the \$80/bbl range in mid-May, and WTI surpassed \$70/bbl on May 7 for the first time since November 2014.

Behind the soaring prices is the fact that supply-demand rebalancing has effectively been achieved. According to the International Energy Agency, as of the first quarter of 2018, oil demand and production are both at 98.1 mb/d, achieving supply-demand parity on a flow basis. OPEC's output stands at 31.65 mb/d as of April, and partly thanks to the unintended drop in output in troubled Venezuela, compliance with OPEC's output reduction target of 1.8 mb/d stands at a record high of 172%. The industry stock of OECD countries stands at 2.8 billion bbl as of March 2018, decreasing to almost the average of the past five years.

Under such circumstances, the market has become strongly aware of geopolitical risk since the beginning of May, spurring higher prices. The Trump administration's announcement on May 8th to abandon the Iran nuclear deal, to relocate the US embassy to Jerusalem on the 14th, and to impose additional sanctions on Venezuela on the 21st are fueling anxiety over the output of Iran and Venezuela. Saudi Arabia and Russia are considering continuing the production cut beyond 2018. Over the next year or two, there is a risk that Iran's output may decline by around 1 mb/d as happened during the previous sanctions, and that Venezuela's output may fall further by hundreds of thousands of b/d. An output decline of this scale in these two countries can be offset to a certain extent by increasing output in Saudi Arabia and the US. However, the return of a massive supply glut is becoming less likely, and with the current deterioration of the situation in the Middle East, oil prices are under upward pressure.

The price rise since the beginning of the year is pushing up the price of LNG for Japan, albeit moderately. The average import price was \$9.6/MMBtu as of April, up more than 10% from \$8.6/MMBtu in January (oil prices rose by just under 20% in the same period). The rise in oil prices is enhancing the price competitiveness of the Henry Hub-linked US LNG against the mainstream of oil indexed LNG. With Henry Hub at just less than \$3/MMBtu, the cost of the US LNG arriving in Japan is estimated to be in the \$8-9/MMBtu range and remains sufficiently competitive. With the start of operation of the Cove Point project, with which Japanese companies have long-term contracts, supplies to Japan will increase. According to the US Energy Information Administration, 66% of US LNG exports are heading for Asia as of February 2018. The flow of US LNG to Asia is likely to grow as demand remains high in China and other Asian countries and with oil prices ready to surge. The increase in the flow of non-oil-indexed US LNG should help improve the liquidity of the LNG market and in turn establish benchmark LNG price in Asia.



4. Update on Policies Related to Climate Change

Takahiko Tagami, Senior Coordinator, Manager
Climate Change Policy Research Group
Global Environment and Sustainable Development Unit

International discussions on climate change is being focused on the formulation of the rulebook for implementing the Paris Agreement by the twenty-fourth session of the Conference of the Parties (COP24) at the end of this year, and the Talanoa dialogue convened throughout 2018 which takes stock of the collective efforts of Parties in relation to progress towards the long-term goal. Under such circumstances, the meetings of the Ad Hoc Working Group on the Paris Agreement (APA) and the Subsidiary Bodies to the Conference of the Parties convened in Bonn, Germany from April 30 to May 10.

Regarding the rulebook for the Paris Agreement, various items are being discussed including mitigation, adaptation, the transparency framework which reviews the achievement in action and support, and finance. For the rulebook to be adopted at COP24 in December in Katowice, Poland, a draft negotiating text must be ready before Katowice. However, this session remained in revising the informal notes prepared at the previous session on the draft elements of the rulebook, due to the concern of developing countries that discussion on mitigation may take precedence over adaptation and finance, and as the discrepancy between developed and developing countries over finance (including ex ante information to be provided by developed countries) surfaced. The informal notes will serve as the basis for future discussions and for preparing a draft negotiating text.

The Talanoa dialogue was held on May 6 (Sunday) for one full day in seven groups, each consisting of 30 representatives of Parties and 15 representatives of NGOs, which shared a "story" on three questions, namely "Where are we?" "Where do we want to go?" and "How do we get there?" The report backs during the session were just brief. A summary will soon be issued and the dialogue is scheduled to continue at COP24.

Behind the concern of developing countries lies an awareness that the package to be agreed in Katowice will be the last one in the foreseeable future, unlike the case before the Paris Agreement where Parties could re-negotiate it in every commitment period. Meanwhile, developing countries claim that since most of their nationally determined contributions are conditional on the provision of finance, they cannot pursue their goals further without the clarity and predictability on financial flows from developed countries.

The next session is scheduled to convene in Bangkok in September. The APA decided that its Co-Chairs will prepare documents including proposals for streamlining the informal notes by August 1 to accelerate the discussions, its Co-Chairs will consider, in consultation with the Chairs of other Subsidiary Bodies, preparing a joint reflection note by mid-August describing the progress so far and direction going forward, and that a round table will be held focusing on the linkage across the items of the Paris Agreement work programme to operationalize the Paris Agreement in the pre-sessional period before Bangkok in September.



5. Update on Renewable Energies

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

In April, Aichi Prefecture launched Japan's first CO₂ emissions certification system for hydrogen. Hydrogen produced with low CO₂ emissions in the process is licensed as "low-carbon hydrogen." Currently, most of the small amount of hydrogen in use is generated from fossil fuels and thus CO₂ is generated during production. This calls for producing hydrogen from renewable energies, but cost is an issue. The idea behind launching this certification system is to support the use of hydrogen by highlighting its environmental-friendliness.

Sources of hydrogen are currently limited to renewables (renewable power and biogas) under this system, but new technological options such as combining fossil fuel-derived hydrogen and CCS may be added depending on how the situation develops. Further, while the system is currently applied only to the production stage of hydrogen, expanding the scope and considering CO₂ reduction across the entire supply chain including transportation and up to utilization will be considered. However, even for hydrogen produced either from grid electricity or by reforming fossil fuels, it is always possible to offset the CO₂ generated during production by purchasing Tradable Green Certificates (TGC) and credits.

While this system is an independent initiative by the prefecture, the development of a standardized national system has been discussed continuously since FY2016 in the Working Group on CO₂-Free Hydrogen under the Council for a Strategy for Hydrogen and Fuel Cells. The agenda includes establishing a method for evaluating the amount of CO₂ emissions from production to use, a certification system, and a system for trading the environmental value of hydrogen based on the certification system.

Outside of Japan, Europe has been running a CO₂ emissions certification project called CertiHy since 2015 under the EU framework for Joint Undertaking of Fuel Cells and Hydrogen and has held repeated discussions on the definition of low-carbon hydrogen and the certification system. In 2017, the definition of low-carbon hydrogen was determined, though CO₂ emissions only in the hydrogen production process is included. According to the definition, the hydrogen produced by reforming natural gas generates 91g-CO₂/MJ. The baseline is set at 60% below this value (36.4g-CO₂/MJ), and hydrogen with less CO₂ than the baseline is categorized as Green H₂ if generated from renewables, and as Low Carbon H₂ if generated from non-renewables. Meanwhile, hydrogen that exceeds the baseline is categorized as Grey H₂. Going forward, a certification system is scheduled to be designed based on this definition and verified through a pilot demonstration.

As decarbonization of the energy system is one of the major significances of hydrogen, hydrogen that is not low-carbon has little value. Meanwhile, it is essential to boost demand for hydrogen in order to increase its use. One way of doing this might be to initially allow the production of inexpensive, fossil fuel-derived hydrogen with higher CO₂ emissions to generate demand, and then gradually turn to low-carbon hydrogen. All in all, to develop adequate demand while achieving decarbonization, it is crucial to define and certify hydrogen and create incentives based on a certification system. Moves concerning the certification of low-carbon hydrogen must be closely monitored both in and outside Japan.



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IEEJ e-Newsletter Editor: Yukari Yamashita, Director
IEEJ Newsletter Editor: Ken Koyama, Managing Director
Inui Bldg. Kachidoki, 13-1 Kachidoki 1-chome, Chuo-ku, Tokyo 104-0054
Tel: +81-3-5547-0211 Fax: +81-3-5547-0223
