The Energy Regulation and Markets Review

Fifth Edition

Editor
David L Schwartz

Law Business Research

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EDITOR'S PREFACE

Our fifth year of writing and publishing *The Energy Regulation and Markets Review* has been marked by significant efforts to reduce greenhouse gases (GHGs), important infrastructure development needs and continued low oil and gas prices. We have also seen divergent positions on existing and future nuclear power generation, and further liberalisation of the energy sector.

I CLIMATE CHANGE DEVELOPMENTS

With respect to climate change efforts, 177 countries signed the Paris Agreement and 17 countries have ratified the Paris Agreement, which will enter into force after at least 55 countries representing at least 55 per cent of the global greenhouse gas emissions ratify the Agreement. Even prior to the effectiveness of the Paris Agreement, we are seeing significant carbon reduction efforts, such as increased development of renewable resources, as well as energy efficiency and demand reduction measures.

In Europe, the European Union adopted 'A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy', and it is expected that there will be a large amount of European secondary legislation to increase the amount of renewable resources. The United Kingdom announced its energy goals, which includes increasing reliance on renewables and imposing strict 'carbon budget' requirements. France adopted new energy legislation that seeks reductions of fossil energy consumption by 30 per cent, reductions of GHGs by 40 per cent by 2030 (and by 75 per cent by 2050), reduction of energy consumption by 50 per cent by 2050, and increased reliance on renewables to eventually reach 40 per cent of electricity production. Denmark established a goal of having renewable energy meet all electricity demands by 2050. The Netherlands has made significant efforts to reduce GHGs, including the shutdown of some older coal-fired power plants. Italy enacted new legislation encouraging energy efficiency, biomass, biogas and bioliquids. Germany undertook significant steps to increase reliance on renewable energy resources.

In the United States, the Environmental Protection Agency's Clean Power Plan, which is currently stayed pending further judicial proceedings, would require 32 per cent

reductions in CO2 emissions from 2005 levels by 2030. Last year, China set out a goal to peak CO2 emissions by 2030 and to increase reliance on non-fossil fuels to 20 per cent by 2030. Japan, Korea, and Australia are working to improve energy efficiency and conservation and to increase reliance on renewable energy supply. The United Arab Emirates continues its efforts to reduce its carbon footprint, increase energy efficiency, reduce existing energy subsidies and to develop greater renewable energy infrastructure. Dubai has established a Dubai Green Fund to assist in the development of renewable energy and energy efficiency. South Africa is looking to procure significant new renewable resources. India has set a target of 175GW of renewable energy to be installed by 2022. India's Renewable Energy Certificate programme has largely failed because of non-enforcement of Renewable Purchase Obligation goals.

II INFRASTRUCTURE DEVELOPMENT

For many countries, reliable energy supply is the key concern, regardless of fuel source. Coal still plays a dominant role in meeting energy supply for Poland, India, Turkey and China. Indonesia's primary challenge remains to reach its goal of 90 per cent electrification by 2020. The primary concern for India's energy sector remains the challenge of providing reliable, uninterruptible electricity to its population and India has begun to employ a variety of creative measures (including a transitional state financing programme) to allow distribution companies to expend greater resources on investment in procurement and infrastructure over the next five years. To meet electrification needs in Central and West Africa, the Regional Initiative for Sustainable Energy identifies over 100 generation power sector projects in countries that are members of the West Africa Economic and Monetary Union that are targeted for development prior to 2030. Mozambique similarly continues to face significant infrastructure needs to meet electricity and natural gas demand. As a result of its civil war, Angola desperately needs to rebuild infrastructure (generation, transmission and distribution). Ukraine's main focus is building infrastructure and reducing gas dependence on Russia following Russia's annexation of Crimea.

III IMPACTS OF LOW OIL AND GAS PRICES

Low oil and gas prices continue to have adverse impacts for the United Arab Emirates, Mexico, Angola and Nigeria. Exploration and production activity has slowed in the United States because of current oil and gas prices, and low gas prices have led to increases in coal plant retirements. Since the relaxation of certain US and international sanctions against Iran, Iran is now looking to attract US$200 billion in investment in its oil and gas industries over the next five years, which may be challenging with today's low oil and gas prices. China is also looking for assistance with shale exploration in the Sichuan Basin, with mixed levels of interest from potential investors. Mexico has also sought to eliminate some of its regulatory uncertainty as a way to attract new investors.

IV NUCLEAR POWER GENERATION

We have seen divergent positions with respect to nuclear power. Following the Fukushima disaster, Japan has shut down all 48 of its nuclear power stations pending new detailed safety reviews. Germany has targeted 2022 as the date for phasing out all nuclear generation.

France is seeking a reduction of nuclear power generation by 30 per cent by 2030. On the other hand, Turkey is continuing with development of a nuclear power plant (expected to be operational in 2023), and the United Arab Emirates is still proceeding with construction of the Barakah nuclear power plant, which is expected to be operational next year. The United Kingdom has stated that nuclear energy will remain an important part of the country's energy future. In the United States, the early retirement of certain nuclear plants has been driven by cost considerations, rather than safety concerns.

V LIBERALISATION OF THE ENERGY SECTOR

We have seen significant energy sector regulatory reforms in many countries. Italy has opened up distribution systems to retail competition and trading, and has seen the widespread introduction of smart meters. Portugal will complete its transition to competition in the energy markets by the end of 2017. South Africa is liberalising its generation sector through a massive procurement programme from independent power producers. Australia is in the midst of restructuring its electricity sector through retail competition. Japan is seeking full retail competition this year, as well as the unbundling of the transmission sector from the generation sector, and is seeking to achieve similar reforms (retail competition and unbundling) in the gas sector. Korea announced a new energy plan to deregulate energy markets and mitigate the monopoly power of the majority state-owned utility company by, among other things, encouraging customer-side generation projects. Brazil saw an increase in retail competition as a result of higher prices, which was an indirect result of the reduced availability of inexpensive hydroelectric power due to the drought from last year. Turkey is focused on privatising state-owned generation companies. There are proposals in Norway to separate transmission grid companies from supply.

I would like to thank all the authors for their thoughtful consideration of the myriad of interesting, yet challenging, issues that they have identified in their chapters in this fifth edition of *The Energy Regulation and Markets Review*.

David L Schwartz
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Washington, DC
June 2015

Chapter 20

JAPAN

Reiji Takahashi, Norifumi Takeuchi, Wataru Higuchi, Kunihiro Yokoi, Ryutaro Kanno and Kunitaro Yabuki[1]

I OVERVIEW

Japan is a country with limited natural energy resources and as such, energy legislation in Japan can essentially be divided into legislation concerning electricity and that concerning gas.

Given the high level of public interest attached to the provision of electric utilities, certain market entry regulations have long been in place. However because of the Great East Japan earthquake and the subsequent accident at the Fukushima Daiichi nuclear power plant, government energy policy is currently in the midst of vast and rapid structural change. As of 31 March 2016, all nuclear power plants, except for two, are currently under suspension in Japan and over recent years other measures to secure alternative resources (including increasing the supply of renewable energy sources and traditional thermal power), conserve existing energy supplies and increase local energy production have been discussed concurrently with a review of the current industry regulations. As a result, the current legislation is in a transitional phase. There are three headline changes affecting the regulation of electricity markets. Firstly, under the Electricity System Reform programme, entry into the electricity retail business will be fully liberalised as of 1 April 2016. In preparation for this, a new regulatory authority for monitoring the new liberalised market was established in 2015. Secondly, the legal unbundling of the electric power transmission function and sector from the existing dominant power suppliers will be implemented in 2020. In addition to these two changes, feed-in tariffs (FITs) were introduced in 2012 and the renewable energy market has been rapidly expanded since then. In response to rapid expansion of the renewables market, the FIT system has been continuously revised to address several problems.

The gas industry in Japan can be divided into the following two major enterprises: the town gas industry, which is the primary source of natural gas to consumer residences through piping; and the liquefied petroleum gas (LPG) industry, which provides LPG via

1 Reiji Takahashi, Norifumi Takeuchi and Wataru Higuchi are partners and Kunihiro Yokoi, Ryutaro Kanno and Kunitaro Yabuki are associates at Anderson Mōri & Tomotsune.

cylinders to consumers in areas where piped gas is not yet available. In principle, both the approval required for entry into the town gas industry and the price of the gas itself are strictly regulated under Japanese law. In contrast, entry into the LPG industry only requires registration with the relevant authority, and the prices for the provision of LPG may be freely set by the provider. As of March 2016, statistics show that there are similar numbers of consumers for both types of gas, with around 29.7 million consumers using town gas while the number of consumers for LPG is close to 25 million. In parallel with the Electricity System Reform, the Gas System Reform, which includes the full liberalisation of entry into the gas retail business and the legal unbundling of gas transmission from generation, is also in progress.

II REGULATION

i The regulators

The energy industry in Japan, which encompasses electric power, gas and other energy resources, is regulated by the Ministry of Economy, Trade and Industry (METI) or, more specifically, the Ministry's Agency for Natural Resources and Energy and the Electricity and Gas Market Surveillance Commission. The Ministry of Economy, Trade and Industries Establishment Act grants the Ministry jurisdiction over various matters including comprehensive policies in relation to energy and mineral resources and the securing of the stable and efficient provision of gas, electric power and heating to Japan. In addition to these matters, comprehensive policies in relation to energy and mineral resources and the securing of the stable supply of energy are handled by the Ministry's Agency for Natural Resources and Energy, and the monitoring of the liberalised electricity markets, as well as compliance with a code of conduct for network sectors, is handled by the recently established Electricity and Gas Market Surveillance Commission.

The Organization for Cross-regional Coordination of Transmission Operators (OCCTO) is not a governmental organisation but is an independent organisation constituted by all of the electricity business entities pursuant to the Electricity Business Act (EBA). The OCCTO's remit is to monitor the electricity supply–demand balance and frequency, and order electricity business entities to supply electricity to other electricity business entities. The OCCTO has the power to instruct or recommend electricity business entities to ensure stable electricity supply subject to Article 28-40, Item 6 of the EBA.

Other governmental agencies regulate certain aspects of the energy industry in Japan, including the Ministry of Environment, the Nuclear Regulation Authority and relevant local governments.

Main sources of law and regulation

The EBA is the main source of legislation regulating businesses involved in the generation, transmission and distribution, and sale of electric power. In addition to this, the Electricity Business Act Enforcement Orders and the Ordinance for Enforcement of the Electricity Business Act further provide detailed regulations for the enforcement and governance of the system provided under the EBA. A number of relevant orders and ordinances ruling the generation, transmission and sale of electricity have also been enacted.

As for nuclear power, regulation is provided in the Atomic Energy Fundamental Act, the Act on Compensation for Nuclear Damage and other specialised legislation.

The Gas Business Act (GBA) is the primary source of legislation regulating businesses involving town gas. In addition to this, the Gas Business Act Enforcement Orders and the Ordinance for Enforcement of the Gas Business Act further provide detailed regulations for the enforcement and government of the system provided under the GBA.

The primary source of legislation regulating businesses involving LPG is the Act Concerning the Securing of Safety and the Optimisation of Transaction of Liquefied Petroleum Gas (the LP Gas Act). In addition to this, the LP Gas Act Enforcement Orders and the Ordinance for Enforcement of the LP Gas Act further provide detailed regulations for the enforcement and government of the system provided under the LP Gas Act.

ii Regulated activities

Electricity

After the Fukushima incident, the Japanese government decided to undertake significant reform of the energy regulation system. The regulations for electricity businesses are also undergoing substantial changes at the moment. Prior to the new EBA (which came into effect on 1 April 2016), licences for electricity businesses were required when the intended activities fell within one of five categories, and only 10 prominent regional companies (which used to be categorised as general electricity utilities) were allowed to supply electricity to general consumers and businesses (low-voltage electricity) in their respective markets. However, the amendment to the EBA to liberalise the entire retail electricity market has streamlined regulated electricity business into three simple categories (i.e., electricity retail businesses, generation businesses and transmission and distribution businesses) to adjust to the liberalised retail market and promote a level playing field for competition between the general electricity utilities and other electricity business entities.

Electricity retail business

A company running an electricity retail business (the sale of electricity to general and large-scale consumers and businesses) is required to be registered by the METI. For a company to be registered as a retail company, it is first required to become a member of the OCCTO. Then an application document must be filed to the METI. The METI and the Electricity and Gas Market Surveillance Commission will then examine the application. An application for the register will be accepted unless the business entity's activities are found to fall under certain negative requirements, including a lack of ability to procure electricity to respond to the maximum demand of its customers and being unable to properly operate an electricity retail business. In anticipation of the market liberalisation, many retail entities have entered this new market with various types of electricity price plans. As of 1 April 2016, 280 entities are registered as retail companies.

Generation business

Companies that generate and supply electricity in excess of 10,000kW to retail companies are required to file with the METI to commence their generation business. They are also required to apply for membership of the OCCTO before filing. Under the old regulation structure of the EBA, independent power producers did not need approval or to file for the commencement of their generation business (provided they filed the price and met the other required terms of the supply of electricity), but under the new EBA, generation business entities are required to file their generation business and are also subject to certain obligations. For example, generation companies are required to submit a plan stating the

amount of electricity generation that can be produced by a unit of the facilities they possess. Additionally, by a standard contract with general transmission companies, generation business entities are required to report their estimation of supply for the next 30 minutes.

Transmission and distribution business

The electricity wheeling service industry is classified into three subcategories: general transmission, transmission and specific transmission by the amended EBA; and each is covered by a different regulatory scheme. Entry to this area has not been liberalised even following the amendment of the EBA because these businesses are responsible for ensuring that all consumers have sufficient access to electricity.

Of the different companies in the three categories, the most prominent are general transmission companies. General transmission companies are business entities providing electricity wheeling services through their own transmission lines throughout their service area. Those intending to engage in the general transmission business are required to obtain approval from the METI in advance. The company must submit a business plan to the METI, which must be satisfied that the plan is feasible. Its facilities also need to be capable of covering the electricity demand. To gain approval, the company must submit a 10-year plan, as do companies in the other two categories above.

A transmission company supplies the electricity to general transmission companies throughout its own grid. Those intending to engage in the wheeling industry are also required to obtain approval from the METI.

In contrast to these two, specific transmission companies, which transmit electricity to a specific point, are only required to notify the METI.

OCCTO

These three types of electricity business entities are all under an obligation to be a member of the OCCTO to allow the OCCTO monitor and coordinate the whole electricity market. Members of the OCCTO have to provide information about the amount of electricity produced by their facilities, etc. on a continuous basis. The OCCTO can instruct its members to maintain a balance of electricity supply and demand in the market to ensure the stable supply of electricity to consumers.

Gas

Town gas businesses targeting general consumers

The GBA stipulates that entities intending to operate gas businesses targeting households, corporations and other such general consumers must obtain the relevant approval to become an operator of such gas businesses (general consumer gas utility business operators, or GCGUBOs) from the METI.

Applications for the relevant approvals involve the necessary submission of application forms in which statutorily required data such as details of the service area, gas generating facility and other necessary information are described. The criteria stipulated in the GBA for the grant of approval include the existence of sufficient demand for gas in the intended service area, the adequacy of the applicant's gas provision capability, whether the applicant's entry into the market will result in an excess in the supply of gas in the service area, whether the applicant has sufficient financial resources and technical capabilities to properly operate such a business, and whether the proposed gas utility is based on a reliable business plan.

Although the foregoing criteria do not specifically limit town gas providers to one provider per service area, in reality, the public administrative procedures utilised by the relevant regulatory authorities requiring that the applicant's entry into the market does not result in an excess in the supply of gas in the service area effectively limits each service area to a single town gas provider. If all necessary criteria are met, the METI must grant its approval. In principle, the entire application and approval process will require around four months to complete.

As of March 2016, 206 GCGUBOs had received the necessary approvals and were currently operating such businesses (of this number, 29 are public utilities).

Regional monopolies have been recognised in relation to these business operators and, accordingly, the percentage of operators for the service areas in large metropolitan areas is understandably high. The share of the largest operator Tokyo Gas (service area: Kanto region with Tokyo as its main focus) currently accounts for about 38 per cent of the market whereas the combined share of the four major corporations (Tokyo Gas, Osaka Gas, Tohou Gas and Saibu Gas) providing service areas in large metropolitan areas accounts for about 73 per cent (based on sales volume as of February 2016).

Other types of town gas business

In addition to the above, the GBA also imposes certain restrictions on operators providing LPG to housing estates and other such residences by entities through the use of simplified gas-generating facilities (community gas utility business operators), facilitating the large-volume supply of gas (defined as the provision of gas to consumer in excess of 100,000 cubic metres per year, discussed in greater detail below) via gas pipelines over a certain size, which are independently maintained or utilised by such operators (gas pipeline service operators) and undertaking the business of providing large-volume supply of gas to consumers (commercial-scale gas suppliers).

Sellers of LPG

The LP Gas Act stipulates that necessary registration for the sale of LPG must be obtained from the METI when intending to establish sales offices catering to two or more prefectures and from the prefectural governor when catering to only one prefecture.

Registration involves the necessary submission of application forms in which statutorily required data, such as details of the sales office, gas storage facilities and other necessary information, are described. Applicants will be registered with the corresponding authority (either the Minister for Economy, Trade and Industry or the prefectural governor) as long as there are no applicable statutory grounds for denial of the application.

Registrations will require 30 days to process or 15 days if the registration is applied for via the relevant authority's electronic information processing system.

As of March 2016, the number of business operators that had obtained the necessary registrations and were currently engaged in the sale of LPG is 20,522. Entry barriers to this section of the industry are low and a large number of small and medium-sized businesses have been entering into the LPG industry in which even retail rates are not regulated. While all-electric technology products were widely spread by the electric power companies to replace the use of gas, this figure is still less than half of when LPG sales were at their peak (54,000 operators in 1967).

iii Ownership and market access restrictions

The only existing restrictions on foreign investment in the electric power industry or the gas industry are those imposed by the general laws regulating the entry of foreign investment in Japan stipulated in the Foreign Exchange and Foreign Trade Act. For example, if a foreign investor were to obtain 10 per cent or more of the shares of an electric power or gas utility (including both town gas and LP gas), intend to set up a branch for the conduct of electric power or gas business or otherwise engage in any such activities, the Foreign Exchange and Foreign Trade Act requires that the relevant authorities be notified in advance of such activities. Furthermore, in the event of the performance of any such activities requiring advance notification of the relevant authorities, a follow-up report after the performance must also be submitted accordingly. Both prior notification and follow-up reports must be submitted to the Bank of Japan, which in turn will facilitate the submission of the notifications and reports to the Minister of Finance or other relevant minister in charge. The relevant authorities have the power to provide a recommendation or an order to suspend such foreign investment, if it hinders national security, public order or public safety.

iv Transfers of control and assignments

Electricity

The prior approval of the METI is necessary in the event of a transfer of the whole business of a general transmission company or in the event of a merger or demerger whereby the surviving entity completely absorbs any such business. The criteria for granting such an approval are the same as those for the original grant of approval to operate such businesses. A merger or demerger of other types of electricity business entities obliges them to notify the METI. Notification to the METI is also required upon the handover of any equipment or facilities to retail companies, power suppliers and any types of transmission companies.

Gas

The transfer or acquisition of all or part of a general consumer gas utility business requires authorisation from the METI before it can be effective, as does the merger or demerger of any entity that is a GCGUBO whereby all or part of a general consumer gas utility business is succeeded by the surviving company. The criteria for the grant of the required authorisation are the same as those for the original grant of approval to operate such businesses.

In the case of LPG businesses, however, in the event of any transfer of the business in its entirety or of any merger or demerger whereby the surviving entity completely absorbs the business, the succeeding entity is only required to notify whichever is relevant of the METI or the prefectural governor.

III TRANSMISSION/TRANSPORTATION AND DISTRIBUTION SERVICES

i Electric power

Integrated system for the production and transmission of electric power

In Japan, following the end of World War II and up until 1995, the production and transmission of electric power, as well as the its assorted related retail operations, were run as a single integrated utility by 10 electric power companies, each with a regional monopoly over the 10 main regions of Japan.

However, amid the institutional reform post-1995, Japan realised the liberalisation of its electric power generation and retail sectors. That being said, the electric power transmission sector is still very much dominated by the aforementioned 10 power companies (former general electricity utilities).

Because the electric power distribution grid is public infrastructure, measures have been implemented to prevent general electricity utilities from abusing their dominant market positions and to ensure the transparency of the electric power industry. Specifically, anti-trust measures that have been implemented include, the compulsory notification of electric power transmission details; the requirement of equal treatment of consumers; and the compulsory separation of the electric power transmission division accounts of general electric power business operators from their other divisions.

Government policy on separation and unbundling of electric power transmission sectors

As part of the Electricity System Reform, the amendment to the EBA passed in 2015, which aims for the legal unbundling of the transmission sector to ensure the neutrality of all entities engaged in electricity-related business. No electricity company can run an electricity retail business or generation business with a transmission business in the same entity after 2020. That means that the 10 former general electricity utilities must split those departments to an affiliate or others by that date.

Obligations undertaken by general transmission companies

Because transmission facilities and the business conducted with them are mostly owned by the former ten general electricity companies, to secure the effective liberalisation of other sectors, these companies are required to provide neutral treatment to retail companies. General transmission companies are not allowed to refuse to execute a grid connection contract without reasonable grounds. The EBA provides that the electricity supply-demand balance and frequency must always be maintained within a certain threshold. General transmission companies must also provide final assurances to each consumer to deliver electricity where consumers do not have a contract with any of the retail companies. General transmission companies are also responsible for the delivery of electricity to consumers on Japan's remote islands.

Cybersecurity

As most activities involved in the electricity business are controlled by information technology, it is urgent for businesses in the sector to establish a reliable cybersecurity system. The Basic Act on Cybersecurity stipulates that Critical Infrastructure Information (CII) operators shall make an effort to assure cybersecurity voluntarily and proactively. Because there is no regulation that clearly stipulates the concrete actions a CII should take with regard to IT protection, a strategy for cybersecurity committee established by the Cabinet has announced that the security criterion for CII operators will be clarified. It is clear that electricity business entities, especially general transmission companies, fall within the definition of CII operators, and will almost certainly be required to adapt their processes in line with any changes to the security requirements.

ii Gas

Terminalling, processing and treatment

After importation, LNG meant for the town gas industry is converted into gas and sent through pipelines or transported by tanker lorries, and stored in gas storage facilities for supply to consumers. The facilities for processing, transportation and storage are mainly owned by the gas utility business operators, who supply the gas to consumers.

Pipelines that are used for gas transportation and gas holders that are used for storage of gas are regulated by the GBA and the technical standards for gas facilities prescribed by ministerial order. Likewise, tanker lorries are regulated by the High-Pressure Gas Safety Act and the Safety Regulations for General High-Pressure Gas.

The transportation and storage of LPG are regulated by the LP Gas Act and the High-Pressure Gas Safety Act. More particularly, whereas storage and transportation at distribution and wholesale levels are regulated by the High-Pressure Gas Safety Act, the storage and transportation supply level to general end-users are regulated by the LP Gas Act.

Transportation obligations for town gas

As mentioned earlier, because GCGUBOs are, pursuant to public administrative procedure, restricted by the practical principle of one town gas service provider per service area, it has been acknowledged that town gas provider monopolies exist within certain regions.

In exchange for this monopoly, GCGUBOs are obligated to broaden the piping grid, in other words to provide gas transportation. As mentioned later in this article, the revitalisation of competition through the utilisation of the piping grid by GCGUBOs to liberalise rates for commercial-scale supplying of gas is highly anticipated.

Nevertheless, current transportation rates are still relatively expensive and revitalisation of competition merely through the utilisation of the piping grid by GCGUBOs is far from sufficient.

Rate system for gas businesses

A GCGUBO wishing to possess a regional monopoly, because its consumers lack the freedom to choose their provider, is required to base its rate upon its costs incurred while under 'efficient management' plus a reasonable rate of return (a rate calculated by discounted cash flow) as stipulated in the general supply provisions approved by the METI. Costs incurred while under 'efficient management' refers to costs assumed to be incurred by a GCGUBO in its business operations pursuant to the necessary exercise of its corporate activities, while 'reasonable rate of return' refers to the reasonable total amount of production costs, provision and distribution costs and general administrative costs as calculated based on actual and realistic future prospects of operations, plus the amount of any funds obtained from interest and dividends to the extent fairly raisable or attainable respectively, as necessary for the realisation of the reasonable development of the business.

Raising of rates is subject to the approval of the METI; however, the lowering of rates is not subject to such a requirement and merely requires notification of the relevant change in rate.

LPG pricing is not subject to regulation and prices may be set as negotiated between the relevant parties of each transaction. Because of the accumulation of retailer's overheads, which accounts for over 60 per cent of the retail price of LPG, said retail price of LPG has become more expensive than that of town gas.

IV ENERGY MARKETS

i Japan Electric Power Exchange

The Japan Electric Power Exchange (JEPX) exists for the benefit of all electric power-related transactions. It was founded on 28 November 2003 as a market for the commodity trading of electric power and serves as an intermediary for electric power spot trading, forward transactions and other similar transactions. (It is possible to undertake both buy and sell orders through the JEPX.) To participate in electric power commodity trading on the JEPX, membership as a trade affiliate is necessary. As of 1 April 2016, 144 companies were trade affiliates of the JEPX. As of 1 April 2016, JEPX has the spot market opening 365 days and established a market in which members can trade electricity until 1 hour prior to its actual use. This market enables electricity business entities to adjust the amount of electricity they provide until the last minute.

The JEPX is managed by a general incorporated association comprising electric power companies and other such entities. It is a private exchange that operates and is regulated by its own market rules.

ii Terms and conditions of supply

Electricity

As explained above, the amendment to the EBA that came into effect on 1 April 2016 liberalised entry into the electricity retail business, but provides a provisional measure that requires former general electric utilities (utilities allowed to retail electricity at low voltage market before the liberalisation) to continue to provide the existing terms and conditions until 2020 at earliest in order not to let the electricity price raise unreasonably.

Additionally, all retail companies are subject to regulations on certain code of conducts such as to deliver explanation and documents in terms of certain matters for their supply to customers.

Gas

Obligation to supply

In recognition of the inevitably monopolistic nature of the general consumer gas utility business and other such considerations, GCGUBOs are subject to an obligation to supply gas and accordingly are prohibited from rejecting an application for the supply of gas received from a consumer and, in principle, from cutting off gas already supplied to a consumer.

This is not the case with LPG and no such obligations are imposed on LPG business operators.

Liberalisation of the town gas business

As a result of amendments to the relevant legislation, the town gas industry is currently experiencing an overhaul of its competitive environment because of the relaxation of regulations. Specifically:

a it has become possible for a town gas supplier to supply gas to the service area of another town gas supplier or other 'white' areas (areas not already serviced by any specific town gas supplier);

b companies other than town gas suppliers may now enter into the commercial scale gas utility business;

c pricing for commercial scale gas supplying has been liberalised; and

d to encourage new entrants to enter the market, a gas transport system has been set up whereby the utilisation of existing gas piping belonging to other business operators is allowed.

In particular, the scope of the liberalisation of commercial-scale gas supply pricing has been progressively expanding because of legislative amendments. Beginning with the first round of reforms in March 1995, which saw the liberalisation of the rates for the supply of gas to consumers whose annual usage exceeded over 2 million cubic metres, as of the fourth round of reforms, which took effect from April 2007 the rates for supply of gas to consumers whose annual usage exceeds 100,000 cubic metres have also been liberalised, accounting for the liberalisation of roughly 62 per cent of the total volume of town gas sales in Japan.

As a result of these efforts, 38 new gas companies entered into the gas industry (based on approval applications and notifications as of 31 March 2015) and as of 2014, 11.7 per cent of the total volume of commercial-scale gas supplied could be attributed to them. New entrants entering into commercial-scale gas supplier business include such entities as electric power companies, domestic natural gas utilities and commercial enterprises.

In addition, the amendment to the GBA is scheduled to come into effect in April 2017. This amendment implements full liberalisation of entry into the gas retail business, which accounts for 36 per cent of the total gas supply. The amendment includes reform of the business licence categories that streamline the regulated gas business into three simple categories: gas retail business, generation business and transmission (pipeline) business.

iii Market developments

Electricity

The Amendment to the Commodity Futures Act provides that electricity becomes subject to commodity futures trading, which enables market participants to avoid the risk of volatility.

Further, the Tokyo Stock Exchange, Inc (TSE) established an infrastructure fund market in April 2015, which enables the listing of funds that invest in certain infrastructure such as electric generation facilities. Funds investing in renewable energy generation facilities are expected to be listed on the market. The listing of the first 'infra-fund' that invests in solar power facilities was approved by the TSE in April 2016 and is scheduled to be listed in June 2016.

Gas

With respect to gas, no particularly noteworthy market developments are currently anticipated or under consideration.

V RENEWABLE ENERGY AND CONSERVATION

i Electricity

The Renewable Electric Energy Act

Japan has recently been subject to huge developments in the area of renewable energy. The Act on Special Measures concerning the Procurement of Renewable Electric Energy by Operators of Electric Utilities (the Renewable Electric Energy Act) was enacted with the objective of introducing FITs (a system whereby the total volume of electric power is bought back at a fixed price). The Renewable Energy Act became effective on 1 July 2012, the major requirements of which can be summarised as follows:

a Electric power companies, including certain retail companies and general transmission companies, are expected to become providers of renewable electric energy and as such must execute all applications for contracts for sale of electric power submitted to them by renewable electric energy suppliers and facilitate the connection of the power generating facilities of these suppliers to their own electric facilities for transformation, transmission and distribution of electric power.

b Renewable electric energy is defined as electric power obtained and converted through the use of electric transduction facilities from renewable energy sources such as solar, wind, water (currently statutorily limited only to small and medium hydroelectric generators with output of less than 30,000kW), geothermal, biomass and other sources as stipulated in the relevant cabinet order. Electric power suppliers that wish to become part of the aforementioned system are required to obtain approval from the METI for power-generating facilities.

c Sales prices and contract terms shall be as set by the METI upon the input of the Committee for Calculation of Procurement Cost and Related Matters. The sales prices and contract terms will be revised every financial year and, in principle, these electric power sales and connection contracts will have to be executed in the same financial year; the METI's approval should also be obtained for the facilities.

d All transactional costs will ultimately be borne by the end-consumers (both private and corporate).

Sales prices and contract terms

Set out below are the changes in sales prices and contract terms for recent years. In relation to solar power, as a reflection of the sudden drop in price of solar panels, the sales price is falling (as per our further notes below). In comparison, measures have been taken to establish favourable pricing and to support investment in respect of offshore wind power and existing headrace tunnel-type medium and small-scale hydroelectric power generators.

	Electricity generated	*Sales price (excluding tax)*				*Contract term*
		2013	*2014*	*2015*	*2016*	
Solar power	< 10kWh	JPY 38	JPY 37	JPY 33 to JPY 35 depending on device used	JPY 31 to JPY 33 depending on device used	10 years
	≥ 10kWh	JPY 36	JPY 32	JPY 29 (1 April to 30 June) or JPY 27 (after 1 July)	JPY 24	20 years
Wind power	< 20kWh	JPY 55	JPY 55	JPY 55	JPY 55	20 years
	≥ 20kWh	JPY 22	JPY 22	JPY 22	JPY 22	20 years
	Off-shore wind power*		JPY 36	JPY 36	JPY 36	20 years
Geothermal power	< 15000kWh	JPY 40	JPY 40	JPY 40	JPY 40	15 years
	≥ 15000kWh	JPY 26	JPY 26	JPY 26	JPY 26	15 years

	Electricity generated	*Sales price (excluding tax)*				*Contract term*
		2013	*2014*	*2015*	*2016*	
Hydroelectric power	< 200kWh	JPY 34	JPY 34	JPY 34	JPY 34	20 years
	≥ 200kWh < 1000kWh	JPY 29	JPY 29	JPY 29	JPY 29	20 years
	≥ 1000kWh < 30000kWh	JPY 24	JPY 24	JPY 24	JPY 24	20 years
Existing headrace tunnel-type medium and small-scale hydroelectric power**	< 200kWh		JPY 25	JPY 25	JPY 25	20 years
	≥ 200kWh < 1000kWh		JPY 21	JPY 21	JPY 21	20 years
	≥ 1000kWh < 30000kWh		JPY 14	JPY 14	JPY 14	20 years
Biomass power		JPY 13 to JPY 39 depending on material used	JPY 13 to JPY 39 depending on material used	JPY 13 to JPY 40 depending on material used	JPY 13 to JPY 40 depending on material used	20 years

* Offshore wind power: generators that require a vessel for access for construction and operational maintenance.

** Existing headrace tunnel-type medium and small-scale hydroelectric power: generators that utilise existing headrace tunnels with renewable electric power equipment and hydraulic steel pipes.

Increase in renewable electric energy generation and associated problems

Following the introduction of FITs, renewable source energy generation – solar power generation in particular – is increasing rapidly. Set out below are recent data on electricity generated by renewable source energy generation facilities and purchased by business operators (million kWh).

	April 2013 to March 2014	*April 2014 to March 2015*	*April 2015 to December 2015*
Solar Power (< 10kWh)	485,686.0	578,017.8	514,854.4
Solar Power (≥ 10kWh)	425,466.9	1,317,731.0	1,860,298.5
Wind power	489,638.3	492,082.3	349,975.4
Hydroelectric power	93,552.6	107,277.2	112,223.6
Geothermal power	570.9	608.1	3,931.7
Biomass power	316,940.0	364,438.0	383,095.3
Total	1,811,854.7	2,860,154.4	3,224,378.9

On the other hand, problematic businesses, such as those that utilised favourable pricing to obtain facility approval but delayed commencement of work and attempted to obtain fraudulent profits, had been frequently reported. In response, the METI has moved to revoke the approval for some of these businesses since 2014. Further, the METI implemented a rule for facility approval issued in or after April 2014, under which solar power facilities with capacity of 50kW or more that have not secured a site and equipment within a certain deadline of receiving approval will have their approval lapse in principle.

Further, in 2014, five general electric utilities (i.e., those in Hokkaido, Tohoku, Shikoku, Kyusyu and Okinawa) announced that they could temporarily suspend or withhold

the execution of a contract for applications for all or part of contracts for the sale of electric power because of the possibility of excess of supply if all the approved renewable-source energy generation facilities were to start generation. To solve this problem, the METI implemented a new rule that allows electricity business entities designated by it to unlimitedly restrict output from renewable-energy facilities, and which is applied in certain situations where oversupply of electricity is expected to occur; as a result, the electric companies resumed executing contracts for new applications.

ii Gas

In terms of gas-related renewable energy, biogas has been generating a lot of attention in recent years. Biogas is a flammable gas produced by the fermentation of organic waste such as raw sewage, food waste and livestock excretions, a feature that allows it to be harvested at sewage treatment plants, food factories and other such locations. Major town gas utilities such as Tokyo Gas and Osaka Gas have in recent years established guidelines for and promoted the purchase of biogas. Additionally, several local governments began to produce biogas in a sewage facility or refuse disposal facility.

VI THE YEAR IN REVIEW

The electric power industry regulations have, following the events at Fukushima in 2011, already witnessed great reforms. First, the electric system reform started, including full liberalisation of entry into the electricity retail business, and the following phase of the reform, including legal unbundling of the electric power transmission function and sector from the existing dominant power suppliers, will be implemented in 2020. Second, the introduction of FITs has encouraged the emergence of new entrants to the renewable energy industry and the renewable energy market has been expanded, but the FIT system is being revised to address several problems.

As explained above, the gas system is scheduled to undergo reform along the same lines as the electric system reform, and it is expected that, from 2017, the full liberalisation of entry into the gas retail business will be implemented. Furthermore, from 1 April 2022, the gas transportation (pipeline) business sector of three major companies (Tokyo Gas, Osaka Gas, and Tohou Gas) will be unbundled and a code of conduct for gas transportation (pipeline) businesses will be imposed; and, in another measure to ensure competitiveness in the gas market, access to pipelines will be open to all at fair prices.

VII CONCLUSIONS AND OUTLOOK

The events at Fukushima in 2011 served as the main catalyst for the reforms that the electric power industry has recently been facing. The full extent of these reforms and their effects, however, remain to be seen. As of April 2016, all 48 nuclear power stations in Japan except two are stopping operating. In the meantime, the Nuclear Regulation Authority issued new nuclear power station safety standards in July 2013 and currently 19 nuclear power stations are in the process of review for restart under the new safety standards (seven stations have already passed). However, it is still unclear when and how many nuclear power stations will restart operations.

Under these circumstances, Japan will become increasing reliant on its remaining sources of energy, that is, oil and LNG. These traditional sources of fuel are regarded as more stable and reliable; however, because they are ultimately non-renewable resources, this in and of itself introduces an entirely different set of issues. At the end of the day, Japan's energy requirements may push it in the direction of renewable energy such as those discussed above. The output of such energy sources is, however, substantially smaller compared with nuclear energy, not to mention inherently unstable and less reliable. Accordingly, Japan's demand for alternative and reliable sources of energy may even result in renewed interest in the gas industry, which in turn will surely lead to further developments in this field.

With all facets of the energy industry shifting so rapidly at the moment, the only thing that can be said with any certainty is that change is imminent. Exactly how and what form this change will take remains to be seen, and it is certainly worth keeping a close eye on Japan in the years to come.

Appendix 1

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