



# IEEJ e-NEWSLETTER

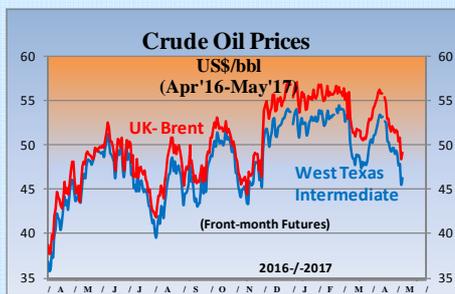
No. 110

(Based on Japanese No. 164)

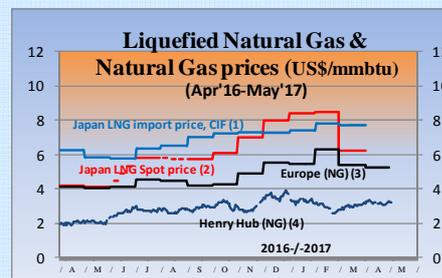
Published: May 12, 2017

The Institute of Energy Economics, Japan

(As of May 5, 2017)



Source: DOE-EIA, 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)
- (5) Investing.com



Source: x-rates.com



Source: Financial Times

## Contents

### 【Energy Market and Policy Trends】

1. Developments in Nuclear Power
2. The Global Energy Mix and the Role of Coal
3. Recent Developments in Oil and LNG Markets
4. Update on Policies Related to Climate Change
5. Developments in Renewable Energies



## Summary

### **【Energy Market and Policy Trends】**

#### **1. Developments in Nuclear Power**

An advisory committee of the Atomic Energy Society of Japan released a report stating that "it is more important to "evaluate the impact of displacement assuming that it has occurred and take measures, rather than only discussing whether the fault is active". The incorporation of this perspective into the actual assessment is highly anticipated.

#### **2. The Global Energy Mix and the Role of Coal**

For Japan which depends heavily on energy imports, coal has a high energy security value. As a "perfect energy" does not yet exist, it is important to use all available energy options, including coal.

#### **3. Recent Developments in Oil and LNG Markets**

While the market is factoring in extension of the OPEC production cut, it is not easy to reach a consensus on the extension. If the cuts are not extended, prices are likely to plummet, at least in the short term.

#### **4. Update on Policies Related to Climate Change**

There have been moves concerning climate change policies heading toward the G7 Summit in May and the G20 Summit in July, and the energy and environmental policies of the US are also slowly taking shape.

#### **5. Developments in Renewable Energies**

New databases on the development potential of small- and medium-sized hydropower and offshore wind power were created and publicized to help assess the feasibility of potential sites. It is hoped that these databases will be increasingly used for the expansion of these renewable energies.



## 1. Developments in Nuclear Power

**Tomoko Murakami**, Manager  
Nuclear Energy Group, Strategy Research Unit

Following the Osaka High Court's decision on March 28 to lift the provisional injunction ordering Takahama Units 3 and 4 to cease operation, on March 30, the request filed by Hiroshima prefecture residents to order the halt of Shikoku Electric's Ikata Unit 3 was dismissed by the court. However, although the District Court and High Court have successively ruled in favor of the power companies, the judgment on plant safety still depends on the values of each individual judge. While the ruling is a step forward for restarting the nuclear power plants, the judicial risk has not been resolved completely. According to the time plan announced by Kansai Electric on May 8, it is planned to restart Takahama Unit 4 in mid-May and Unit 3 in June.

On March 27 and 28, the Nuclear Regulation Authority carried out a field investigation of the geological features and structure of the premises and surrounding areas of Chubu Electric's Hamaoka Units 3 and 4, where a safety assessment is currently underway. At the hearing of Chubu Electric by the NRA on April 5, the power company claimed that the several faults in and outside the plant premises are not active, while the NRA cited a lack of scientific evidence to determine if the faults are active, and requested the company to provide further data. Chubu Electric replied that they will respond sincerely to the assessment and make utmost efforts to demonstrate that the plants meet the new regulation standards as soon as possible.

Meanwhile, at the end of March, the investigative advisory committee of the Atomic Energy Society of Japan on the activity of faults and engineering risk evaluation (chaired by Professor Tadashi Narabayashi, Hokkaido University) released a report highlighting "the importance of reducing the risk of fault displacement by evaluating its impact and taking measures." In the report, the advisory committee indicated that the problem regarding the Fukushima Daiichi accident was not only the underestimation of the height of tsunamis, but also the lack of preparation against possible flooding of plant facilities. As with the tsunamis, in approaching fault displacement, it is more important to "evaluate the impact of displacement assuming that it has occurred and take measures, rather than only discussing whether the faults will ever move", the committee said. The same may apply to the geological investigation of the Hamaoka site. The NRA and the utilities are expected to take a more constructive approach and start discussing what to do if a fault moves, rather than whether an active fault exists on the premises.

Regarding the size of the nuclear new build market, emerging countries now exceed developed countries. On April 19, Russia's international nuclear company Rosatom, which is eager to expand in emerging countries, agreed to cooperate with the IAEA in preparing the necessary infrastructure and safety regulations for emerging countries newly introducing nuclear power. The parties concerned in Japan and other developed countries need to remember that the level of infrastructure and safety regulations considered essential in developed countries may not match the "honest needs" of emerging countries.



## 2. The Global Energy Mix and the Role of Coal

**Ichiro Kutani**, Assistant Director  
Strategy Research Unit  
Manager, Global Energy Group 1

On April 18, the Institute of Energy Economics, Japan organized a reporting meeting titled "The Global Energy Mix and the Role of Coal -- The Position of Coal under the Current Challenging Circumstances". The meeting was held to discuss how the role of coal will change and its position in the future, as climate change receives increasing attention and as specific measures, notably the Paris Agreement, are steadily implemented.

The first reporting session discussed the position of coal in the post-Paris world. As a stable and inexpensive energy source, coal remains a viable option particularly for countries with a low energy-sufficiency rate and developing countries with low income levels. However, restrictions on the use of coal are likely to be tightened to address climate change and pollution. For coal to continue to be used, two actions are required: To maximize its environmental performance while remaining more cost competitive than other energies, and to clearly establish its significance and effectiveness for energy security through government policy.

The second session reported on the background and status of the EU's "decarbonization" policy. Decarbonization has been accelerating in the EU driven by concern over the delay in coal-related measures, as represented by the remaining low-efficiency coal-fired thermal power plants, and a rollback in decarbonization policy such as protecting the domestic coal industry. However, the implications and impact of "decarbonization" vary by country even within Europe. For Japan, casually pursuing decarbonization would be irrational, considering the country's advanced coal-fired thermal power technology and the policy to ensure a balance among the 3Es of Energy Security, Economic Efficiency, and Environment.

The third session discussed how to interpret the current trend toward divestment from fossil fuels. First, it is necessary to calmly monitor the reality that the moves toward decarbonization could expand to funding and investment issues. Divestment could also accelerate under the logic of "coordinating the flow of funds toward achieving the 2°C target", now that the Paris Agreement is in effect. Given that divestment has led to criticism and naming of individual companies, Japan may need to be able to present a highly transparent explanation, considering reputational risk.

As a "perfect energy" does not yet exist, all countries should use all of their available energy options in line with their circumstances. For Japan which depends heavily on energy imports, coal has a high energy security value. Meanwhile, Japan also needs to accurately understand the ever-changing domestic and overseas situations, accurately publicize both the importance of coal and Japan's efforts to achieve its NDC (Nationally-Determined Contributions), and correct any erroneous information. However, given the quickly changing situation, it is also important to monitor the environment surrounding coal and technological innovations in renewable energies (cost reduction, fluctuation absorption technologies), and flexibly review the long-term strategy if necessary.



### 3. Recent Developments in Oil and LNG Markets

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

Oil prices rose after the US attack on Syria on April 7 and expectations that the OPEC production cut would continue, but then dropped as the attack on Syria appeared to be limited and as the US gasoline inventory increased, and are around \$50/barrel in the end April. Kuwaiti Oil Minister Essam Al-Marzouq, which chairs the Joint Ministerial Monitoring Committee for the OPEC and non-OPEC production cut, revealed that the compliance rate was as high as 94% in February, and expects even higher rate for March. Despite this unprecedentedly high rate, however, inventory levels have hardly come down and remain at record highs.

Meanwhile, US oil production bottomed out in October and has been edging upward. Shale oil, which is driving the US production hike, continues to improve in productivity, and producers are also actively hedging in expectation of a rise in output. The market seems to expect the OPEC meeting on May 25 to extend the production cut, but it will not be easy to reach a consensus on the extension. If it is not, prices are likely to plunge, at least in the short term. Even if the cut is extended, both OPEC and non-OPEC participants will continue to face a tough situation, fighting the downward pressure on price from factors such as the production increase and rising interest rates in the US, and the possible anti-EU movements. Demand is relatively strong on the back of the expanding global economy, but these factors will continue to suppress the increase in oil prices.

Looking at natural gas, Gastech, one of the largest international conferences on natural gas, was held in Chiba, Japan from April 4 through 7. The key topics were flexibility in LNG trading, recovery of competitiveness of natural gas, and developing demand for LNG. The flexibility in LNG trading has been discussed actively since the Asia premium problem for LNG became significant. The Japan Fair Trade Commission has been conducting a preliminary investigation on the destination clause in LNG contracts since last summer, and the conference noted that the clause has been hampering more flexible LNG trading. Regarding the competitiveness of natural gas, many sellers emphasized their ongoing efforts to reduce project development costs. Although natural gas is the cleanest fossil fuel, amid the surging global expansion of renewables, golden age of gas will not be realized without strong competitiveness.

While the emphasis on developing demand for LNG reflects the recent supply glut, the focus was on the use of LNG as bunker fuel. With the regulations on the sulfur content of bunker fuels to be tightened in 2020 by the International Maritime Organization, LNG is an option to such tightening. The construction of LNG bunkering facilities in ports and LNG-fueled ships is expected to stimulate new demand for LNG, and in turn hopefully help spur new LNG development projects which are currently largely stalled.



## 4. Update on Policies Related to Climate Change

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

There have been moves concerning climate change policies heading toward the G7 Summit in May and the G20 Summit in July, and the energy and environmental policies of the US are also slowly taking shape. On April 9 and 10, the G7 energy ministerial meeting was held in Rome chaired by Italy. In the meeting, the energy ministers of all countries reconfirmed their commitment to implementing the Paris Agreement except for the US, which reserved its position on the Paris Agreement. Consequently, it was clearly stated in the Chair's Summary that "The Secretary of Energy of the United States of America informed fellow Ministers and Commissioner that the United States is in the process of reviewing many of its policies and reserves its position on this issue, which will be communicated at a future date."

In the US, on March 28, President Trump issued a Presidential Executive Order on Promoting Energy Independence and Economic Growth. In Section 4 of the executive order, the president required the Administrator of the Environmental Protection Agency to immediately take all steps necessary to review the Clean Power Plan for existing power plants and the greenhouse gas emission standards for new power plants, for consistency with the policy to review any regulations that hinder the development of domestically produced energy resources.

Regarding research and development, in its America First budget blueprint of March 16, which was covered in the previous Newsletter, the administration announced the abolition of the DOE's Advanced Research Projects Agency-Energy (ARPA-E) on the grounds that the private sector is better positioned to finance innovative energy R&D and commercialize innovative technologies. ARPA-E was established in 2007 pursuant to the America COMPETES Act, and has been funding innovative energy technology projects since 2009.

Ahead of the G20 Summit, on March 20, the IEA and IRENA jointly released "the Perspectives for the Energy Transition: Investment Needs for a Low-Carbon Energy System". As the chair of the G20, the German government has requested the IEA and IRENA to analyze the conditions and investments necessary for an energy transition to keep the temperature rise well below 2°C, and the findings of this report will inform the G20 meeting. The report states that energy-related CO<sub>2</sub> emissions will have to be reduced by 70% from current levels by 2050.

The IEA and IRENA analyzed individual scenarios while setting a common target. The IEA concludes that to achieve the target, the share of fossil fuels in the primary energy supply must be halved from current levels to 39% while tripling the share of low-carbon energies to 70%, both by 2050 (both including 9% of fossil fuels with CCS). The share of renewable energies must be increased to 47% by 2050 and that of nuclear energy from 5% in 2014 to 14% in 2050. Meanwhile, IRENA estimates that the share of renewable energies in the primary energy supply will need to be boosted from 15% in 2015 to 65% in 2050, while keeping the total consumption of fossil fuels to a third of the current level in 2050. Nuclear power will remain at 2016 levels, and CCS be introduced only in the industrial sector. IRENA postulates that investment in energy transition will raise global GDP by 0.8% in 2050 and create six million additional jobs in the energy sector including energy efficiency, offsetting job losses in the fossil fuel sector with new jobs in renewables, but some consider that such economic analysis is overly optimistic and its validity needs to be reviewed.



## 5. Developments in Renewable Energies

**Yoshiaki Shibata**, Senior Economist, Manager

New and Renewable Energy Group

New and Renewable Energy & International Cooperation Unit

At the end of March, there were two subtle but very important moves to help support the expansion of renewable energies, both of which involved the disclosure of a database. One was a database on rivers which helps the development of small- and medium-sized hydropower, and the other was an offshore wind condition database that assists the development of offshore wind power. Their necessity was stated at a meeting of Cabinet members involved in renewable energies established in April 2014, and the Ministry of Economy, Technology and Industry (METI) led the collaborative efforts of various ministries to create and release the databases.

Small- and medium-sized hydropower has long been developed by the former general electric utilities and municipalities, and 9,600 MW was already operating before the FIT system was introduced. It is considered a promising power source with relatively stable output, and according to the Long-Term Energy Outlook, an additional 1,300 to 2,000 MW will be required to meet the 2030 target. However, only 230 MW has been put into operation since the launch of the FIT system. One of the main reasons for the sluggish pace is the initial risk. Hydropower requires much time and money to identify promising sites in the initial stage of development, and there is a high risk that investigations will find that sites are not viable. The data on river flux and water channels required for identifying promising sites for small- and medium-sized hydropower have so far been gathered independently at the ministerial, agency and prefectural levels, making it difficult to evaluate business feasibility until recently, when the New Energy Foundation launched a portal site with METI as the single manager of all the data. The portal site provides the flux and current conditions of over 2,000 locations nationwide.

Next is offshore wind power. Although still in the demonstration phase, there are high hopes for offshore wind power development in Japan as it has great potential and superior capacity factor compared with land-based wind power, which makes it advantageous for a maritime nation like Japan. For onshore wind power, suitable locations have already been identified through the Ministry of Environment's potential map and NEDO's wind condition map, which are contributing to the operators. However, for offshore wind power, the lack of information on promising sites for development had been a problem, as with the case of small- and medium-sized hydropower. The selection of suitable sites for developing offshore wind power plants requires various data, as it requires not only an understanding of the wind conditions but also smooth coordination with other parties in fishery and navigation. Accordingly, NEDO recently released a map of offshore wind conditions in the nearby waters of Japan, the first such map to unify all the relevant information and data. The map contains, in addition to information on the natural environment such as offshore wind conditions, water depth, biological ecosystem and seabed geology, socio-environmental information such as port areas, sea routes, and historic sites.

Both databases provide a foundation for introducing the renewable energies, and their creation and publication are highly valued. Making it easier to evaluate business feasibility helps operators to introduce renewable energies. These databases are expected to be highly useful.



**Past IEEJ Events**

**Energy and Economy Indicators of Japan**

**IEEJ Homepage Top**

**Back Numbers of *IEEJ e-Newsletter***

**Back Numbers of *IEEJ Newsletter* (Original Japanese Version - Members Only)**



**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**

