IEEJ e-NEWSLETTER

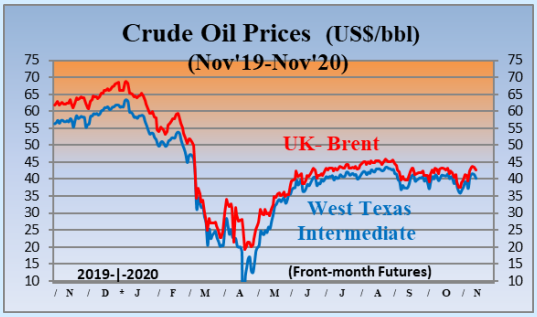
No. 196

(Based on Japanese No. 206)

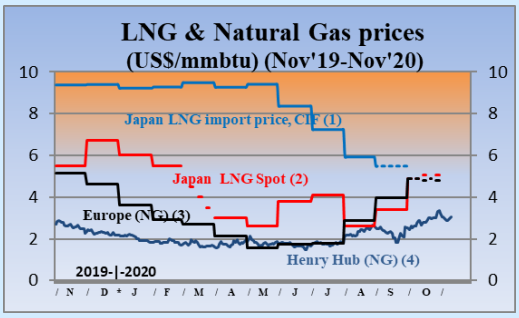
Published: November 16, 2020

The Institute of Energy Economics, Japan

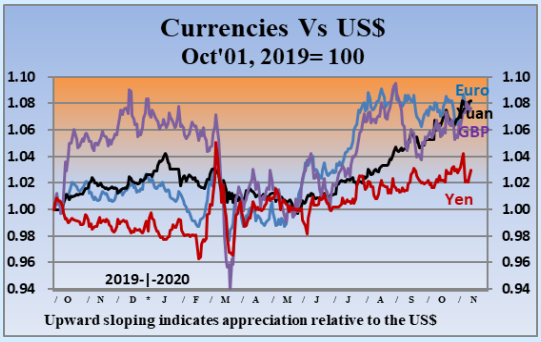
(As of November 13, 2020)



Sources:
(1) DOE-EIA
(2) Investing.com



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)



Source: x-rates.com

Sources:
(1) Finance. Yahoo.com
(2) Investing.com

Contents

Summary

【Energy Market and Policy Trends】

1. Key Points of IEEJ Outlook 2021

The IEEJ Outlook 2021 forecasted the global supply and demand for energy through 2050 and analyzed the issues in transforming the global energy system from three perspectives: the spread of Covid-19, the circular carbon economy, and minimizing the total cost of climate action.

2. Energy Policies

On October 13, the 32nd Strategic Policy Committee was convened, commencing discussions on formulating the Sixth Strategic Energy Plan. The discussion points are the pathway to carbon-neutrality in the second half of this century and verifying the 2030 energy mix.

3. Recent Developments in the LNG and Oil Markets

In the US, more refiners are converted to bio refineries. Advanced and more progressive decarbonization measures were presented at the LNG Producer-Consumer Conference. The International Conference on Carbon Recycling 2020 discussed the issues involved in implementing carbon recycling in society.

4. Update on Policies Related to Climate Change

The EU announced a methane strategy to reduce methane emission with the possibility of regulating natural gas imports. In China, research organizations presented a scenario for achieving net-zero CO_2 emissions by 2050.

5. Update on Renewable Energies

A special event of the Hydrogen Energy Ministerial Meeting was held online. There are now 12 countries and regions formulating their own hydrogen strategies and road maps; hydrogen use is gaining momentum globally.

1. Key Points of IEEJ Outlook 2021

Shigeru Suehiro, Senior Economist, Manager
Econometric and Statistical Analysis Group
Energy Data and Modelling Center

The IEEJ Outlook 2021 forecasted the global supply and demand for energy through 2050 based on a reference scenario and analyzed the issues in transforming the global energy system from three perspectives: the spread of Covid-19, the circular carbon economy, and minimizing the total cost of climate action.

The Covid-19 pandemic may reshape society

Under the post-Covid world transformation scenario which assumes that the changes in politics, the economy, and society caused by Covid-19 will remain and only grow stronger, the world will shift from pursuing economic efficiency to an awareness of security. Improving the energy self-sufficiency rate and diversifying energy sources will be the focus, introduction of nuclear and renewable capacities will accelerate, and the use of hydrogen energy will begin. Electrification will make significant progress as the digital transformation enables more economic activities to be conducted remotely. Meanwhile, transportation demand will fall, causing oil demand to peak by around 2040. Furthermore, efforts to strengthen energy security and decarbonize will trigger a race to develop innovative technologies, thus spurring the use of CO_2-free hydrogen. CO_2 emissions will peak by around 2040 and then start to decline.

Energy policies and strategies will need to be formulated factoring in the ever-present possibility of drastic changes to enable flexible and proactive responses to such changes.

Simultaneously reducing emissions and securing a stable energy supply through the use of decarbonized fossil fuel

The international community is becoming more aware of the circular carbon economy, in which the CO_2 generated when using fossil fuel is reduced through the four "R technologies," namely, reduce, reuse, recycle, and remove. By fully introducing the four R technologies that are closest to becoming commercially available, CO_2 emissions can be reduced by around 5 billion tonnes assuming that global fossil energy consumption remains generally unchanged between now and 2050. In particular, the combination of fossil fuel-sourced blue hydrogen and CCS (Carbon Capture and Storage) will play a major role.

To achieve ambitious emissions reduction targets, it is essential to take a comprehensive approach and leverage all available options to the maximum. It is clearly worth cutting the cost of fossil fuel decarbonizing technologies further and actively developing and implementing those technologies.

A practical approach and long-term perspective for resolving climate issues

The key idea in addressing the long-term challenge of climate change is economic optimization, that is, minimizing the total cost of mitigation, adaptation, and damage. However, the total cost minimization approach entails various uncertainties. There is particular concern about the earth becoming permanently hotter due to irreversible changes to the earth's system called tipping elements, such as rapid acceleration of the mechanism that is causing the West Antarctic Ice Sheet to collapse. The analysis in IEEJ Outlook 2021 indicated that the total cost minimization approach remains valid even when considering the impact of tipping elements.

Taking tipping elements into consideration will reinforce the importance of decarbonization technologies in the future. To address climate issues, it will be increasingly important to execute policies that back the steady development and commercial implementation of technologies with a long-term perspective.

2. Energy Policies

Seiya Endo, Economist
Econometric and Statistical Analysis Group
Energy Data and Modelling Center

On October 13, the 32nd Strategic Policy Committee of METI's Advisory Committee for Natural Resources and Energy was convened for discussions on formulating the Sixth Strategic Energy Plan.

In the discussions, two notable points were indicated regarding the future direction: (1) Japan will aim to go carbon-neutral in the second half of this century, and (2) the necessary measures will be verified without assuming the 2030 energy mix is fixed. At the start of the meeting, METI Minister Kajiyama indicated the Suga administration's policy to achieve a carbon-neutral society and a stable supply of energy, calling for discussions on long-term measures for simultaneously achieving these targets. He also stated that the measures for 2030 are open to change, hinting that the 2030 plan should be discussed based on a long-term vision. This compares with the words of former METI Minister Seko who said that Japan is not at a stage where the framework of the Fifth Strategic Energy Plan should be changed, and maintained the 2030 numerical targets.

In response to this policy, Committee members posed questions to reconfirm the 2030 vision. The opinions included raising the share of renewable energy, which is actively being increased, revising downward the share of nuclear energy which is struggling to restart, and reviewing the estimated demand in line with changes in society. Some commented it is necessary to clarify whether the Energy Mix, as a framework for policy discussion, is an outlook or a target, and to determine whether the Energy Mix should be revised based on changing circumstances.

Regarding the long-term discussions looking beyond 2050, many members pointed to the importance of boosting Japan's international competitiveness in various decarbonization technologies from the perspective of industrial policy. Considering that the EU has set the green recovery plan as a "national" strategy and is designing a system that will boost its industry, various technologies including wind power, nuclear, hydrogen energy, batteries, and digital technologies were presented as promising areas. The Committee is expected to determine where Japan stands in the stages up to the completion of each advanced or innovative technology.

IEEJ Chairman and CEO Masakazu Toyoda commented as follows:

- Countries other than Japan are formulating climate actions with a view to strengthening their international industrial competitiveness. Japan should foster wind power as well as nuclear power, in which Japan is largely self-sufficient in terms of technologies, in addition to accelerating the development of technologies to decarbonize fossil fuels such as hydrogen energy and ammonia, an area in which Japan is leading.
- There is growing concern over energy security as the Middle East destabilizes and supply chains are disrupted. Japan should recognize once again the value of nuclear power, a semi-domestic energy source. Further, with energy investment currently low, assistance is needed to secure investment. It is also important to respond to geopolitics, including resource diplomacy in the Middle East and building joint Asia-wide stockpiles.
- Maximum effort is needed to reduce energy prices in order to maintain and improve Japan's international competitiveness. It is also necessary to reduce renewable energy costs while promoting nuclear power and technologies for decarbonizing fossil fuels.

Shortly after the Committee meeting, the government announced that it would aim to achieve net carbon-neutrality by 2050. As mentioned by Chair Shiraishi at the meeting, the Committee will discuss a long-term period of up to 2050. The results of the discussion will serve as the base for discussing the 2030 vision.

3. Recent Developments in the LNG and Oil Markets

Yoshikazu Kobayashi, Senior Economist
Planning & Administration Unit

International oil prices remain stable with WTI around $40/bbl and Brent in the lower $40/bbl range. Regarding the global oil supply and demand balance, demand exceeded supply in the third quarter as oil demand has been increasing since May, albeit slowly, and as OPEC Plus continues to cut production. However, the oil market is expected to remain under downward price pressure since demand is still extremely uncertain with Europe and other areas being hit hard by the second wave of Covid-19 and with the decrease in US shale oil production starting to level off.

As oil demand remains sluggish due to Covid-19, refineries are being rationalized in the downstream sector of the US oil industry. On October 1, major US oil refiner Marathon announced plans to convert its Martinez refinery (processing capacity of 161,000 b/d) in California into a renewable-sourced fuel production plant. The company plans to produce 48,000 b/d in 2023. Another major refiner, Phillips 66, also revealed plans on August 12 to convert its San Francisco refinery (processing capacity of 120,000 b/d) into a renewable-sourced fuel production plant (production capacity: 52,000 b/d). In California, on September 23, Governor Gavin Newsom announced plans to allow only zero-emission vehicles such as EVs, fuel cell vehicles, and plug-in hybrids to be sold in the state from 2035, adding to the severe pressure on the downstream oil business. There are currently 15 refineries (total processing capacity: 1.91 mb/d) in the state, but yet more refineries may switch to other businesses going forward.

In October, many international conferences on the future of fossil fuels were held. On October 12, the eighth LNG Producer-Consumer Conference was held online to discuss two topics, the pricing system and the decarbonization of LNG. In the session on pricing, the panelists agreed on the importance of having a single common price benchmark that reflects the supply and demand for LNG. However, multiple candidate benchmarks currently exist, and some panelists pointed out problems in the transparency of their pricing method and issues in using them as a reference price for long-term contracts and making investment decisions. In the session on decarbonization, recent efforts such as carbon-neutral LNG that uses CO_2 credits and the utilization of CCS were presented. One panelist pointed out that synergies can be expected between the LNG supply business and the clean ammonia and hydrogen supply businesses. While discussions in this area so far have mostly assumed gas-fired thermal power as a backup electricity supply for variable and intermittent renewable power generation, many forward-looking opinions were heard in this session about the new role of LNG in decarbonization.

On the following day, October 13, the second International Conference on Carbon Recycling 2020 was convened. Since the first meeting last year, awareness of the significance of carbon recycling, in which CO_2 is reused and recycled as a resource, has been rising gradually internationally. In the conference, participants pointed out the need for policy measures to spur the implementation of carbon recycling technologies in society, such as first visualizing the progress of development of individual technologies such as CO_2-absorbing concrete and synthetic methane through industry-academia-government collaboration, and then providing incentives and regulations to accelerate investment by the private sector.

4. Update on Policies Related to Climate Change

Takahiko Tagami, Senior Coordinator, Manager
Climate Change Group
Climate Change and Energy Efficiency Unit

The European Commission is set to propose the EU's carbon border adjustment mechanism by June 2021. On October 13, Diederik Samsom, head of the team of Frans Timmermans, European Commission Executive Vice-President for the European Green Deal, stated at an online event that the mechanism will be applied initially to the steel, cement, and electricity sectors. Earlier, on September 30, the European Roundtable on Climate Change and Sustainable Transition, a research institute, compiled a report based on communications with the Commission and stakeholders, in which they announced that the most probable scenario for implementing the mechanism is to extend EU ETS to import products, rather than imposing a carbon tax or customs duty. In this case, companies exporting target products to Europe will be required to purchase emission allowances. Developments in the debate over the mechanism must be watched going forward.

Regarding natural gas imports, on October 14, an EU strategy to reduce methane emissions was released. In the course of discussions on the methane strategy, there was a call for setting a methane standards in the upstream sector and regulating the import of natural gas that does not meet the standards. However, the released methane strategy only incentivized a compulsory measurement, reporting, and verification (MRV) framework for all energy-related methane emissions. It must be noted, however, that in the absence of significant commitments from international partners on methane emissions reductions, the Commission will consider proposing legislation on targets, standards or other incentives to reduce methane emissions from fossil energy consumed and imported in the EU. There have been reports in the media that the French government is delaying the signing of a contract between Engie and a US LNG company because of the high methane emission intensity of US shale gas.

On October 12, regarding China's 2060 carbon-neutrality target, a project to study "China's low-carbon development strategy and transition pathway," involving Tsinghua University, the Energy Research Institute and others, held a meeting to present the accomplishments so far. In the meeting, a scenario for achieving net-zero CO_2 emissions by 2050 was presented. Professor He Jiankun of Tsinghua University stated that CO_2 emissions will peak before 2030 and progress will accelerate thereafter, heading toward the emissions reduction pathway for achieving the 1.5℃ target. By 2050, non-fossil energy will account for more than 85% of primary energy consumption (the percentages for renewables and nuclear are not indicated) with coal at 5% or less. The remaining 1.72 billion tonnes of CO_2 will be offset through removals by forests and CCS. Further, the project proposed a 19-20% reduction in CO_2 intensity per unit GDP and capping total energy-related CO_2 emissions at 10.5 billion tonnes as indicators for the Fourteenth 5-year Plan.

In Japan, Prime Minister Suga announced a goal to achieve net-zero GHG emissions by 2050 in his first policy speech on October 26. Japan's goal thus far was to cut GHG emissions by 80% by 2050 and to achieve a decarbonized society at the earliest possible time in the latter half of this century. By setting this goal, Japan is emphasizing its efforts to the international community with the Environment Innovation Strategy in mind, which aims to establish innovative technologies for cutting global CO_2 emissions to net zero or lower, formulated in January. The next steps will include considering industrial policies and measures to boost industrial competitiveness toward a decarbonized society.

5. Update on Renewable Energies

Yoshiaki Shibata, Senior Economist, Manager
New and Renewable Energy Group
Electric Power Industry & New and Renewable Energy Unit

On October 14, the third Hydrogen Ministerial Meeting was convened. To be precise, it was held as an Online Special Event of the Hydrogen Energy Ministerial Meeting amid the continuing Covid-19 pandemic, and as part of the Tokyo "Beyond-Zero" Week alongside five other meetings, namely ICFF 2020, RD20, TCFD Summit 2020, the Ninth LNG Producer-Consumer Conference, and the International Industry-Academia-Government Conference on Carbon Recycling 2020. In the meeting, ministers and representatives from 23 countries, regions, and international organizations including Japan delivered messages on the importance of hydrogen energy for decarbonization, and 25 private companies reported their latest efforts regarding hydrogen.

At the same time, a progress report on the status of efforts of each country on the Global Action Agenda published at the Second Hydrogen Ministerial in 2019 was released. The Global Action Agenda sets six action guidelines for building a hydrogen-based society, namely the formulation of a hydrogen strategy, etc., the use of fuel cells in the mobility sector, building an international hydrogen supply chain, sector integration, investigation and analysis by international organizations and others, and communication, education, and awareness raising. Progress was reported on a demonstration project on international hydrogen supply chains and sector integration using renewable hydrogen and on the spread of fuel cell vehicles and forklifts. The most notable fact was that more and more countries have drawn up hydrogen strategies in the past two years. In addition to Japan, China, South Korea, France and others who have made a head start, 12 more countries and regions including Australia, Germany, Norway, Spain, Portugal, and the EU have now released hydrogen strategies or hydrogen roadmaps, with four more countries considering following suit, and the trend is expected to expand.

Furthermore, at this event, the IEA declared they will publish a Global Hydrogen Review every year to summarize the hydrogen energy-related efforts worldwide and strengthen ties with the Japanese government heading toward the Hydrogen Ministerial meeting next year.

Both the supply potential and demand potential of hydrogen vary by country, and so does the purpose of using hydrogen. For instance, Japan is the only country to use the expression "hydrogen economy," which implies a society in which hydrogen accounts for most of the energy supply. In contrast, most other countries consider hydrogen as one of the many options for reducing carbon emissions or decarbonizing. Needless to say, however, one of the most important roles of hydrogen is to contribute to the global effort to reduce carbon emissions and decarbonize. As efforts on decarbonization accelerate, the momentum of hydrogen use is building each year in the international community.

Another important role of hydrogen is enhancing energy security, yet the key phrase "energy security" was hardly mentioned at the event. Hydrogen can be produced using a wide variety of resources and technologies found around the world, allowing countries to build various types of international and domestic supply chains. Other advantages of hydrogen include a stable supply secured by diverse sources of import and ramping up energy resilience through the consumption of energy produced within the country. It is important to discuss hydrogen energy also from these perspectives, and not only for carbon emissions reduction and decarbonization.

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, Managing Director**
***IEEJ j-Newsletter* Editor: Ken Koyama, Senior Managing Director**
The Institute of Energy Economics, Japan (IEEJ)
Inui Bldg. Kachidoki, 13-1 Kachidoki 1-chome, Chuo-ku, Tokyo 104-0054, Japan
Tel: +81-3-5547-0211 Fax: +81-3-5547-0223