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Contributing Editors: **Michael Burns & Julia Derrick**

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CONTENTS

Japan

Sadayuki Matsudaira
Nishimura & Asahi

Overview of the current energy mix, and the place in the market of different energy sources

After the Fukushima Accident in 2011, nuclear power plants in Japan became subject to a strict review process by the Nuclear Regulatory Authority, which was established in 2012, and only a limited number of nuclear power plants have restarted operation. Since then, construction of new nuclear power plants has become a challenging prospect. Due to this, the ratio of coal and gas power plants has significantly increased, and as of 2019, the allocation of electricity generation resources is as follows: natural gas 37%; coal 32%; oil 7%; nuclear 6%; and renewables 18%.

To promote renewable energy, Japan introduced the Feed-in Tariff (FIT) system in 2012. Under this system, certain renewable power generation facilities certified by the Ministry of Economy, Trade and Industry (METI) are entitled to receive a certain fixed rate per kWh for a set period. The rate and period are determined based on the type of renewable energy and generation capacity of the plant. Since then, renewable power projects, including solar, wind, and biomass power projects, have developed significantly. Under the FIT system, projects generating approximately 56GW of solar energy, 2GW of wind energy, and 2.7GW of biomass energy have been developed from the period of the introduction of the FIT system in 2012 to March 2021.

The nationally determined contribution (NDC) by Japan under the Paris Agreement is intended to decrease carbon emissions by 26% by 2030, in comparison to the levels in 2013. In addition, in October 2020, former Prime Minister Yoshihide Suga announced the goal of achieving net-zero carbon emissions in Japan by 2050. In April 2021, the Japanese government also announced the ambitious target of decreasing carbon emissions by 46% by 2030 in comparison to the levels in 2013.

The Japanese government enacted the Sixth Fundamental Energy Plan in October 2021. The plan sets the following percentages for electricity generation resources in 2030: renewables 36% to 38%; hydrogen and ammonia 1%; nuclear 20% to 22%; natural gas 20%; coal 19%; and oil 2%.

With regard to the electricity market, until March 2016, the retail supply of electricity to small consumers (such as households (less than 50kW)) was strictly regulated, and only a general electricity utility in each supply area (there are 10 supply areas in Japan, and there were 10 general electricity utilities, each of which was responsible for the supply in each area) supplied electricity to such consumers. In April 2016, the market was liberalised, and any electricity retailers who registered with METI were permitted to supply electricity to small consumers. As of October 2021, over 800 companies have registered with METI and entered the electricity retail market.

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Many electricity retailers procure electricity from a wholesale electricity market called JEPX (Japan Electric Power Exchange). However, since procuring electricity (particularly base load electricity) through JEPX at a competitive price is currently not feasible for new electricity retailers, the Japanese government introduced the base load electricity market. Under this system, a power generation division or affiliate of any of the former general electricity utilities is required to supply a certain amount of base load electricity to new electricity retailers at a price equal to that at which such retail division or affiliate procured it.

Any entity can engage in power generation so long as such entity submits a notification to METI when its generation capacity exceeds a certain threshold (10MW) and satisfies certain other relevant requirements. In order to maintain sufficient generation capacity even after the deregulation, the Japanese government introduced capacity market auctions. Power generators that win a capacity market auction are entitled to receive a certain price determined through the auction process as consideration for its provision of power generation capacity and electricity when necessary.

In order for non-fossil fuel electricity produced by both FIT and non-FIT projects to be fairly evaluated and monetised, the government also introduced a market for the trade of non-fossil fuel electricity. The development of this market has been handled by the government as detailed below.

With respect to the gas market, like the electricity market, until March 2017, the retail supply of gas to small consumers (such as households) was strictly regulated, and only a general gas utility in each supply area was permitted to supply gas to such small consumers. In April 2017, the market was liberalised, and any gas retailers that registered with METI were permitted to supply gas to such small consumers. As of October 2021, over 80 companies have registered with METI and entered the retail gas market.

Unlike the electricity business, which has JEPX, there is no wholesale market for the gas business, and the former general gas utilities are required to supply wholesale gas to new gas retailers on reasonable conditions under the guidelines provided by METI. Under the Gas Business Act, operators of LNG terminals are required to provide LNG terminal services to third parties on reasonable conditions as long as there is surplus capacity available to respond to such third parties' requests (third-party access).

Electricity and gas network business (i.e., transmission and distribution of electricity and gas pipelines) is regulated and operated entirely by general transmission utilities for electricity and gas pipeline utilities. These utilities are required to provide wheeling services to all retailers on equal conditions. If certain conditions (such as obtaining a certain licence from METI) are met, an entity other than general transmission utilities may engage in electricity transmission and/or distribution business in a certain designated area.

Changes in the energy situation in the last 12 months which are likely to have an impact on future direction or policy

As mentioned above, in October 2020, the former Prime Minister Suga announced the goal of achieving net carbon neutrality in Japan by 2050. Since then, discussions on achieving this target have been ongoing. In April 2021, the Japanese government also announced its intention to decrease carbon emissions by 46% by 2030 in comparison to the levels in 2013. In the Sixth Fundamental Energy Plan enacted by the Cabinet in October 2021, the Japanese government emphasised the necessity of developing renewable energy, hydrogen and ammonia power, nuclear power, CCUS (Carbon dioxide Capture, Utilisation and Storage), and energy-saving measures.

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From December 2020 to January 2021, the wholesale price of electricity (in the JEPX spot market) spiked to over JPY 200 per kWh, and electricity retail companies (especially those that largely rely on the wholesale market to procure electricity) suffered as a result. The reasons for this spike include the scarcity of LNG supply in the winter. In response to the spike, regulators discussed the introduction of new guidelines which would require natural gas power generators to disclose more information on the scarcity of LNG, etc.

The first electricity capacity market auction (for the electricity supply in 2024) was conducted in 2020. This was a single price auction, and the successful auction price in the 2020 auction was equal to the cap amount designated by the OCCTO (Organization for Cross-regional Coordination of Transmission Operators, a public organisation in Japan which is responsible for the sound operation of electricity transmission systems across Japan, and which holds electricity capacity market auctions). However, electricity retailers complained about having to bear the cost of compensating for such high price payments to the auction winners. Accordingly, the government and the OCCTO have discussed measures to reduce the auction price in the 2021 auction.

Since the enactment of the Act on Promoting the Utilization of Sea Areas for the Development of Marine Renewable Energy Power Generation Facilities in 2018, the Japanese government has taken steps to develop offshore wind projects in Japan. Under the Act, a project developer was selected in the first bid process for a designated ocean area in June 2021. Bid processes for three other designated ocean areas are currently ongoing.

Developments in government policy/strategy/approach

Currently, the Japanese government is discussing various strategies to decrease the number of coal power plants in Japan, and will include the following measures: (1) setting a higher target under the Energy Conservation Act for power generation efficiency (43%) that coal power plants should achieve, and which only efficiently managed USC (Ultra Super Critical) plants are capable of achieving; (2) decreasing the amount of compensation that coal power plants receive from the capacity market; and (3) requiring large power generation companies to prepare plans to reduce the number of inefficient coal power plants.

The Japanese government has also discussed how renewable energy can be monetised by the market, and how to make the market for non-fossil fuel electricity efficient and easy to use for all relevant parties. There are two types of non-fossil fuel electricity and markets. The first one is electricity from power generated under the FIT mechanism, which is traded in the renewable energy market. Both electricity retailers and certain large consumers are able to purchase electricity through this market. The second is electricity generated by non-fossil fuels without using the FIT system, which is traded on the market, and allows electricity retailers to satisfy their obligations under the Act on Sophisticated Methods of Energy Supply Structures. Only electricity retailers are allowed purchase electricity through the market and use it to satisfy the obligation under the Act that certain large electricity retailers must procure at least 44% of their electricity from non-fossil fuel sources.

Developments in legislation or regulation

The amendment of the Act on Promotion of Global Warming Countermeasures was enacted in May 2021, and includes (1) the goal of achieving carbon neutrality in Japan by 2050, (2) the introduction of a new system under which local governments certify renewable power projects that are permissible under local governments' respective policies, and which facilitates the development of such projects, and (3) facilitating the disclosure of information on the carbon emissions of industrial consumers.

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The increase of renewable energy projects (particularly solar projects) under the FIT system has led to discussions on how to avoid burdening consumers with any further costs of the FIT system, as well as how to avoid projects that would jeopardise the environment and safety of local communities and people.

Auctions under the FIT system already were introduced for certain large solar projects, biomass projects, and wind projects. In addition, from April 2022, certain "competitive" renewable power generation facilities, such as large-scale solar power plants (those with capacity larger than 1MW) will become subject to the Feed-in Premium (FIP) system, instead of the FIT system. Under the FIP system, power generators will sell electricity generated from renewable resources to JEPX (the electricity wholesale market) or a counterparty of a bilateral PPA, and receive a certain premium price, in addition to the price received under JEPX or the bilateral PPA, while under the FIT system, power generators sell such electricity to and receive the payment from general transmission utilities at a fixed price. By introducing the FIP system, the Japanese government expects that renewable power generation projects will be developed by using a market (JEPX and bilateral PPAs).

Demand responses and aggregators thereof are expected to perform more roles in the electricity market, and as such, a new licence requirement for aggregators of demand responses will be introduced in April 2022. In the capacity market and delta kw (ancillary) market, demand responses have been recognised as material sources for electricity capacity and reserves to ensure the stability of the power system in Japan.

Judicial decisions, court judgments, results of public enquiries

Multiple lawsuits have been filed seeking the suspension of the operation of nuclear power plants in Japan. In some cases, the claimant prevailed in district court, although most of these decisions were reversed by higher courts.

Recently, several lawsuits have been filed against coal power plants seeking the suspension of their construction and/or operation. To the extent of our knowledge, no court has ordered a coal power plant to suspend its construction or operation.

Major events or developments

Given the recent decrease in the purchase price of solar power, use of the corporate PPA business model has increased. Under this business model, solar power producers directly enter into an agreement with consumers, and lenders for power projects finance the project relying on the creditworthiness of such consumers, who are obligated to purchase the electricity at a certain agreed price for a certain agreed period.

Proposals for changes in laws or regulations

The Japanese government is discussing whether to clarify and harmonise regulations on hydrogen supply chain businesses. Currently, the High Pressure Gas Safety Act, Gas Business Act, and Electricity Business Act may apply to the hydrogen business, depending on the business model being utilised and the phase of development, and in certain cases, it is unclear which of them is actually applicable. However, the Japanese government has liberalised regulations on hydrogen stations for supplying hydrogen for cars, and will attempt to improve the regulatory framework for the hydrogen business in order to facilitate its development.

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Sadayuki Matsudaira
Tel: +81 3 6250 6256 / Email: s.matsudaira@nishimura.com

Sadayuki Matsudaira's main practice areas are transactions, projects, and regulatory matters in the energy sector. Sadayuki advises international and domestic clients on a variety of energy-related areas, such as power plants, gas terminals, networks, and energy wholesale and retail businesses. He is the Regional Vice-Chair for Asia Pacific of Lex Mundi's Energy Group. He was selected as a Leading Individual in Projects and Energy in *The Legal 500* Asia-Pacific 2021.

Nishimura & Asahi

Otemon Tower, 1-1-2 Otemachi, Chiyoda-ku, Tokyo 100-8124, Japan
Tel: +81 3 6250 6200 / URL: www.nishimura.com

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