

THE ENERGY
REGULATION
AND MARKETS
REVIEW

ELEVENTH EDITION

Editor
David L Schwartz

THE LAWREVIEWS

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David L Schwartz

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PREFACE

In our 11th year of writing and publishing *The Energy Regulation and Markets Review*, the most pressing global concerns are inflation, supply chain concerns, the Ukraine war and continuing effects from the covid-19 pandemic. Accordingly, many of our contributing authors have emphasised concerns associated with the effects of these crises on infrastructure development, commodity purchases and energy demand. We have also seen industry and regional specific changes that have added uncertainties to global energy policies. For example, oil and gas prices have spiked sharply (offering a dramatic contrast to historically low prices just two years before). While pricing changes may be a boon for sellers and their exporting countries, that has created uncertainty for countries that are highly dependent upon oil and gas consumption and imports, particularly imports from Russia, which is now subject to certain embargoes following the initiation of trade sanctions earlier this year arising from Russia's invasion of Ukraine. Additionally, the United Kingdom continues to experience uncertainties resulting from its transition out of the European Union (a process known as Brexit), particularly regarding the future of its energy policies to reduce greenhouse gases and its coordination and cooperation with the European Union. The Biden administration has continued to reassure US allies and historical trading partners that it remains committed to the 2015 Paris Agreement, notwithstanding the Trump administration's previous withdrawal. And the memory of the 2011 Fukushima nuclear incident continues to affect energy policy in many countries. Finally, there are continued efforts to liberalise the energy sector globally.

I CLIMATE CHANGE DEVELOPMENTS

We continue to see significant carbon reduction efforts globally, including increased use of renewable resources and measures to improve energy efficiency and reduce demand.

In the United States, the Biden administration has continued to commit to the fight against climate change, despite the previous administration's support for fossil fuels. While coal and other aged fossil fuel plants continue to retire at an unprecedented rate (primarily because of the economics of those facilities), the Texas winter storm in February 2021 and recent dramatic increases in oil and gas prices have raised questions about whether renewable resources alone will be sufficient for long-term reliability. The US Federal Energy Regulatory Commission issued a report recommending reliability improvements to prevent rolling blackouts resulting from severe storms. Many states have continued to award procurements of thousands of megawatts of new offshore wind development projects on the east coast and, in May 2021, the US Bureau of Ocean Energy Management granted its first approval for the Vineyard Wind offshore project. The Federal Energy Regulatory Commission has continued

to struggle with whether and how to impose regulatory restrictions on the ability of states to subsidise renewable energy projects in light of their adverse impacts on competitive market prices.

Despite Brexit, the United Kingdom's renewable energy targets have continued to meet or exceed those of the European Union. France is seeking to double its wind and solar capacity and President Macron has announced a goal to close the remaining coal plants by 2022. France has recently updated its national policy priorities with respect to climate change to include low-carbon hydrogen resources as well as power plants equipped with pumped storage, and provided a new certification process for biogas. Italy had previously targeted a 28 per cent reliance on renewable energy by 2030 but is now working to reach the 32 per cent target adopted by the European Union, and has recently created a new Ministry of Ecological Transition to assist with the fight against climate change. To reduce reliance on Russian oil and gas, Belgium seeks to triple its offshore wind capacity to 5.8GW by 2030. Portugal is retiring coal generation and replacing it with renewable and hydrogen generation resources. Greece is decommissioning some of its old lignite plants and has begun implementation of a 'just transition' plan. Poland has been struggling to meet the EU renewable energy targets but has plans to develop significant offshore wind generation.

China continues to have ambitious renewable energy goals, aiming for an emissions peak by 2030, carbon neutrality by 2060 and a goal of 15 per cent of generation supplied by non-fossil fuel generation. There remains significant debate in Australia regarding the role of gas and coal in the energy landscape, which has led to a patchwork of national and state policies that point to continued uncertainty regarding Australia's commitment to carbon reduction. Malaysia continues its efforts to encourage greater entry into the renewable energy market and has goals to reach 31 per cent renewable generation by 2025 and 40 per cent by 2035, which reflects an increase in renewables of 15 per cent over previous targets.

The United Arab Emirates aims to reduce its carbon footprint by 70 per cent by relying on 50 per cent renewable energy by 2050, and recently launched an ambitious initiative to fund and supply clean electricity to almost 100 million people in Africa by 2035. In Brazil, hydroelectric resources constitute more than half of its installed generation capacity, and efforts continue to increase wind and solar generation as the cost of renewable generation has decreased.

II INFRASTRUCTURE DEVELOPMENT

The multiple crises so far this year (inflation, the war in Ukraine, supply chain issues and the continued covid-19 pandemic) have increased prices and slowed infrastructure development for many countries, particularly those in which a reliable energy supply remains the primary concern, regardless of fuel source. Even the United States is no exception, as controversy remains over the Dakota Access Pipeline, development and approvals for which have continued to stall, and the Biden administration revoked the Keystone XL Pipeline's presidential permit in January 2021, regardless of the recent dramatic increases in oil prices. The European Union has recognised the need to secure a diverse energy supply, particularly in view of Russia's invasion of Ukraine and the desire to reduce reliance on Russian oil and gas. Belgium is expected to increase investment not only in renewable generation but also in hydrogen and geothermal energy to combat reliance upon Russian oil and gas. Portugal is also seeking to expand the development of green hydrogen as an alternative fuel source, including development of the Sines project, which is intended to replace in part the capacity

lost following the retirement of coal generation. Furthermore, and unsurprisingly, Russia is expected to experience a significant downturn in foreign investment in its energy sector as a result of sanctions imposed by the United States, the European Union, the United Kingdom and many European states. Lebanon has developed a plan to reform its electricity sector to increase installed capacity so that electricity can be provided for up to 20 hours per day. Nigeria has only 12,000MW of installed generation capacity, which is insufficient to meet its needs, and is looking to the gas sector in the country to supply sufficient fuel to support additional generation resource development.

III NUCLEAR POWER GENERATION

Ten years after the Fukushima disaster, there is a struggle between efforts to limit reliance upon nuclear energy and the emissions reductions and fuel diversity benefits nuclear power offers. Because of the Ukraine war and the need for fuel diversity, and the importance of nuclear power for fighting climate change, Belgium has extended the economic lifetime of two nuclear power plants until 2035. France had previously sought to eliminate nuclear generation by 2025 but has extended that date. South Korea has continued its efforts to phase out nuclear power (replacing nuclear plants with new renewable facilities over time). However, the United Arab Emirates' new 5,600MW Barakah nuclear power station is almost complete and one of its units is already operational. When all units are online, Barakah will supply 25 per cent of the emirates' electrical needs. Poland still intends to explore the development of up to six new nuclear power units in the future, with a target date for the first unit in 2033. In the United States, although the early retirement of certain nuclear plants has been driven by cost and power market considerations (rather than safety concerns), some states have passed legislation to subsidise nuclear energy to allow owners to continue to operate through zero emissions credit programmes, including Illinois, New York, New Jersey and Ohio.

IV LIBERALISATION OF THE ENERGY SECTOR

We have seen significant energy sector regulatory reforms in many countries. The European Union has sought to continue efforts to centralise the regulation of the EU energy sector, albeit without the full participation of the United Kingdom. Belgium, Portugal, Greece and France (among others) have each taken significant steps towards further liberalisation of the energy sector. Australia has opened access to transmission through regulatory reforms to ensure timely transmission investment and encourage market entry, and continues to engage in significant changes in the regulation of the energy market. Brazil has recently implemented net metering regulations and is now implementing distributed generation regulations. China has reduced subsidies for renewable energy and has implemented a market-price mechanism for pricing coal-based generation. The United Kingdom has continued to implement a competitive tender process for the development of offshore transmission. In the United States, while states have continued to subsidise renewable generation (particularly significant new subsidies for offshore wind development in the Northeast), the Federal Energy Regulatory

Commission has continued to struggle between deference to states in making procurement decisions and protections against adverse impacts on competition by implementing minimum offer price rules to combat buyer-side mitigation markets.

I would like to thank all the authors for their thoughtful consideration of the myriad interesting, yet challenging, issues that they have identified in their chapters in this 11th edition of *The Energy Regulation and Markets Review*.

David L Schwartz

Latham & Watkins LLP

Washington, DC

May 2022

MALAYSIA

Richard Khoo Boo Hin and Rachel Chiah¹

I OVERVIEW

Power generation in Malaysia has historically been reliant on fossil fuels such as natural gas and coal. Until 2010, the country's reliance on natural gas as an energy source steadily increased and, at the end of that year, natural gas accounted for 71,543ktoe² of the 106,794ktoe of all energy produced nationwide.³ However, Malaysia is now gradually working towards reducing its dependency on fossil fuels and developing its renewable energy market infrastructure. As at 2019, the country's electricity generation mix comprised 42.8 per cent coal, 40.2 per cent gas, 0.5 per cent diesel and 16.5 per cent renewable resources.⁴ Malaysia has recently announced ambitious targets of 31 per cent renewable energy capacity by 2025 and 40 per cent by 2035.

II REGULATION

i The regulators

The energy market in Malaysia and its participants are subject to a great deal of legislation governing the supply of electricity generally and the mining of energy resources. The principal laws regulating the energy sector in Peninsular Malaysia and Sabah⁵ are as follows:

- a* the Electricity Supply Act 1990 (ESA);
- b* the Renewable Energy Act 2011 (REA);
- c* the Environmental Quality Act 1974;
- d* the Gas Supply Act 1993 (GSA);
- e* the Occupational Safety and Health Act 1994;
- f* the Petroleum and Electricity Control of Supplies Act 1974;
- g* the Petroleum Development Act 1974;
- h* the Petroleum (Safety Measures) Act 1984; and
- i* the Factories and Machinery Act 1967.

1 Richard Khoo Boo Hin is a partner and Rachel Chiah is a senior associate at Skrine.

2 ktoe = kilo tonnes of oil equivalent.

3 PricewaterhouseCoopers, 'The Malaysian Oil & Gas Industry: Challenging times, but fundamentals intact' (May 2016).

4 Energy Commission Malaysia, 'Malaysia Energy Statistics Handbook 2020' (2021).

5 On 1 September 1990, legislative powers in respect of energy laws in the state of Sarawak were delegated to the local state authority.

The legislation listed above also requires compliance with the regulations, orders, rules and other related secondary legislation. The most relevant of these are as follows:

- a* Efficient Management of Electrical Energy Regulations 2008;
- b* Electricity Regulations 1994;
- c* Gas Supply Regulations 1997;
- d* Licensee Supply Regulations 1990;
- e* Petroleum Regulations 1974;
- f* Renewable Energy (Feed-In Approval and Feed-in Tariff Rate) Rules 2011;
- g* Renewable Energy (Renewable Energy Power Purchase Agreement) Rules 2011; and
- h* Renewable Energy (Technical and Operational Requirements) Rules 2011.

The secondary legislation deals with the practicalities of legal compliance in much greater detail and includes regulations on, *inter alia*, safety, licensing, management of supply, transport and transmission, technical and operational requirements and exemptions. The laws may also empower the relevant ministers or regulatory authorities to make further rules, guidelines or directives in respect of their regulatory sphere.

There are multiple regulatory authorities in Malaysia overseeing the various segments of the energy sector. The Energy Commission of Malaysia (the Commission) is the primary regulator of the energy and gas supply in Peninsular Malaysia and Sabah⁶ and is empowered with the following functions, *inter alia*:

- a* to advise the Minister of Energy and Natural Resources (the Minister) on all matters concerning national policy objectives for energy supply activities;
- b* to advise the Minister on all matters relating to the generation, production, transmission, distribution, supply and use of electricity as provided under the electricity supply laws and the supply of gas through pipelines and the use of gas as provided under the gas supply laws;
- c* to promote and safeguard competition and fair and efficient market conduct or, in the absence of a competitive market, to prevent the misuse of monopoly or market power in respect of the generation, production, transmission, distribution and supply of electricity and the supply of gas through pipelines;
- d* to promote the use of renewable energy and the conservation of non-renewable energy; and
- e* to promote research into, and the development and the use of, new techniques relating to:
 - the generation, production, transmission, distribution, supply and use of electricity; and
 - the supply of gas through pipelines and the use of gas supplied through pipelines.⁷

The Commission reports to the Malaysian Ministry of Energy and Natural Resources (the Ministry of Energy) and is responsible for the oversight of all elements of the industry from tariffs and licensing to consumer safety. The Commission works in close cooperation with the Sustainable Energy Development Authority of Malaysia (SEDA), a statutory body

⁶ The regulation of energy and electricity in the state of Sarawak is under the purview of Sarawak's Ministry of Utilities, with Sarawak Energy Berhad being the primary supply authority. Additionally, Sarawak has its own state laws for environmental protection and occupational health and safety.

⁷ Energy Commission Act 2001, Section 14.

formed under the Sustainable Energy Development Authority Act 2011 and responsible for the development and implementation of policies and programmes in relation to sustainable energy. In April 2018, the Commission implemented a single-buyer regime by establishing an entity known as the Single Buyer, which is responsible for conducting electricity planning and managing the procurement of electricity and related services in Peninsular Malaysia.

With regard to hydrocarbon-sourced energy, a company seeking to participate in the extraction of oil and gas in Malaysia will generally do so by entering into production-sharing contracts, joint operating agreements or farm-out agreements with Petroliaam Nasional Bhd (PETRONAS),⁸ and a PETRONAS licence is required to operate a business to process or refine petroleum, or to market or distribute petroleum or petrochemical products.⁹ More recently, Sarawak, a state in east Malaysia, has developed a regulatory role in gas distribution within Sarawak via the state-owned entity Petroleum Sarawak Bhd (PETROS).

ii Regulated activities

The generation and supply of electricity

The construction, operation, management and use of electrical installations designed for the supply or use of electricity require a licence from the Commission.¹⁰ There are two main types of licences issued under the ESA (ESA licences):

- a licences for private installations, meaning any installation operated by a licensee or owner solely for the supply of energy to and use on the licensee's or owner's own property or premises or, in the case of a consumer, taking electricity from a public installation or supply authority for use only on the licensee's or owner's property or premises; and
- b licences for public installations, meaning any installation operated by a licensee for the sale and supply of electricity to any person other than the licensee.

The ESA provides that, except where expressly approved by the Minister, the maximum period for which a licence may be granted is 21 years,¹¹ and the licensee shall be required to pay an annual fee for the licence. The Commission may attach such terms and conditions to the licence as it sees fit, but generally the licences are non-transferable. The licensee must also comply with the provisions of the Commission's guidelines and directives and those of the Grid System Operator.

A person may apply for an ESA licence via the Commission's online application system. Although neither the ESA nor the related rules and regulations expressly impose any ownership or equity limitations on the applicant, the Commission's 'Guidelines on Licensing Under Section 9 of the Act' state that an applicant is required to have a minimum paid-up capital of 2 per cent of the total project cost or connection charge, as applicable. In addition, licences for public installations are subject to the prevailing government policy on foreign equity, which at the time of writing is capped at 49 per cent. Typically, there will be ownership or equity limitations set out in the terms and conditions of licences and other approvals or in the provisions of the power purchase agreements (PPAs) signed between the

8 Petroleum Development Act 1974, Section 2.

9 *id.*, at Section 6.

10 Electricity Supply Act 1990, Section 9.

11 *id.*, at Section 9(4).

independent power producers (IPPs) and the national energy company, TNB.¹² Exceptions to the current policy of a 49 per cent cap on foreign equity in power projects are only granted on a case-by-case basis.

Prior to the commissioning of an installation, a person may apply for a provisional licence from the Commission. A provisional licence is typically required for purposes of obtaining project financing, plant reliability tests or project development. However, a provisional licence is temporary and the licensee is required to obtain the requisite ESA licence prior to commencing operations.

Generation and supply of gas via pipelines (for private utilities and supply to consumers)

The GSA regulates delivery of gas to consumers via pipelines, downstream from the connection flange of the loading arm at the regasification terminal or the last flange of the gas processing plant or onshore gas terminal.¹³ Prior to 2016, there were only two types of licences for the supply of piped gas in Peninsular Malaysia:

- a* private gas licence – allowing its holder to supply and use piped gas on its own premises (e.g., restaurants); and
- b* gas utility licence – allowing licence holders to supply gas via pipelines to third parties for their use.

Historically, power producers and industrial consumers of gas were only able to source gas from PETRONAS. However, as part of the Tenth Malaysia Plan¹⁴ and the country's New Energy Policy, the government has opened up the gas supply market to manage the growing demand for energy and gas in Malaysia and encourage economic growth. In 2016, the GSA was amended to provide more opportunities to liberalise the downstream gas markets. Following this, since 2017 in all states in Malaysia except Sarawak, the Third Party Access System (the TPA System) has been implemented, whereby new suppliers can bring liquefied natural gas into Malaysia via the regasification terminals for distribution to Malaysian buyers. The TPA System permits third parties to access and utilise gas distribution networks, thereby promoting competition in Malaysian gas markets. In October 2019, TNB Fuel Services Sdn Bhd took delivery of the very first gas shipment under the TPA System from Shell Malaysia Trading Sdn Bhd at a price below the regulated gas price, marking the start of the next phase of TPA implementation in Malaysia.

Pursuant to the GSA, a person will require a licence from the Commission to carry out:

- a* import into regasification terminals;
- b* regasification of gas;
- c* shipping of gas;
- d* transportation of gas;
- e* distribution of gas;

12 Note that the Energy Commission 'Guidelines on Large Scale Solar Power Plants for Connection to the Transmission and Distribution Electricity Networks' prescribe a 49 per cent foreign equity cap for large-scale solar plant projects.

13 Section 1(3), Gas Supply Act 1993.

14 2011–2015.

- f* retail of gas; or
- g* use of gas.

There is no limit on the number of licences that can be obtained by a person, provided that there will be no conflict of interest in the performance of the relevant licensee's obligations.¹⁵

To obtain a licence under the GSA, the applicant must comply with the requirements stipulated in the Commission's guidelines on licence applications. These requirements vary depending on the type of licence, but in general the applicant must:

- a* be a Malaysian-incorporated company or have a place of business in Malaysia;
- b* meet the minimum paid-up capital stipulated by the Commission (5 million ringgit or its equivalent in other currencies);
- c* have sufficient financial capability;
- d* have sufficient relevant technical capability; and
- e* comply with such other requirements as may be prescribed by the Commission.¹⁶

At present, licences shall not be granted to any person who is not incorporated in Malaysia or who does not have a place of business in Malaysia (except for a licence for importing gas into a regasification terminal).¹⁷ The licences are not transferable or assignable without the prior written consent of the Commission or the Minister.¹⁸

The tariff for utilisation of gas facilities will be determined by the Commission, but TPA System licensees will be able to negotiate gas prices with buyers on a willing buyer-willing seller basis. The Commission retains the right to regulate the price of gas to retail customers as necessary to protect the consumer interest.

Change of control or ownership

In Malaysia, licences are non-transferrable and hence any acquirer of an energy business must procure its own energy licences (or, if the acquisition is by way of sale of shares in the licensee, the consent of the Commission and other stakeholders are likely to be required).

Other regulatory requirements

While the licences discussed above relate to the construction of power plants and power installations, and to the supply, sale, distribution and transmission of energy, there are other ancillary licences and certifications that may be relevant to a prospective market entrant; for example, approvals from the Department of Environment of Malaysia or the Malaysian Department of Occupational Safety and Health. A licence holder would generally also be required to employ certain technically skilled and qualified persons registered with the Commission and although the government has been gradually liberalising professional services in Malaysia, the relevant laws continue to prescribe minimum qualification requirements that are favourable to Malaysians or require local participation (e.g., a minimum period

15 Gas Supply Act 1993, Section 11B(3); Energy Commission, 'Frequently Asked Questions for Third Party Access System (TPA)'.

16 Note that the requirements for minimum paid-up capital, financial capability and technical capability do not apply to retail and private gas licences.

17 Gas Supply Act 1993, Section 11B(2)(b).

18 *id.*, at Section 11B(4).

of residency in Malaysia or a minimum percentage of Malaysian or Bumiputera¹⁹ equity in an applicant company). Other laws, such as the Factories and Machinery Act 1967 and the Petroleum (Safety Measures) Act 1984, also contain provisions addressing licences, approvals, certifications and registrations relating to safety, transportation and other matters that are ancillary, but nonetheless essential, to any party interested in entering the Malaysian energy market.

III TRANSMISSION/TRANSPORTATION AND DISTRIBUTION SERVICES

i Vertical integration and unbundling

The electricity transmission network in Peninsular Malaysia, known as the National Grid, is owned and operated by TNB. IPPs sell the electricity generated to TNB at the tariff stipulated in their respective PPAs. The electricity grid that supplies power in Sabah is owned and operated by Sabah Electricity Sdn Bhd (SESB), a company owned partly by TNB and partly by the Sabah state government, whereas the grid in Sarawak is owned and operated by state-owned Sarawak Energy Berhad. Since the privatisation of power production in the early 1990s, the upstream market for the generation of electricity remains highly competitive with a mixture of local and foreign power producers and a competitive bidding system for power plant projects.

With respect to gas, several licences have already been issued by the Commission under the GSA since the implementation of the TPA System. A full list of licensees is available on the Commission's official website. Gas Malaysia Bhd operates and maintains the Peninsular Gas Utilisation pipeline system in accordance with its distribution licence, and its subsidiaries, Gas Malaysia Distribution Sdn Bhd and Gas Malaysia Energy and Services Sdn Bhd, have successfully obtained gas distribution and shipping licences respectively, from the Commission. Sabah Energy Corporation Sdn Bhd operates and maintains the gas distribution pipelines in Sabah.

ii Transmission/transportation and distribution access

Except in limited circumstances, an ESA licence holder has a duty to supply electricity to the premises to which its licence relates upon receiving a notice of request from the owner or occupier of those premises.²⁰ The GSA imposes a similar duty on the holder of a gas retail licence to supply gas to (1) a consumer's premises and (2) any regasification, transportation or distribution licensee, upon receiving a notice of request from that person.²¹

19 The term 'Bumiputera' or 'Bumiputra' is used to describe Malays and the indigenous population of Malaysia.

20 Electricity Supply Act 1990, Sections 24 and 25.

21 Gas Supply Act 1993, Section 14, subject also to Section 15.

iii Rates

The Commission is empowered to determine the tariffs for both electricity and gas under the ESA and the GSA, and to issue guidelines for tariffs and charges, including the methodology, categories of tariffs and charges, and the duration for the imposition and review of tariffs and charges.

Electricity prices are regulated by the Malaysian government via the Commission. Similarly, the tariffs for gas supply are vetted and approved by the Commission.

iv Security and technology restrictions

In cases of industrial unrest, lockout, strike or other emergency, or if the constitutional monarch of Malaysia decides that public interest so requires, the monarch may authorise the Commission to suspend an ESA licence or take temporary possession of any power installation or gas pipeline, and operate it as the Commission sees fit. Alternatively, the monarch may order that the licensee's licence and right to use the installation or pipeline be withdrawn either partially or completely.

As to information security, both the ESA and the GSA have similar information security provisions, requiring an ESA or GSA licensee to be responsible for the preservation of confidentiality and integrity of its information, information systems and supporting network infrastructure pertaining to its duties and other matters as provided under the relevant Act. A licensee must take all necessary measures to protect the relevant information from any risk of unauthorised access, intrusion or removal, and in the event of becoming aware of any incident that may interfere with or affect the performance of the licensed activities, the licensee is obliged to inform the Commission immediately.²²

IV ENERGY MARKETS

i Development of energy markets

Prior to the 1990s, TNB had a monopoly over the electricity supply industry in Malaysia, at the generation, transmission and distribution levels. In 1993, the first electricity purchase agreement was signed in Malaysia, with Malaysia's first IPP. Since then the Malaysian energy market has been gradually liberalised, with the Commission awarding power plant projects to companies via a mix of direct awards and competitive bidding. The Malaysian government maintains absolute discretion in the awarding of these projects. The Commission's position has been that direct awards of power plant projects are the exception and not the rule.²³

The current Malaysian energy sector framework is based on a single-buyer model whereby IPPs and the power generation arm of TNB are responsible for generating electricity, which is sold to TNB (in Peninsular Malaysia), Sarawak Energy (in Sarawak) and SESB (in Sabah). These parties are then responsible for distributing and retailing electricity in their respective jurisdictions. Malaysia also has a number of captive power plants; however, captive power remains a marginal contributor to Malaysia's total energy generation capacity.

22 Electricity Supply Act 1990, Section 52A and Gas Supply Act 1993, Section 37G.

23 Cecilia Kok, 'EC: Competitive Pricing Still the Rule', *The Star Online* (9 September 2016). See also Wan Ilaika Mohd Zakaria, 'Energy Commission Prefers Competitive Bids', *The Sun Daily* (21 November 2017), at www.thesundaily.my/news/2017/11/21/energy-commission-prefers-competitive-bids.

In recent years, the Malaysian government has been pushing for increased use of renewable energy – the Commission conducted competitive bidding exercises for four large-scale solar (LSS) projects, in 2016, 2017, 2019 and 2020, and the commissioning of a number of these projects has probably contributed significantly to the fact that renewable energy accounted for 23 per cent of the national installed power capacity at the end of 2020.²⁴

The Commission also introduced the New Enhanced Dispatch Arrangement (NEDA) system in 2015, which allows IPPs to supply power to the National Grid without entering into a PPA. Existing IPPs may also participate, but they must also comply with the terms of their respective PPAs. NEDA has sought to reduce energy prices by introducing a system whereby energy generators bid daily on variable operating rates, according to the NEDA rules.

Prior to 2015, no PPAs had ever been granted to a majority foreign-owned company (i.e., a company owned and controlled by non-Malaysians). Government policies required an IPP operator to have no more than 49 per cent of its equity in the hands of non-Malaysian entities. At the end of 2015, the government made an exception for the acquisition of 1Malaysia Development Bhd's power assets by China General Nuclear for 9.83 billion ringgit, making it the largest acquisition by value in the history of Malaysia's energy industry and the first – and so far, the only – instance in which the Malaysian government has made an exception to the foreign equity rule and allowed a non-Malaysian entity to acquire 100 per cent of the equity in an IPP.²⁵

On 12 March 2021, the Commission shortlisted 30 bids for the development of solar farms (with export capacity ranging from 10MW to 50MW) in Malaysia's fourth LSS bidding cycle, with commissioning expected to commence in late 2022 or early 2023.²⁶

ii Energy market rules and regulations

The laws and authorities regulating the generation of energy also govern its supply and sale. Energy continues to be sold to consumers at fixed, government-approved tariff rates. Notwithstanding Malaysia's policy of privatisation, competition in the energy market lies mainly at the level of bidding for power projects and power generation, and has little direct effect on the price paid by end consumers for their electricity.

iii Contracts for sale of energy

In Peninsular Malaysia, electricity generated by the IPPs is sold to TNB (as offtaker) pursuant to the terms of their respective PPAs. TNB then sells on the electricity to the end consumers. IPPs do not enter into contracts with individual consumers, apart from in highly exceptional circumstances).

Historically, all gas used in the generation of electricity was sold by PETRONAS to IPPs pursuant to the terms of the gas sales agreements between PETRONAS and the IPPs, and in accordance with the Commission's 'Guidelines for Implementation of Gas Framework Agreement (GFA) in the Power Sector'. The Single Buyer determines the quantity of gas

24 Malaysia Renewable Energy Roadmap (December 2021).

25 Elffie Chew, 'Malaysia's 1MDB Sells Power Unit in Step to Wind Down Operations', Bloomberg (23 November 2015), at <https://www.bloomberg.com/news/articles/2015-11-23/1mdb-sells-power-unit-to-china-general-nuclear-for-2-3-billion>.

26 Energy Commission, press release, 'Request for Proposal (RFP) for the Development of Large Scale Solar Photovoltaic (LSSPV) Plants in Peninsular Malaysia for Commercial Operation in 2022/2023 (LSS@ MEnTARI) Selection of Shortlisted Bidders' (12 March 2021).

that the IPPs require to generate their allocated capacity, and arranges for its delivery and offtake between PETRONAS and the IPPs. The terms of the individual gas sales agreements between PETRONAS and the IPPs are fairly standard and generally there is little room to negotiate on non-commercial points. The liberalisation of the market for the supply of gas has allowed third parties to sell on the gas to consumers through PETRONAS' piping system. However, the capacity for negotiation of the terms of supply is restricted by the fact that consumers do not have a choice of supplier; they obtain their gas supply from whichever retail licensee owns the piping system providing the gas to the consumer's premises. The government also reserves the right to determine gas prices and will do so when it deems it necessary to protect consumers' interests.²⁷

iv Market developments

Green Electricity Tariff

In November 2021, the Ministry of Energy launched the Green Electricity Tariff programme (GET),²⁸ which offers electricity consumers the option to purchase electricity generated from renewable energy sources comprising:

- a LSS plants;
- b hydropower stations belonging to TNB or TNB's subsidiaries; and
- c any other renewable energy plants approved by the Commission.

The total quota of green electricity offered under GET will be 4,500GW per annum. At the time of writing, TNB has announced on its website that GET has been fully subscribed.²⁹

A consumer interested in participating in GET is required to apply for a subscription in blocks of 100kWh (residential) or blocks of 1,000kWh (non-residential). The amount subscribed for should be less than or equivalent to the consumer's monthly consumption, as determined by TNB. Upon approval of the application, the consumer is required to enter into a GET contract with TNB. Subscription to GET is based on a one-year cycle, with automatic renewal on prevailing terms, and the consumer will have to apply for termination or modification of the subscription.

Consumers subscribing to GET will have to pay a premium tariff rate, which is currently set at 3.7 sen/kWh. This premium is separate from and additional to the applicable gazetted tariff rate imposed on the consumer.

A key aspect of GET is the issuance of renewable energy certificates on an annual basis, allowing consumers to reduce their carbon footprint. This is likely to have contributed to the strong response to GET, with large corporations and banks in Malaysia undertaking to procure green electricity through the programme.

27 Energy Commission, 'Frequently Asked Questions for Third Party Access System (TPA)', at https://www.st.gov.my/images/article/faq/2017/FAQs_TPA_20170116_V3_-_English.pdf.

28 Energy Commission, 'Guide on Green Electricity Tariff' (December 2021).

29 As at 5 April 2022.

V RENEWABLE ENERGY AND CONSERVATION

i Development of renewable energy

Since the implementation of the Tenth Malaysia Plan, the government has implemented a range of programmes and projects to educate the Malaysian public and encourage electricity efficiency and energy conservation. Energy laws and regulations reflect this; for example, the Efficient Management of Electrical Energy Regulations 2008 authorises the Commission to require operators and owners of installations that consume 3 million kWh or more during a six-month period to engage a registered energy manager to analyse the total consumption of electrical energy, advise on the development and implementation of measures to ensure efficient management of energy and monitor the effectiveness of the implemented measures.³⁰ The introduction of the feed-in tariff mechanism under the REA was similarly enacted with the aim of expanding and developing the country's green energy industry.

There are a number of fiscal incentives in place that are specifically targeted at potential entrants to the renewable energy market in Malaysia. For example, a budget of 5 billion ringgit had been approved under the Green Technology Financing Scheme (GTFS) to help fund new energy efficiency projects in Malaysia for the period 2018–2022.³¹ On 6 March 2019, the Ministry of Finance approved an upgraded scheme, GTFS 2.0, for companies that are majority Malaysian-owned, allocating 2 billion ringgit for the period between January 2019 and the end of 2020. Successful applicants are entitled to an interest or profit rate subsidy of 2 per cent per year on loans and financing for the first seven years of the financing term, and a government-issued financial guarantee of 60 per cent of the green component cost.³²

The Ministry of Energy has also launched the Energy Audit Conditional Grant (EACG 2.0) programme,³³ under which a conditional energy audit grant is given to:

- a commercial and industrial installations with total electrical energy consumption equal to or exceeding 3 million kWh over a period of six consecutive months; and
- b private installations with total net electrical energy generation equal to or exceeding 3 million kWh over a period of six consecutive months.

The Malaysian Investment Development Authority (MIDA) offers tax incentives for green technology projects and services. Subject to conditions imposed by MIDA, a Malaysian company that undertakes a green technology project or a company that purchases green technology assets as listed in MIDA's MyHijau Directory or provides green technology services may be eligible for investment tax allowance and income tax exemptions. As part of the national budget for 2020, these incentives have been extended until 2023.³⁴

30 Regulation 6(1) of the Efficient Management of Electrical Energy Regulations 2008.

31 Mohd Khalemi, 'Green Tech Financing Scheme to Continue With RM5bil Funding', Green Technology Financing Scheme (GTFS) (2 March 2017), at <https://www.gtfs.my/news/green-tech-financing-scheme-continue-rm5bil-funding-0>.

32 See the official GTFS 2.0 website, at <https://www.gtfs.my/page/features-gtfs-20>.

33 See the Sustainable Energy Development Authority (SEDA) website, at <https://www.seda.gov.my/energy-demand-management-edm/energy-audit-conditional-grant-commercial-building/>.

34 'Green Technology Incentives: Towards Achieving Sustainable Development In Malaysia', at <https://www.mida.gov.my/green-technology-incentives-towards-achieving-sustainable-development-in-malaysia/>. Renewables development has not slowed in the wake of the covid-19 pandemic, with MIDA having received 900 applications for these tax and investment incentives in 2020.

Feed-in tariff approvals and renewable energy power purchase agreements

A small producer of renewable energy may apply to SEDA to participate in the feed-in tariff system established under the REA, which allows locally produced electricity to be sold to power utilities at a fixed premium for a specific period.

To be eligible, an applicant must generate renewable energy from a renewable energy installation with an installed capacity of not more than 30MW, or such higher installed capacity as may be approved by the Minister. In addition, Rule 3 of the Renewable Energy (Feed-In Approval and Feed-In Tariff Rate) Rules 2011 provides that if the producer is a corporate body:

- a* the company must be incorporated in Malaysia;
- b* the foreign equity participation in the company must not exceed 49 per cent during the application and for the entire period of approval;³⁵ and
- c* if the company already holds an ESA licence, or if it is an associate of an existing ESA licensee, that company is prohibited from making any application for a feed-in approval relating to a renewable energy installation proposed to be connected to the electricity distribution network of the ESA licensee.³⁶

The application may be made by the company or its authorised representative, and it should be submitted to SEDA either manually or via SEDA's online application portal. The application should include supporting information regarding the renewable energy installation, including:

- a* the type of renewable energy resource to be used;
- b* the proposed location;
- c* the proposed installed capacity;
- d* the proposed feed-in tariff commencement date; and
- e* the name and details of the ESA licensee.

Other prerequisites for SEDA approval vary depending on the renewable energy source (solar, biomass, hydroelectricity, biogas) and the output of the installation. SEDA has a number of guidelines and documents on its website detailing the application processes, tests and checks to be carried out, and technical requirements for each particular type of renewable energy installation. For instance, corporate applicants must have a minimum paid-up capital of 20,000 ringgit or equivalent if they intend to develop renewable energy installations with a rated kWp or net export capacity of up to 72kWp or 72kW. If the installation's net export capacity exceeds 72kWp, the minimum paid-up capital is increased to 50,000 ringgit.³⁷

A feed-in approval may be assigned or transferred but only with the consent of SEDA.³⁸ SEDA will not approve an assignment or transfer unless it is satisfied that the proposed assignment or transfer (1) was not reasonably foreseeable at the time of application for the initial feed-in tariff approval, (2) is just and reasonable, and (3) is not inconsistent with the

35 Rule 10 of the Renewable Energy (Feed-in Approval and Feed-in Tariff Rate) Rules 2011 requires the applicant company to submit 'its corporate information, including the ultimate beneficial shareholders of the company'.

36 Rule 3 of the Renewable Energy (Feed-in Approval and Feed-in Tariff Rate) Rules 2011.

37 'Guidelines and Determinations of the Sustainable Energy Development Authority Malaysia', dated 5 February 2016.

38 Rule 19 of the Renewable Energy (Feed-in Approval and Feed-in Tariff Rate) Rules 2011.

objectives of the REA and the current energy policies of the Malaysian government, taking into account the need for sustainability and diversity in renewable resources, and the need for fair competition and transparency in the implementation of the feed-in tariff system.³⁹

If the feed-in tariff approval is granted, the distribution licensee is required to enter into a renewable energy power purchase agreement (REPPA) with the feed-in approval holder in the form prescribed under the Renewable Energy (Renewable Energy Power Purchase Agreement) Rules 2011. The terms of the REPPA will vary according to the type of renewable resource used and the capacity of the renewable energy installation. Similarly to PPAs, REPPAs may contain restrictions on foreign participation, foreign control or transfer or assignment that are more stringent than those prescribed under the renewable energy laws.

Feed-in tariff approvals are subject to quotas announced by SEDA on its official website, in six-month windows over a period of three years. Successful applications will be placed in a queue and subject to a ballot process until the quota has been exhausted.⁴⁰

LSS PV plants

The Commission conducted several competitive bidding processes for the development of LSS plants to be located in west Malaysia and Sabah. The plants will be connected to the distribution or transmission grid depending on their proposed capacity, and will sell their energy to the Single Buyer or to SESB (as the case may be) under a PPA. The LSS capacity to be tendered ranges from 1MWac to 100MWac.

Malaysian companies with the prescribed minimum level of Malaysian equity interest may participate in the LSS programme. The following thresholds apply:

- a* at least 51 per cent of the equity of the participant company is held by Malaysians; or
- b* the equity of the participant company consists of a consortium of legal entities that includes a minimum of one Malaysian company, and in which the Malaysian equity interest in the consortium is at least 51 per cent.

Upon successful negotiation, the bidders must enter into a PPA with TNB. Under the terms of the latest request for proposal in respect of the LSS programme, all contractors engaged for the development of the project must be registered as a 'local contractor' with the Construction Industry Development Board of Malaysia, which means that such contractors are required to have a minimum Malaysian equity holding of 70 per cent. This significantly reduces the participation of foreign contractors.

Net Energy Metering

A key initiative through which the Malaysian government is encouraging the uptake of renewable energy is the Net Energy Metering (NEM) scheme in Peninsular Malaysia. Under the NEM scheme, consumers install solar photovoltaic (PV) systems on the rooftops of their respective buildings. The energy produced from the system is primarily for self-consumption, and any excess may be sold to the appropriate distribution licensee (which for Peninsular Malaysia is TNB). The NEM programme was introduced with the intention of replacing the feed-in tariff mechanism for solar PV installations, which was closed at the end of 2017.

39 Rule 19(2) of the Renewable Energy (Feed-in Approval and Feed-in Tariff Rate) Rules 2011, read together with Section 3(3) of the Renewable Energy Act 2011.

40 Accessible at <http://www.seda.gov.my/reportal/fit/>.

The scheme is regulated by the Commission, with SEDA as the implementing agency. To participate in NEM, applicants must first be registered as customers of distribution licensees in Peninsular Malaysia. Foreign entities also are eligible to apply as long as they are distribution licensee customers. The resources for producing electricity shall be from solar PV only; however, other renewable energy resources, such as biogas, biomass or micro hydro, may be allowed on a case-by-case basis, at the sole discretion of the Commission.⁴¹

The present scheme is the NEM 3.0 programme, which was launched in December 2020 and has an aggregate quota allocation of 500MW. NEM 3.0 comprises three separate initiatives: NEM Rakyat, allocated for domestic consumers; NEM GoMEn, allocated for government ministries and entities; and the NEM Net Offset Virtual Aggregation (NOVA) programme, allocated for commercial and industrial consumers.⁴²

Applications for NEM are processed on a first come, first served basis up to the limit of the allocated quota.⁴³ The application may be made by the applicant's appointed registered solar PV service provider or registered electrical contractor, and it should be submitted either manually to SEDA or via SEDA's online application portal.

If NEM approval is granted, a NEM contract is to be signed between the NEM consumer and the distribution licensee. The NEM consumer will also be required to obtain an ESA licence if the installation is above 24kWp (single-phase system) or above 72kWp (three-phase system).

The response to NEM has been positive, particularly among commercial and industrial consumers. In recognition of this, the Ministry of Energy announced in October 2021 that it would be releasing an additional quota of 300MW for the NEM NOVA programme.⁴⁴

Malaysia Renewable Energy Roadmap

As regards policy, the Malaysian government has launched the Malaysia Renewable Energy Roadmap (MyRER), which outlines the strategic framework and plans for achieving the nation's renewable energy target of a 31 per cent share in the national capacity mix by 2025 and 40 per cent by 2035.

MyRER has identified four strategic pillars for development and implementation:

- a enhancing existing solar programmes such as NEM and LSS, as well as introducing new business models;
- b increasing bioenergy capacity by supporting the rollout of biomass, biogas and waste-to-energy under the feed-in tariff regime, as well as exploring auction systems and net metering schemes;
- c optimising small hydropower plants under the feed-in tariff regime, as well as exploring the lifetime extension of existing, peaking large hydropower plants to support greater variable renewable energy penetration; and

41 Guidelines for Solar Photovoltaic Installation on Net Energy Metering Scheme under the Electricity Supply Act (Amendment) 2015 (Act A1501).

42 Press release, at <https://www.st.gov.my/en/contents/files/press/2020-12-29/1609224125.pdf>.

43 See the SEDA website, at <https://services.seda.gov.my/nem/auth/login>.

44 Press release, at <https://www.ketsa.gov.my/ms-my/pustakamedia/KenyataanMedia/Media%20Release%20-%20No%20RE%20To%20Be%20Exported%20To%20Singapore.pdf>.

- d* exploring new technologies, resources and solutions for efficient and cost-effective renewable energy development, including assessing the implementation of new renewable energy sources such as geothermal and wind.

In addition, the Malaysian government intends to support development and implementation through the following initiatives:

- a* enhancing private sector participation and providing greater customer choice in choosing electricity generated using renewable energy sources;
- b* improving access to green financing;
- c* increasing system flexibility for demand-side management; and
- d* developing awareness and readiness for a renewable energy-oriented society.

In addition to enabling an increase in Malaysia's renewable energy capacity, the implementation of MyRER is envisaged to assist in meeting the nation's climate change commitments and creating employment opportunities in the renewable energy industry.

ii Technological developments

The Malaysian government is currently delivering its Green Technology Master Plan: 2017–2030, mapping out the country's green technology strategies and targets over the next decade in each industry sector. The Master Plan emphasises the need to develop cleaner energy sources and more efficient technologies to increase recycling rates, promote awareness of green technology, and encourage research and development funding opportunities for companies seeking to contribute to the country's move towards a more renewables-reliant future.

As a part of the Master Plan, the government has also taken the approach of leading by example in respect of renewable energy and it is strongly encouraging compliance with the Government Green Procurement (GGP) Guidelines for all government procurement activities. The GGP Guidelines require that acquisitions of products and services abide by certain environmentally friendly criteria, thereby allowing the government to leverage its purchasing power to encourage industries and private enterprises to do likewise. The degree to which each ministry enforces the GGP Guidelines varies and progress is overseen and facilitated by a steering committee and a working committee.

VI THE YEAR IN REVIEW

In June 2021, the government announced new renewable energy targets of 31 per cent of total installed capacity by 2025 and 40 per cent by 2035. This is 15 per cent higher than the initial target of 20 per cent by 2025 set out in the National Renewable Energy Policy. The Ministry of Energy has stated that the new renewable energy targets are expected to reduce carbon emission intensity in the power sector by 45 per cent by 2030 and by a further 60 per cent by 2035, which will be consistent with Malaysia's targets under the Paris Agreement.⁴⁵

⁴⁵ Press release, at <https://www.ketsa.gov.my/ms-my/pustakamedia/KenyataanMedia/Press%20Release%20ASEAN%20Energy%20Meeting%202021%20June%202021.pdf>.

The Ministry of Energy has also stated that the government does not intend to build any new coal-fired power plants. However, it does not discount the possibility of extending the operation of existing coal-fired power plants – this will be dependent on the availability of alternative technology in the future and the cost of such technology.

The Prime Minister presented the Twelfth Malaysia Plan in September 2021, a development roadmap for the period 2021 to 2025. A key theme of the Twelfth Malaysia Plan is the advancement of sustainability in line with Malaysia's commitment to move towards a low-carbon economy. This includes developing instruments for climate action and ensuring sustainable energy and electricity.

The beginning of 2022 saw Malaysia's gas market in the non-power sector becoming fully liberalised following cessation of the remaining regulated gas tariffs on 31 December 2021.

PETRONAS launched its Malaysia bid round for 2022 on 27 January 2022, with 14 exploration blocks, six clusters of discovered resource opportunities, one cluster of late-life assets and two exploration study areas being offered. A virtual data room allowing potential investors to conduct data review will be accessible until 30 June 2022.⁴⁶

In March 2022, TNB's gas-fired power plant in Pasir Gudang, Johor, commenced commercial operations. The plant is the world's largest and most efficient heavy-duty gas turbine power plant, utilising gas turbine technology by General Electric that is the most efficient currently produced in the market. TNB has stated that this is a landmark project evidencing its commitment to low-carbon economic activities.⁴⁷

Market interest in hydrogen as a viable renewable energy source for the future continues to grow, particularly in the state of Sarawak. In January 2022, Samsung Engineering Co Ltd, POSCO, Lotte Chemical and SEDC Energy Sdn Bhd (a subsidiary of the state-owned Sarawak Economic Development Corporation) signed a memorandum of understanding for the development of a green hydrogen and ammonia project in Bintulu, Sarawak. The project aims to convert hydropower and natural gas to green hydrogen, methanol and blue hydrogen, and convert hydrogen to ammonia.⁴⁸ In addition, Sarawak Metro Sdn Bhd is developing the Kuching Urban Transportation System (KUTS), with trains powered primarily by on-board hydrogen fuel cells. A tender has been issued for the supply of systems and fleet for System Package 1 of KUTS.⁴⁹

VII CONCLUSIONS AND OUTLOOK

In the past year, Malaysia has seen significant progression towards a clean energy transition, as evidenced by the Malaysian government's focus on the development of renewable energy. No doubt the involvement and support of key industry players such as PETRONAS, as well as large corporations and banks, has also contributed to increased activity in the renewables market.

46 Press release, at <https://www.petronas.com/media/press-release/petronas-offers-14-exploration-blocks-discovered-resource-opportunities-late>.

47 Press release, at <https://www.tnb.com.my/assets/newsclip/25022021d.pdf>.

48 The Edge Markets, 'Samsung Engineering plans green hydrogen, ammonia project in Sarawak', at <https://www.theedgemarkets.com/article/samsung-engineering-plans-green-hydrogen-ammonia-project-sarawak>.

49 David Burroughs, 'Sarawak Metro launches systems and fleet tender', at <https://www.railjournal.com/passenger/metros/sarawak-metro-launches-systems-and-fleet-tender/>.

The nation's road to achieving its renewable energy targets for 2025 and 2035 will not be without challenges, given that there is still strong reliance on conventional power, and the development of renewable energy will require strategic and extensive investment. Furthermore, the regulatory framework in Malaysia has not yet caught up with the shift taking place in the energy landscape and the implementation of new policies will take time to bear fruit.

ABOUT THE AUTHORS

RICHARD KHOO BOO HIN

Skrine

Richard Khoo Boo Hin is the firm's construction and projects partner, leading a specialised team focused on non-contentious energy and utilities, infrastructure and construction and engineering matters. His portfolio covers a wide range of advisory and drafting services for all stages of the project life cycle, including the drafting and negotiation of key agreements and advising on project structuring, procurement, and project implementation. Richard has been listed as a 'distinguished practitioner' by *Asialaw Leading Lawyers 2021*, and *2020*. Clients describe him as 'knowledgeable in the power industry and adept in power purchase agreements' (*Asialaw Profiles 2021*) and 'a name to note, particularly for advice on commercial elements of construction projects' (*The Legal 500: Asia Pacific 2020*, real estate and construction).

RACHEL CHIAH

Skrine

Rachel Chiah is part of the firm's projects and infrastructure practice. Her practice focuses on front-end drafting and advisory work for construction, energy and utilities, and infrastructure matters. She has experience in the preparation of key contracts (standard form and bespoke) for projects in a range of industries, including engineering, construction and commissioning, operations and maintenance, supply, and consultancy contracts. Additionally, she regularly advises clients on regulatory and compliance issues in relation to project development. Rachel also has experience in transactional work, having been involved in acquisitions of infrastructure and power projects.

SKRINE

Level 8, Wisma UOA Damansara
50 Jalan Dungun
Damansara Heights
50490 Kuala Lumpur
Malaysia
Tel: +60 3 2081 3999
Fax: +60 3 2094 3211
richard.khoo@skrine.com
rachel.chiah@skrine.com
www.skrine.com

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