



# IEEJ e-NEWSLETTER

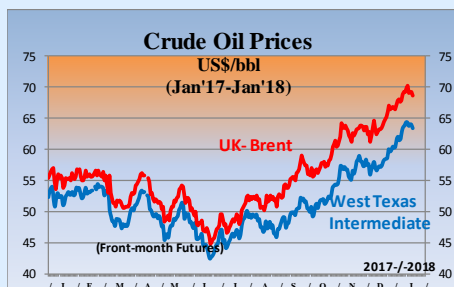
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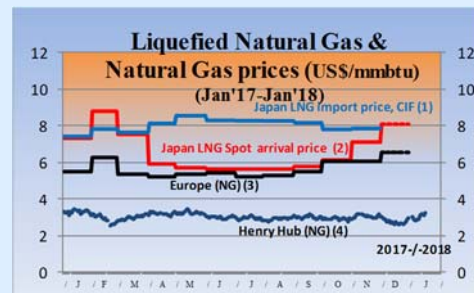
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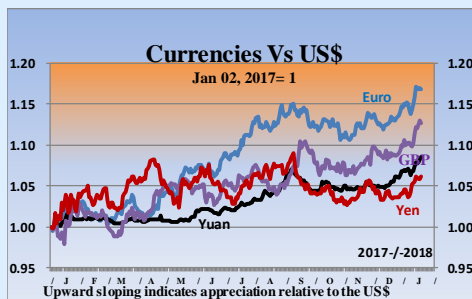


Source: DOE-EIA, Financial Times, NASDAQ

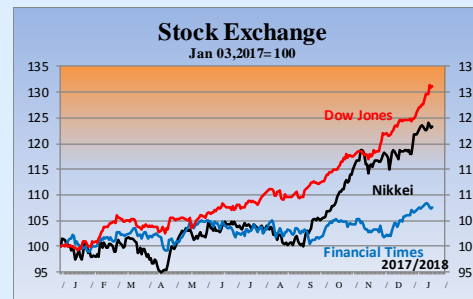


Sources:

- (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)
- (5) Investing.com



Source: x-rates.com



Source: Financial Times

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## Summary

### **【Special Feature II : Key Points for 2018】**

#### **1. Nuclear Power**

With no sign of acceleration in the restarting of nuclear plants in Japan, attention must be paid to the prospects for lifetime extension licenses. Japan must pay attention to the active domestic and international business strategies of China and Russia.

#### **2. Developments in the Coal Market**

In 2017, coal prices fluctuated wildly due to China's imports and supply disruptions in Australia, and remained high overall. China's spot purchases must continue to be monitored in 2018, but overall, supply is abundant.

#### **3. Renewable Energies**

In 2018, further adjustments and revisions of the FIT system will be required, including improving the bid system, responding to grid connection constraints, and the sustainability of biomass power.

#### **4. Energy Efficiency and Conservation**

In 2018, initiatives to encourage large investments in energy conservation, enhancement of policy measures in the transportation sector, and new initiatives will be considered.

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

Regarding international negotiations, it appears to be difficult to complete the work for implementing the Paris Agreement in time for COP24. The moves of various countries concerning the promotion and expansion of EVs must be monitored.

#### **6. APEC's Energy and Environmental Issues**

In 2018, the focal points in APEC's energy cooperation are likely to be energy access, doubling of the renewable energies ratio, and revision of the role of fossil fuels.



## 1. Nuclear Power

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

As of December 2017, 12 units have passed the safety assessments by the Nuclear Regulation Authority (NRA) (including three which gained licenses to extend their lifetime to 60 years), and 13 other existing units as well as Oma Nuclear Power Station (new build) are undergoing a safety assessment. In November 2017, the Japan Atomic Power Company applied to the NRA for a 20-year extension of the lifetime of Tokai Daini NPS. This is the first such application for a boiling water reactor in Japan, but in the US, many plants of the same model are licensed to operate for 60 years. Will the license be granted by November 28, 2018, 40 years since the plant started operation, setting a precedent in Japan? Meanwhile, on December 22, the Kansai Electric decided to decommission Ohi Units 1 and 2 which began operation in 1979. Whether other power companies will make similar decisions must be closely monitored.

To speed up the safety assessments and life extension and for restarting the plants, the transparency and consistency of assessments based on scientific accuracy will become more important than ever. Further, unless the irregularities and uncertainty of court decisions, such as ruling differently from the NRA's decisions or imposing specific conditions only on certain power companies, are resolved, the situation will remain stagnant for both the assessments and restarts.

In many US states with liberalized power systems, the slump in wholesale electricity prices is eroding the cost-competitiveness of existing nuclear power plants, causing premature closures. Recognizing the supply security risk, in September 2017, the Department of Energy instructed the Federal Energy Regulatory Commission (FERC) to support nuclear and coal power plants to maintain the resilience of the power grid. FERC, however, announced on January 8, 2018 that it terminated consideration of the DOE's September 29 proposal on grid reliability and resilience pricing, and will start a new proceeding to holistically examine the resilience of the bulk power system. FERC still places a priority on resilience. Attention must be paid to the impact of this initiative on the market competitiveness of nuclear power.

In the US, several states are considering helping nuclear power stations that are at risk of premature closure, such as New Jersey where a bill was accepted by the State Senate on December 20 which would enable power generators to receive additional credits from electricity tariffs based on the amount of nuclear power they generate as a zero emission power. Combined with the federal effort, state-level initiatives must also be monitored as they have a more direct impact on the power companies' activities.

The nuclear industry in China and Russia remains active, both inside and outside their countries. In 2017, new plant constructions and operations began in Pakistan, Iran, Bangladesh, and other countries with technological support from Russia and China. This trend is expected to continue in 2018, and China is scheduled to launch its first EPR at its Taishan Nuclear Power Station and its first AP-1000 at the Sanmen Nuclear Power Station. Japan has much to learn from the overseas strategies of these countries, which run their projects by carefully studying the host country's electricity and infrastructure situations and analyzing the prospects for recouping investments and executing the plans.



## 2. Developments in the Coal Market

**Atsuo Sagawa**, Senior Research Fellow, Manager  
Coal Group  
Fossil Fuels & Electric Power Industry Unit

In 2017, amid rising demand in Asia, coal prices fluctuated wildly due to natural disasters, strikes, and mining accidents in Australia, and remained high overall.

The spot price for steam coal (FOB, shipped from Port of Newcastle, Australia) dropped from \$110/tonne in November 2016 to \$72/tonne in May 2017, but climbed back to \$102/tonne in August in the summer demand season. The price remained in the upper \$90 range as strikes at Glencore, a major coal developer, continued, and reached \$100 in late December as the winter demand season began.

Meanwhile, the spot price for coking coal (FOB, Australian premium hard coking coal) plummeted from \$310/tonne in November 2016 to \$150/tonne in March 2017. The price soared to \$290 when a cyclone hit Queensland, Australia, causing extensive damage to railroads, returned to \$150 in June, but then jumped to \$210 in September when Australia's Appin coal mine suspended operations due to methane gas issue. It fell temporarily to \$180 in October, but began to rise again in late November due to poor production in Australia, surpassing \$230 in mid-December.

A year-on-year comparison of coal imports of major countries in 2017 shows that steam coal imports for January-October increased by 9.8 million tonnes in China, 17.7 million tonnes in South Korea where several new coal power plants have started operation since 2016, and 4.4 million tonnes in Japan, but decreased by 16.6 million tonnes in India (January-September) which has a policy of phasing out thermal coal imports for power generation. Imports continued to increase in the ASEAN area but decreased in Europe. Coking coal imports for January-October increased by 12.1 million tonnes in China, 2.8 million tonnes in India (January-September), and 0.8 million tonnes in South Korea, and decreased by 3.7 million tonnes in Japan.

Meanwhile, a year-on-year comparison of coal exports of major countries shows that Australia's exports increased by 0.6 million tonnes year-on-year for steam coal in January-June, but coking coal exports decreased by 12.4 million tonnes due to a cyclone at the end of March. Exports were strong in the US where coal prices remained high, increasing by 11.6 million tonnes for coking coal and 18 million tonnes for steam coal in January-October. Exports also increased in Columbia by 14 million tonnes (mainly steam coal), while remaining flat for Indonesia and South Africa.

In 2018, spot coal prices will continue to be strongly influenced by China, which buys much of its coal on the spot market. However, the supply of coal is generally in balance with demand, and the price of steam coal, which now exceeds \$100 due to temporary supply issues, is likely to fall toward early spring and thereafter remain at around \$70-90, though with seasonal fluctuations. Similarly, the price of coking coal, which now exceeds \$230, should fall as production normalizes in Australia, to around \$170, the lowest price level in 2017.

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### 3. Renewable Energies

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

2017 was the first year of the FIT system reform. Several measures were implemented to control the increasing burden of the surcharge, including introducing a bid system for mega solar PV and setting a multi-year schedule for lowering the purchase price of other renewable energies. Still, problems remain.

First, regarding the bidding system, the first feed-in-tariff bidding was held in Japan in November for solar PV capacities of 2 MW and more. However, there was no real competition as only 141 MW of capacity was offered for bidding against a total bidding amount of 500 MW, and all offered capacities were sold. The lowest successful bidding price was 17.2 yen/kWh but the highest was 21 yen/kWh, which is the upper price limit. The lack of competition was inevitable because the shortage of offered capacities was due to the "experimental" nature of the bid and insufficient preparation period for this first attempt. These issues will need to be resolved in the second bid in FY 2018.

However, some fundamental issues of the system were also revealed. The main issue is that the deposit to participate in the bidding will be confiscated unless a grid connection contract is signed for the purchased capacity within three months, and also that there is no spare space in the power grid for connections. Such uncertainty in grid connection is a risk for operators and deters them from participating in the bidding. In Japan, renewable generation equipment is connected to the grid, within the then-available capacity, on a first-come-first-served basis, and this is becoming a barrier. Consequently, the bid highlighted the need for "Connect & Manage," a mechanism introduced in Europe and the US in which a renewable energy operator is allowed to connect to the grid only if it accepts output restrictions when the grid is congested.

Second, regarding biomass power, its licensed capacity has soared to 14 GW as of September 2017 due to last-minute demand triggered by a fall in the purchase price for general wood and crop residue. This is an enormous leap from 4 GW in March 2016.

Many of these projects are yet to secure sources for fuel and funds, and some estimate that only around 20% of licensed projects that have not yet started, will actually do so. An increase in nonperforming projects also occurred with mega solar PV a few years ago, and measures such as license cancellation had to be taken. A government council is set to meet shortly to discuss countermeasures such as revising already decided purchase prices and introducing a bid system. Other issues have been pointed out for biomass power since last year, such as its high dependence on imports and uncertainty in continuing business after the purchase period ends. In addition to the actions recently implemented, further institutional revisions are required for biomass power.

In 2018, adjustment and revision of the FIT system will continue to be required, including improving the bid system, responding to grid connection constraints, and the sustainability of biomass power.



## 4. Energy Efficiency and Conservation

**Naoko Doi**, Senior Economist  
Manager, Energy Conservation Group  
Global Environment and Sustainable Development Unit

The Energy Mix sets a target of reducing energy consumption by 50.3 million kl of oil equivalent by FY2030. As of FY2015, the progress toward this target is estimated at 4.2 million kl (8.3%). Progress has been made in introducing technologies with a short investment recovery period such as LED equipment, but those requiring large investments and a long investment recovery period have not seen significant progress. Similarly, the transportation sector, in which the greatest cuts in energy consumption are expected by FY2030, needs to take further measures although energy efficiency is improving in various modes of transport and the use of next-generation vehicles is increasing.

Thus, in 2018, initiatives to encourage large investments in energy conservation, enhancement of policy measures in the transportation sector, and new initiatives will continue to be considered.

To encourage large investments in energy conservation, it is essential to (1) encourage the active involvement of top management in investment decisions, and (2) offer incentives to business operators. To encourage the involvement of top management, the government will consider newly stipulating in the government's "management standards," which is the basis for business operators in formulating energy conservation policies, that investment decisions must be made by top management based on site-level energy management. Further, to incentivize business operators and promote investment in energy conservation, discussions will be conducted on rewarding business operators in the classification system for businesses with an energy consumption of over 1,500 kL per year. With this new effort, those operators that have formulated or implemented medium- to long-term investment plans may be rated higher in the current four-tiered classification of annual energy conservation efforts of business operators (S, A, B, or C). Such institutional incentives, alongside cash handouts, interest subsidies and other financial aid, are expected to encourage large energy conservation investments by business operators.

In the transportation sector, concern is rising that issues in freight transport, such as the increase in home delivery parcels due to the booming e-commerce market and the re-delivery of parcels, may affect energy consumption and undermine energy conservation efforts. Freight transport by e-commerce operators is outside the scope of the current Energy Conservation Act, but anticipating further growth of this market, discussions will be held on a possible revision of the law to newly categorize and regulate e-commerce operators as "freight owners." The purpose of the study is for e-commerce operators as "freight owners" to report their annual energy consumption and formulate a medium- to long-term energy conservation plan for a 1% annual improvement in energy efficiency. Further efficiency improvements in freight transport are desired, as well as the prevention of re-deliveries of home delivery parcels by providing information to customers.

Attention must also be paid to the enhancement of energy supply-demand optimization through demonstration projects and private-sector businesses, which aim to improve energy efficiency and grid integration by connecting devices and technologies through IoT, AI and other digital technologies. At present, there is no method of measuring or calculating energy saving effects using data gathered through digital technologies. Studies in this area are required for verifying the effect of the subsidy system and promoting energy conservation businesses.



## 5. Update on Policies Related to Climate Change

**Takahiko Tagami**, Senior Coordinator, Manager  
Climate Change Policy Research Group  
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Regarding international negotiations, the rulebook for implementing the Paris Agreement is scheduled to be completed by the twenty-fourth session of the Conference of the Parties to the UNFCCC (COP24). However, with so many outstanding issues, including developing countries' insistence on a balance between finance/adaptation and mitigation (reduction) and between pre- and post-2020 actions, it appears difficult to complete the work in time for COP24 scheduled for 2018.

In the United States, the procedure for repealing the Obama administration's Clean Power Plan (a regulation to reduce emissions from existing power plants) has begun. The repeal, however, is not expected to have a significant impact on the emission situation in 2018, as several states are preparing to file lawsuits, and state-level policies on renewables and energy conservation will continue to be implemented. The US has submitted a communication to the UN to withdraw from the Paris Agreement, but has also stated that the country will continue to participate in international climate change negotiations and meetings to protect its interests and ensure that all future policy options remain open to the administration, and has participated in COP23. The impact of the US's withdrawal announcement on international climate change negotiations should be limited in the near term.

China's National Emissions Trading Scheme was scheduled to start in 2017 but an official announcement had been delayed due to doubts about the credibility of statistical data. On December 19, 2017, the emissions trading scheme for only the power sector was announced, without specifying a date. The shape of the scheme leading up to 2020 should be monitored. Further, the government has required automobile manufacturers to ensure that a certain percentage of their production are new energy vehicles (electric vehicles (EVs), fuel cell vehicles, plug-in hybrids, etc.), and has announced a credit trading system to maintain compliance. Attention must be paid to the future of China's strategy to develop its green low-carbon industry, such as EVs.

The EU's targets for 2030 appear difficult to meet, unlike those for 2020. Under such circumstances, in 2018, full-scale coordination is expected to start with the European Parliament and the Council over the revised Emissions Trading Scheme (ETS) Directive, Effort Sharing Regulation regarding non-ETS sectors, and revised Energy Efficiency Directive.

While the US and the EU are revising their car fuel economy standards, it is noteworthy that China and India have embarked on schemes and support measures for EVs. With France and the UK announcing plans to eventually prohibit the sale of internal combustion engine vehicles, the moves of various countries concerning the promotion and expansion of EVs and other advanced vehicles must be watched.

In Japan, government councils are discussing such topics as the challenges in achieving the FY2030 emissions reduction target, designing a non-fossil-value trading market to achieve the target non-fossil power ratio of at least 44%, the progress in achieving the thermal power efficiency indices under the Energy Conservation Act, the long-term strategy toward 2050, and the policy on carbon pricing (carbon tax, etc.). Developments in these discussions must be closely monitored.



## 6. APEC's Energy and Environmental Issues

**Kazutomo Irie**

General Manager

Asia Pacific Energy Research Centre

In 2018, energy access, doubling of the renewable energies ratio, and revision of the role of fossil fuels are likely to be focal points in APEC's energy cooperation.

At the Fifty-Fourth Meeting of APEC Energy Working Group (EWG54) held in Wellington, New Zealand from November 20 through 24, 2017, the current situation of APEC energy cooperation and its challenges for the future, particularly in 2018, were discussed.

First, "energy access" was adopted as a subject for policy dialogue toward 2018, and China was selected as the lead. Despite its efforts to establish nationwide electricity access, more than 2 million people in China are still without access to the power grid, and the country aims to solve this problem within around ten years. China was eager to share its experience with other developing economies, perhaps in the hope of creating business opportunities in connection to the "Belt and Road" initiative. Japan overcame the issue of non-electrified regions long ago, and may not play an active part in the policy dialogue. However, things should be different in the context of business.

Second, among APEC's two quantitative goals in the energy area, the goal of reducing energy intensity (energy consumption per unit GDP) by 45% by 2035 is now on the way to being met. However, there is still no plan for meeting the goal of doubling the ratio of renewable energies by 2030, although the members have agreed on the definition of renewable energies. The APEC Expert Group on New and Renewable Energy Technologies (EGNRET), which is responsible for setting the path to doubling the ratio, has been asked to consider using renewable energies not only in the power generation sector but also in the transportation fuel sector.

In this context, it is noteworthy that Japan, as the leader in the development of hydrogen vehicles, received high expectations as an importer of hydrogen at the Electric Vehicle & Hydrogen Technology Policy Workshop also held in New Zealand prior to the Energy Working Group Meeting, which discussed the technological feasibility of hydrogen production and export from biomass residue and other renewables. Views vary on whether electric vehicles (EVs) and hydrogen vehicles will compete with or complement each other as technologies to replace the internal combustion engine vehicles. The outcome of strategy of Japan's automobile industry which pursues the development of both EVs and hydrogen vehicles is likely to receive much attention in APEC.

Third, there have been moves to review the role of fossil fuels in APEC energy cooperation since 2016, but these are likely to accelerate with the Trump administration's policy of backing the coal industry. In APEC, dependency on fossil fuels is still high. The real value of APEC energy cooperation in this area will be put to the test in 2018; possible topics for such cooperation may include revitalizing oil and natural gas trade amid the shale revolution, as well as accelerating the transfer of clean coal technology and constructing an emergency supply scheme for oil and gas.





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