The Energy Regulation and Markets Review

Fourth Edition

Editor
David L Schwartz

Law Business Research

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THE PUBLIC COMPETITION ENFORCEMENT REVIEW

THE BANKING REGULATION REVIEW

THE INTERNATIONAL ARBITRATION REVIEW

THE MERGER CONTROL REVIEW

THE TECHNOLOGY, MEDIA AND
TELECOMMUNICATIONS REVIEW

THE INWARD INVESTMENT AND
INTERNATIONAL TAXATION REVIEW

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THE CORPORATE IMMIGRATION REVIEW

THE INTERNATIONAL INVESTIGATIONS REVIEW

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THE INTERNATIONAL CAPITAL MARKETS REVIEW

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CONTENTS

EDITOR'S PREFACE

Our fourth year of writing and publishing *The Energy Regulation and Markets Review* has been marked by significant infrastructure development needs, low oil and gas prices, financial and economic sustainability measures, and carbon reduction programmes.

As many of the world's economies have begun to regain their financial footing following the global economic crisis, we are seeing a strong focus on infrastructure development. India is heavily engaged in providing economic incentives for the development of generation, transmission and distribution facilities, and many countries have acknowledged significant generation development needs to meet growing demand, including in Central Africa, Egypt, Uzbekistan, Indonesia and Malaysia. In the wake of Russia's annexation of Crimea, Ukraine is seeking IMF financing assistance to invest in power sector infrastructure, and New Zealand is looking to build large transmission projects.

We have also seen continued efforts to promote sustainability and development of green energy resources. Denmark has created a climate council and new regulatory requirements to encourage development of green energy and to promote conservation. France has adopted an aggressive new energy efficiency and conservation law that includes a new 'carbon' tax. The United States Environmental Protection Agency has proposed a Clean Power Plan to limit CO2 emissions from existing generation facilities by 30 per cent by 2030. At the same time, however, a federal court of appeals in the United States has determined that the Federal Energy Regulatory Commission (FERC) had no authority to treat demand responsiveness (a form of conservation) with the same economic value as generation. Korea has been exploring eco-friendly sources of energy independence, and Brazil has encouraged renewable energy development to make up for reduced hydropower in recent years. Even China appears to be working to develop clean, safe and sustainable energy that reduces reliance on coal generation.

Oil and gas prices remain low, which appears to have allowed largely energy-dependent countries (such as Japan) to secure longer-term oil purchases, but appears to have had negative impacts on countries that largely rely upon oil export revenues, such

as Russia, Angola and Iraq. Efforts to reduce reliance on nuclear generation continue to create demand for other energy sources in Germany, Japan and France.

We have seen significant energy sector regulatory reforms in many countries. In Spain and Portugal, there have been efforts to reduce the tariff deficit and promote financial and economic sustainability. Poland has worked to reform its regulatory system to encourage competition and development, while, at the same time, protecting state-owned companies from hostile takeovers. Romania has sought to encourage competition and reduce political interference with the regulatory process. The United States has continued to struggle with how to allocate transmission costs fairly and efficiently under FERC's Order 1000.

Certain countries have continued their efforts to privatise state-owned companies. Turkey has engaged in an effort to privatise its generation facilities. Cyprus is continuing its efforts to privatise its state-owned utility company. India is privatising its coal mines, and Mexico is encouraging private oil companies to bid for exploration and production rights.

On the nuclear energy front, Turkey has moved forward in its efforts to develop its first nuclear generation facility. At the same time, Japan and Korea have sought to reduce their reliance on nuclear energy, and Germany has continued on its path to shut down all nuclear facilities, all in the wake of the 2011 events at the Fukishima facility in Japan.

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 fourth edition of *The Energy Regulation and Markets Review*.

David L Schwartz
Latham & Watkins LLP
Washington, DC
June 2015

Chapter 17

JAPAN

Reiji Takahashi, Norifumi Takeuchi, Kunihiro Yokoi, Wataru Higuchi and Yoshihiro Tsutaya[1]

I OVERVIEW

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

In recognition of the high level of public interest attached to the provision of electric utilities, certain market entry regulations are in place to regulate the industry. Also, because electric power consumers – especially general consumers – currently have virtually no options in selecting an electric power supplier, strict regulations are in place to monitor the content of all contracts executed between power suppliers and such consumers in the interests of consumer protection. Due to the events of the Great East Japan earthquake and the accident at the Fukushima Daiichi nuclear power plant, however, government energy policy is in the midst of rapid structural change. All nuclear power plants are currently under suspension in Japan as of 31 March 2015, and other measures to secure alternative resources (including the increase of renewable energy and traditional thermal power), energy saving and local energy production have been discussed over recent years with a review of the current industry regulations. As a result, the current legislation has reached a transitional phase. First, the Electricity System Reform that includes full liberalisation of entry into the electricity retail business and legal unbundling of the electric power transmission function or sector from the existing dominant power suppliers is in progress under the initiative of the government. Second, feed-in tariffs (FITs) were introduced in 2012 and the renewable energy market has been rapidly expanded since then, while the system has been continuously revised to address several problems.

1 Reiji Takahashi and Norifumi Takeuchi are partners and Kunihiro Yokoi, Wataru Higuchi and Yoshihiro Tsutaya are associates at Anderson Mōri & Tomotsune.

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 cylinders to consumers in areas where piped gas is not yet available. In principle, the approval required for entry into the town gas industry as well as 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 prices for such LPG may be freely set by the provider. As of March 2015, statistics show that around 29.4 million consumers utilise town gas whereas the corresponding number of consumers for LPG is around 25 million. These statistics show that town gas and LPG are at level pegging with each other. In parallel with the Electricity System Reform, the Gas System Reform, which includes full liberalisation of entry into the gas retail business and legal unbundling of the gas transmission function 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. The Ministry of Economy, Trade and Industries Establishment Act provides for the Ministry's jurisdiction over matters concerning comprehensive policies in relation to energy and mineral resources and over matters concerning the securing of the stable and efficient provision of gas, electric power and heating to Japan, and for the handling of such matters by the Ministry's Agency for Natural Resources and Energy.

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 Electricity Business Act is the main source of legislation regulating businesses involving the generation, transmission and sales (distribution) 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 government of the system provided under the Electricity Business Act.

As for nuclear power, regulation is provided in the Atomic Energy Fundamental Act, the Act on Compensation for Nuclear Damage and other such specialised legislation.[2]

2 Although, since the accident at Fukushima in 2011, various legislative acts for compensation and support pursuant to nuclear damage have been enacted in Japan and there have also been significant recent developments in these legal fields, these developments will nevertheless not be covered in this chapter. For an update on such developments, please refer to Naoki Iguchi, Ava Tabila and Yuko Suzuki, 'After The Quake: Rethinking Japan's Renewable Energy Policy', SEERIL Current Practice, vol. 7, p. 21.

The Gas Business Act is the main 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 Gas Business Act.

As for LPG, the main 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

The following activities relating to the electricity business are regulated under the Electricity Business Act:

a supplying electric power to general consumers and businesses (general electric utilities business);

b supplying wholesale electric power to general electric utilities utilising production facilities the capacity of which is in excess of 2 million kW (wholesale electricity utilities business);

c supplying electric power to large-scale businesses with demand in excess of 50kW through the use of electric lines and cables generally owned by general electric utilities (such suppliers are generally known in Japan as 'power producer suppliers' or 'PPSs');

d supplying electric power to specified consumers and businesses in a specified area utilising their own privately owned power production facilities, electric lines and cables (electricity utilities business within a specified area); and

e supplying wholesale electric power in excess of a certain amount of capacity to general electric utilities through executed long-term agreements (such suppliers are generally known in Japan as 'independent power producers' or 'IPPs').

Of the five aforementioned categories, most prominent are the general electric utilities. There are currently 10 such regional electric power companies in Japan, their representative being the Tokyo Electric Power Co, Ltd (TEPCO). These companies at one time held regional monopolies over Japan's electric power industry and even now continue to cut imposing figures in the energy industry.

As for the remaining categories, two entities (Electric Power Development Co Ltd (or J-Power), and the Japan Atomic Power Company) currently fall under the category of wholesale electricity utilities; 651 corporate entities currently exist as PPSs as of 31 March 2015 according to the website of the METI, such as Ennet Corporation, a company established by a joint venture of Tokyo Gas Co Ltd, Osaka Gas Co Ltd and NTT Facilities Inc. Various others operate under the title of electricity utilities within a specified area, such as Roppongi Energy Service Co Ltd, a supplier of electric power, whose generators are located beneath the Roppongi Hills business complex in Tokyo's Minato ward and which supplies electric power to the entire Roppongi Hills complex.

Many still function as IPPs, such as the large majority of business operators utilising FITs to run solar and wind power-generation businesses discussed in Section V, *infra*.

Entities intending to engage in any general electric utilities business, wholesale electricity utilities business and electricity utilities business within a specified area are required to obtain approval from the METI prior to commencing of such business. Criteria for the grant of such approval include whether the applicant has sufficient financial resources and technical capabilities to properly perform such businesses or whether such business is based on a reliable business plan. Applicants will be judged on their ability to cater to the energy consumption demands of the general public and whether they will be capable of running a sound business. Processing time for such applications will depend on the approval applied for. In general, an application for approval in relation to a general electric utility business will require three to four months, whereas approval for a wholesale electricity utility business will require anywhere from five weeks to two months with approval for electricity utilities business within a specified area requiring five to eight weeks.

In contrast, entities intending to engage in any of the activities of PPSs are only required to file a notification with the METI upon the commencing such business.

Entities intending to engage in any of the activities of IPPs are not required to obtain approval from the METI prior to commencing business, but are required to file a notification with the METI regarding the price and other terms of the supply of electricity. In addition, while neither approval nor notification are required for commencement of an electric power generation business, the METI must still be notified of the installation work plans of the power stations depending on the type of power generation and scale of the generator facilities (additional authorisation will also be necessary in the event of installation of nuclear power stations). The majority of entities viewed as engaging in large-scale electricity power generation business including IPPs will likely be subject to these requirements.

It should be noted that the amendment to the Electricity Business Act passed in June 2014, which will come into effect by the end of 2016, liberalises entry to electricity retail business. After this amendment comes into effect, even retail consumers will be able to choose a supplier regardless of the size of demand. In response to this liberalisation, the five categories set out above will be changed into simpler three categories, which are generation, transmission (distribution) and retail sale. While generation businesses can commence merely by filing, and while retail sale will be required for registration and bound by certain regulations such as the securing of a stable supply of electric power and consumer protection measures, transmission or distribution businesses will be allowed only after the operator obtains approval from the METI prior to commencing such business.

Gas

Town gas businesses targeting general consumers

The Gas Business Act stipulates that entities intending to perform 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 such other necessary information are described. The criteria stipulated in the Gas Business Act for the grant of such 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 perform such 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 2015, 209 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 37 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 2015).

Other types of town gas business

In addition to the above, the Gas Business Act 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 2015, the number of business operators that had obtained the necessary registrations and were currently engaged in the sale of LPG is 20,600. 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 such 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 such notifications and reports to the Minister of Finance or such 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 that a transfer of the business of a general electric utility, wholesale electricity utility and electricity utility within a specified area in its entirety is contemplated, or in the event of a merger or demerger whereby the surviving entity completely absorbs any such business. The criteria for granting such approval are the same as those for the original grant of approval to operate such businesses. Notification of the METI is also required upon the handover of any equipment or facilities in relation to general electric utilities, wholesale electricity utilities or electricity utilities within a specified area.

In the case of a PPS, in the event of any transfer of such business in its entirety or of any merger or demerger whereby the surviving entity completely absorbs such business, the succeeding entity is only required to notify the METI.

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 such required authorisation are the same as that for the original grant of approval to operate such businesses.

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

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 four stages of institutional reform post-1995, Japan realised the liberalisation of its electric power generation and sales sectors to a certain extent. That being said, it should still be noted, however, that the electric power transmission sector is still very much dominated by the aforementioned 10 power companies that have continued as general electricity utilities (except in cases where PPSs use their own electric power transmission facilities). The securing of the stable provision of electric power has been cited as a reason for this and as a result, general electricity utilities (electric power companies such as TEPCO) have an overwhelming competitive advantage in the electric power industry over other competitors engaged in the production and transmission of electric power and related retail operations.

Notwithstanding the foregoing, because the electric power distribution grid is a 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. To be more specific, compulsory notification of electric power transmission details, equal treatment of the consumers, and separation of electric power transmission division accounts of general electric power business operators from its other divisions have been implemented for the foregoing purpose.

Government policy on separation/unbundling of electric power transmission sectors

As part of the Electricity System Reform, on 15 February 2013, an advisory committee for electric power systems reform was set up by the METI, which finalised its report and implementation schedule. The report recommended the independence of the electric power transmission and distribution functions (formation of separate corporations for power distribution, in particular). As a result, on 2 April 2013, Prime Minister Shinzo

Abe instructed the relevant ministers to prepare the bills required to implement the committee's proposals. Pursuant to the schedule for the reform of the electric power system:

a the establishment of the Organisation for Cross-regional Coordination of Transmission Operators and operational control of the transmission system by such an independent system operator shall be established within 2015;

b the entry into the electricity retail business shall be fully liberalised by the end of 2016 (the bill was passed in 2014); and

c the bill that aims for the legal unbundling of the transmission/distribution sector was submitted by the cabinet to the Diet in March 2015 and is currently being discussed by the Diet as of April 2015.

While the detailed regulations will be discussed through the enactment of further amendments and implementing regulations in a few years' time, and the transmission/distribution sector will be scheduled to be unbundled from the other sectors, the business of transmission and distribution will be performed based on a licence from the METI even under the new regime, and the regional monopoly will be kept under strict regulations to secure open and fair competition.

Fully distributed cost method

General electric utilities are required to obtain the approval of the METI in relation to the setting of rates and other conditions for the supply of electric power. A condition for the grant of such approval is that the 'rates consist of fair costs incurred as a result of efficient management and fair profits'. Calculation of electricity rates is supposedly subject to the General Electric Utility Supply Provisions' rules for fee calculation, which aim to limit costs and reduce electricity prices by making 'efficient management' a requirement for all such operators. In reality, however, it has been pointed out that TEPCO can easily declare prices higher than necessary and unjustifiably increase electricity rates and many share serious doubts as to the ability of the METI to monitor it.

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 Gas Business Act 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 such 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 in order 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. As of 2013, of the 320 new entrants to the commercial-scale gas supplier industry, only 99 entrants will be utilising gas transportation – barely 31 per cent.

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 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 such transactions. (It is possible to undertake both buy and sell orders through the JEPX.) In order to participate in electric power commodity

trading on the JEPX, membership as a trade affiliate is necessary. As of 1 April 2015, 108 companies were trade affiliates of the JEPX.

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

General electric utilities are required to only execute contracts with general consumers, the terms and conditions of which have been approved by the METI. Such entities are also prohibited from refusing to supply electric power to consumers unless there are legitimate grounds for doing so.

Additionally, electricity utilities within a specified area are required to notify the METI of the contents of their electric power supply contracts.

In direct contrast, PPSs are free to set the terms and conditions of their electric power supply contracts at their discretion, based only on negotiations with their relevant counterparties.

As set out in Section II.ii., *supra*, the amendment to the Electricity Business Act was passed in June 2014. It will come into effect by the end of 2016, and liberalises entry into the electricity retail business, but provides a provisional measure that requires general electric utilities to continue to use the existing terms and conditions for the time being. The bill to amend the Electricity Business Act, submitted in March 2015 and currently being discussed in the Diet, includes a provision that gives the government discretion to remove that provisional measure in certain areas.

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 due to 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 in order 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 due to 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, 35 new gas companies entered into the gas industry (based on approval applications and notifications as of 1 April 2014) and as of 2013, 12.1 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.

iii Market developments

Electricity

The Amendment to the Electricity Business Act, passed in June 2014, provides that electricity shall be subject to commodity futures trading, which enables market participants to avoid the risk of volatility. This amendment will come into effect by the end of 2016.

Further, the Tokyo Stock Exchange, Inc 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.

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 TEPCO, which supply electric power, 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 such 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 since 2012. 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*
		2012	*2013*	*2014*	*2015*	
Solar power	<10kW/h	JPY 42	JPY 38	JPY 37	JPY 33 to JPY 35 depending on device used	10 years
	≥10kW/h	JPY 40	JPY 36	JPY 32	JPY 29 (1 April to 30 June) or JPY 27 (after 1 July)	20 years
Wind power	<20kW/h	JPY 55	JPY 55	JPY 55	JPY 55	20 years
	≥20kW/h	JPY 22	JPY 22	JPY 22	JPY 22	20 years
	Offshore wind power*			JPY 36	JPY 36	20 years
Geothermal power	<15000kW/h	JPY 40	JPY 40	JPY 40	JPY 40	15 years
	≥15000kW/h	JPY 26	JPY 26	JPY 26	JPY 26	15 years

	Electricity generated	*Sales price (excluding tax)*				*Contract term*
		2012	*2013*	*2014*	*2015*	
Hydroelectric power	<200kW/h	JPY 34	JPY 34	JPY 34	JPY 34	20 years
	≥200kW/h <1000kW/h	JPY 29	JPY 29	JPY 29	JPY 29	20 years
	≥1000kW/h <30000kW/h	JPY 24	JPY 24	JPY 24	JPY 24	20 years
Existing headrace tunnel-type medium and small-scale hydroelectric power*	<200kW/h			JPY 25	JPY 25	20 years
	≥200kW/h <1000kW/h			JPY 21	JPY 21	20 years
	≥1000kW/h <30000kW/h			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 39 depending on material used	JPY 13 to JPY 40 depending on material used	20 years

*Offshore wind power: generators that require a vessel to access for the purpose of construction and operational maintenance.
*Existing headrace tunnel-type medium and small-scale hydroelectric power: generators which utilise existing headrace tunnels with renewed 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 kW/h).

	April 2012 to March 2013	*April 2013 to March 2014*	*April 2014 to December 2014*
Solar power (<10kW/h)	232,068.3	485,686.0	464,093.8
Solar power (≥10kW/h)	18,952.9	425,466.9	965,654.1
Wind power	274,171.2	489,638.3	321,460.1
Hydroelectric power	12,007.4	93,552.6	84,838.1
Geothermal power	123.5	570.9	192.8
Biomass power	21,698.5	316,940.0	265,792.7
Total	559,021.8	1,811,854.7	2,102,031.6

On the other hand, problematic businesses, such as those which 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 new 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 due to the possibility of excess of supply if all the approved renewable source energy generation facilities start generation. In order to solve this problem, the METI implemented a new rule that can allow those general electric utilities to unlimitedly restrict output from the newly established renewable facilitates in certain situations where oversupply of electricity occurs and, as a result, the electric companies resumed executing a contract 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

Following the events at Fukushima in 2011, the electric power industry regulations have already witnessed great reforms. First, the electric system reform including full liberalisation of entry into the electricity retail business is under progress, and the following phase of the reform including legal unbundling of the electric power transmission function/sector from the existing dominant power suppliers is currently discussed in the Diet. 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.

In parallel with the electric system reform, the gas system reform, which would lead to the deregulation of retail sales of town gas in all respects, is under discussion by the Diet. However, there still remain many issues to be resolved in respect of the implementation of such deregulation, such as the improvement of infrastructure such as pipelines. Accordingly, it will be necessary to monitor the continued progress of such discussions.

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 March 2015, all 48 nuclear power stations in Japan are undergoing periodic maintenance. In the meantime, the Nuclear Regulation Authority issued new safety standards of nuclear power station in July 2013 and currently 21 nuclear power stations are in the process of the review for restart under the new safety

standard (four stations 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 the rapidly shifting facets of the energy industry at the moment, the only thing that can be said with any certainty is that change is imminent. Exactly how and in what form such change will take place 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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