IEEJ e-NEWSLETTER

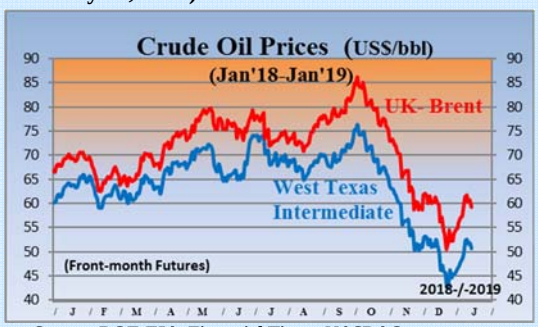
No. 151

(Based on Japanese No. 184)

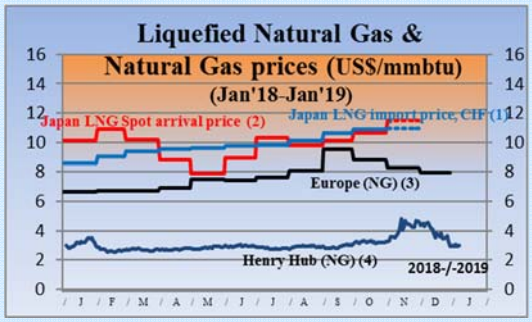
Published: January 15, 2019

The Institute of Energy Economics, Japan

(As of January 14, 2019)



Source: DOE-EIA, Financial Times, NASDAQ



Sources:
(1) Ministry of Finance "Japan Trade Statistics"
(2) Ministry of Economy, Trade and Industry (arrival month basis)
(3) Estimated by World Bank (Netherland Title Transfer Facility)
(4) DOE-EIA, NYMEX (Front-month Futures)
(5) Investing.com

Source: x-rates.com

Source: Financial Times

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I. Overall Energy Policy

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2019 is the first year of the new Strategic Energy Plan. The revision of this strategic plan triggered discussions within Japan, although it did not receive as much public attention as the previous revision. However, once the strategic plan was approved by the Cabinet, public attention evaporated as if a spell had been broken. Establishing the plan is only the first step; making a new year's resolution only to forget it after the first week does not get the job done.

Magnificent plans, plans full of ambition, and plans that convey a vision capture people's attention. However, executing such plans entails difficulties commensurate with their scale. Thus, the current waning interest might simply reflect human nature rather than the people of Japan today. A great German great mind left these words two centuries ago:

The heights charm us, but the steps do not;

with the mountain in our view we love to walk the plains.

Unfortunately, we cannot afford to bury our heads in the sand as 2020 is the deadline for submitting the long-term low greenhouse gas emission development strategy beyond the 2030 target under the Paris Agreement (the 2020 deadline was set by COP while the G7 Ise-Shima Summit requested that strategies be submitted "well ahead of the 2020 deadline"). This year's discussions will be crucial to make our long-term strategy an effective one, even though there were promising signs last year. Some predict that the long-term strategy will be submitted before the G20 summit scheduled for June 2019. 2020 is also the year for submitting the nationally-determined contributions (NDCs), which are updated every five years. Thus, this year is of crucial importance.

In those discussions, we must not talk only of dreams though the target years are far ahead. It is essential to use the multi-track scenario, whose importance was highlighted at last year's Round Table for Studying Energy Situations, together with the scientific review mechanism for the scenario, to engage in solid discussions, with a clear distinction between expectations and reality. A balanced perspective will be particularly important for ultra long-term targets and guidelines to ensure that they will be ambitious but not unrealistic.

A true ideal is born in the heart which faces reality.

As focusing on the problems ahead would spoil the festive mood of this new year edition, I would like to close with a quote that appropriately encourages us to engage in action this year.

Without haste, but without rest.

——Johann Wolfgang von Goethe

II. World Energy and the Environment

1. Oil

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The key issues for the international oil market in 2019 are Iranian oil exports after the temporary waiver of sanctions, the level of joint production cuts by OPEC Plus, the impact of the decelerating macroeconomy on oil demand, and the impact of the IMO regulations on oil prices.

The United States' announcement of the 180-day waiver for eight countries including Japan, China, and South Korea to stop purchases of Iranian oil in November 2018 accelerated the falling trend of oil prices toward the end of 2018. However, the extent to which Iranian oil exports will decrease from May when the temporary waiver of sanctions expires is a major uncertainty affecting the supply and demand of oil and its prices. With the United States rejecting any extension of the waiver, Iranian oil exports may fall to around 0.7 mb/d in late 2019 (from the current 1.1 mb/d). This will hit Iran's economy and the country may enter into talks with the US to break the impasse. A significant drop in Iranian exports will also result in a tighter market balance and higher price volatility.

At the OPEC meeting and the ministerial meeting with non-OPEC countries held on December 6 and 7, 2018, OPEC Plus decided to jointly cut 1.2 mb/d from October 2018 levels for six months from January 2019. The level of reduction of each country has not been announced but Saudi Arabia and Russia will undoubtedly be the key contributors. Oil producer countries are hoping that this decision will prevent oil prices from falling further. However, it is not clear whether good compliance can be maintained and it is widely considered that the level of reduction is insufficient considering the production increase by the US.

On the demand side, the growth in oil demand may be affected by rising concerns over a macroeconomic slowdown. In its monthly Oil Market Report released on December 13, the International Energy Agency predicted that oil demand would rise steadily to 100.6 mb/d in 2019, up 1.4 mb/d (1.4%) from 2018. However, stock prices are falling in many countries mainly due to the escalating US-China trade war, the vulnerability of emerging economies, and geopolitical and macroeconomic risks. Needless to say, any turmoil in the financial market crash would inevitably affect oil prices.

Under such market environment, oil prices (Brent) are estimated at around $65 in the first half and $70 in the second half of 2019. Under the low price scenario in which the supply-demand balance eases, prices are estimated at around $60.

The International Maritime Organization will strengthen its regulations on sulfur content for marine fuel oil effective from January 2020. This regulatory tightening is a major issue for shipping companies and refineries. Most of the high-sulfur fuel oil for ships will be replaced with low-sulfur fuel oil, mainly comprising of gas oil, in 2020, and so the price of high-sulfur fuel oil is expected to drop and that of gas oil to rise from the end of 2019. However, many uncertainties remain, including how the port authorities of various countries will implement the regulations effectively, how much cheating will happen, what quality standard for low-sulfur fuel oil will be like, what price levels will be, and which countries and demand departments will absorb the high-sulfur fuel oil which ships will be unable to use. Further, increased demand for gas oil may widen the gap between heavy and light crude oils as well.

2. Natural Gas (LNG)

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The LNG industry's attention in the year 2019 is focused on how many large-scale LNG production projects will reach an investment decision to meet market requirement around the middle of the 2020's. A brownfield project on the Gulf Coast of the United States and a greenfield one each on Canada's West Coast and in West Africa received an FID (final investment decision) in 2018. Other projects also made progresses including long-term offtake comittments and engineering works. In addition to those projects expecting immenent investment decisions, there have been additional project proposals, leading to potential long-term expansion of the LNG market, subject to successful market development and investment environment.

In 2018, higher crude oil prices until the third quarter of the year than the preceding four years boosted available cash in the pockets of project developping companies, which has supported the positive trend on new investment. However, as the prospect of crude oil prices is still uncertain, economics of each project can be altered dramatically by crude oil price developments. Therefore, securing future gas demand remains the key to LNG production project development, requiring fine-tuned views on future market growth, especially in emerging markets in Southeast and South Asia. In this respect Japanese companies may have a significant role to play in both production and market developments, as they have contributed to the expansion of the LNG industry for many years.

As the second LNG export project in the Lower 48 of the United States started production in 2018, LNG exports from the country to Japan are moving into high gear. Although relatively high crude oil prices would give LNG from the United States competitive advantages in the Asian market, it could lose those advantages when crude oil prices go down and natural gas prices in the United States go up. Flexibility and resiliency of LNG from the United States will be tested, starting in 2019.

Both term-contract and spot prices of LNG stayed in higher ranges than in recent years throughout 2018. As a large portion of term-contract LNG prices is still pegged to crude oil prices with three-month time lags, those LNG prices continued being influenced by crude oil prices. Although crude oil prices tumbled after October 2018, term-contract LNG prices will not start going down until the early new year due to the time lags. Spot LNG prices were traded at the highest level in the past four years until the third quarter of the year, before they slided down after November. Reflecting increasing LNG supply, term-contract LNG prices are expected to be relatively stable in the range of USD 10 - 11.5 per million Btu and spot LNG prices are expected to be in the slightly lower USD 8 - 10 range in 2019.

Taking advantage of new market trends of easing destination restrictions, both LNG buyers and sellers are expected to pursue cross-regional partnership, joint LNG procurement, and optimasation of respective market positions to enhance flexibility in the LNG market. The market is expected to see more short- and mid-term LNG sale contracts and spot LNG transactions, including resale arrangemtns from firsthand LNG sales. Simple distinction between buyers and sellers is expected to be less relevant as players expand thier respective sale and purchase portfolios.

3. Renewable Energies

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This report projects the situation of renewable energies and hydrogen in 2019. First, the percentage of renewable energies in global electricity generation reached 25% in 2017 although most of it is still hydropower (16%). Wind power still accounts for only 4% and solar PV for 1% but are both expected to continue to grow this year, mainly in China and other emerging countries.

Regarding the expansion of the renewable energy market, its center has been shifting from Europe and other developed countries to emerging countries since several years ago. According to the IEEJ's analysis, the installed capacity of wind power and solar PV combined is expected to grow from 2017 to 2019, from 130 GW to 180 GW in the United States, from 280 GW to 320 GW in Europe, and from 270 GW to a significant 400 GW in China. Wind power and solar PV will grow at a similar pace in China and the US but the growth of solar PV in Europe will ease while that of offshore wind power will accelerate.

Renewables are expected to increase from 48 GW to 58 GW in Japan, but the many institutional measures must be noted. These include the final resolution of the non-operating FIT projects issue, development of the "post-FIT" business for residential solar PV, the full-scale launch of the FIT bid system with the end of the one-year pilot period, accelerating offshore wind power development with the entry into force of the new offshore power law on November 30 (Bill for the Act of Promoting the Utilization of Sea Areas in the Development of Power Generation Facilities Using Maritime Renewable Energy Resources), and the concrete system design for "Japanese Connect & Manage" to resolve transmission capacity limits. Further, a demonstration test is under way for a Virtual Power Plant (VPP), which utilizes battery cells and other energy storage methods as its core technology. 2019 will test whether these efforts will effectively help renewable energy become a financially-independent major power source.

Regarding hydrogen, Japan took the initiative to hold the world's first hydrogen ministerial meeting in Tokyo last October and the Tokyo Statement was released. The meeting described the "hydrogen society" as a "clean, more prosperous and secure energy future worldwide supported by using hydrogen in society where appropriate, across the energy, transportation, and industry sectors" and confirmed the importance of international cooperation to achieve it. The importance of hydrogen for energy transformation and decarbonization is also to be discussed at the G20 meetings in June in Japan. With the World Hydrogen Technologies Convention 2019 also scheduled to be held in the same month just a year before the Tokyo Olympics, which aims to make hydrogen one of its legacies, hydrogen energy will remain a center of attention in moves in Japan. Outside of Japan, attention must be focused on Norway, which plans to produce hydrogen by combining natural gas reforming with CCS and bring it to continental Europe, Germany, which continues to promote the production and use of hydrogen from excess domestic renewable electricity (Power to Gas), and Australia, which recognizes hydrogen as a resource that matches natural gas and coal in importance and is speeding up demonstration tests to produce CO_2-free hydrogen from both renewables and fossil fuels using CCS, aiming to both export the energy and use it domestically.

Both renewable energy and hydrogen will take time to become major energy sources. However, they are expected to be increasingly used in order to decarbonize the energy system in the future, and so warrant close attention.

4. APEC's Energy and Environmental Issues

Kazutomo Irie
Managing Director,
President of the Asia Pacific Energy Research Centre

In 2019, a further reduction of energy intensity (promotion of energy conservation), a doubling of the renewable energy share, and a review of the use of fossil fuels (particularly coal) are likely to be the major topics in APEC's energy cooperation.

First, among APEC's two quantitative aspirational goals for energy, there are now prospects for meeting the energy conservation goal to reduce the energy intensity by 45% from 2005 levels by 2035. The energy intensity goal was first established in 2007 aiming for a reduction of 25% by 2030, and this was revised in 2011 to the current one. A proposal to raise the goal even higher is highly likely now that the present one seems achievable. In this case, how to achieve further energy conservation in the transportation sector, which is expected to become the largest energy consuming sector, will require intensive consideration.

Meanwhile, there are currently no prospects for achieving the other goal of doubling the share of renewable energy by 2030. The share rose smoothly from the baseline year of 2010 to 2016. However, the current initiatives are inadequate for achieving a doubling of the share as more plant investment is required in the power generation sector and the effects of the current initiatives are leveling off, as shown by the sluggish increase in the ratio of biofuels in the transport sector and the low usage of solar thermal energy in the residential/commercial sector. Discussions continue in the Expert Group on New and Renewable Energy Technologies, which is responsible for charting the path to double the share, for using renewable energy not only for power generation but also transportation fuel and other uses. The goal might be unrealistic if the governments of APEC member states do not take bold initiatives.

Further, even if more renewable energy is introduced, relatively inexpensive fossil fuels will continue to account for most of the energy supply in the APEC region and their stable supply is still a significant challenge. Natural gas trade is increasing within the region with the export of American shale gas-derived LNG now fully underway and LNG projects from large gas fields being developed in Australia.

Meanwhile, the continued use of coal is facing headwinds particularly in Europe due to its high greenhouse gas emissions. However, in the APEC region, many countries and regions (called 'economies' in APEC) partly depend on coal-fired thermal power for their inexpensive and stable supply of electricity. If these economies are to continue to use coal-fired power, they need to consider how to invest in building new more efficient and cleaner coal-fired power plants and upgrading existing plants. APEC participants include Japan, which has the world's leading clean coal technologies, alongside the world's major coal exporters including Indonesia, Australia, the United States, Russia, and Canada. How to use fossil fuels, particularly coal, is likely to become a focus in APEC's energy cooperation in 2019.

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