

LNG PROSPECTS IN SOUTH EAST ASIA

THE FIVE COUNTRIES – CHINA, SOUTH KOREA, INDIA, PAKISTAN AND TAIWAN – WHERE LNG IMPORTS INCREASED THE MOST DURING THE FIRST HALF OF 2018 ARE ALL IN ASIA, AND ALL EXPERIENCED GROWTH IN LNG IMPORTS OF AT LEAST 12% YEAR-ON-YEAR.¹ BY **RICHARD NELSON, KRISTIAN WHITAKER AND CHRISTINA TECSON, KING & SPALDING.**

Asia's demand increase was the main driver of growth in the global LNG market, with China and South Korea contributing most of the additional demand.² This article looks beyond the established LNG markets of these countries and into the growing natural gas industries of the emerging markets of South-East Asia.

These emerging markets provide a unique opportunity to study how LNG markets are established, and offer an interesting perspective into the factors that must be considered and the conditions that must be present for the development of a natural gas industry.

LNG as the appropriate energy source

- *Myanmar, finding the right energy mix* – Myanmar's total primary energy production has risen considerably in recent years: gas production more than doubled between 2000 and 2007, and biomass production rose by 26% between 2000 and 2013.³

Despite this, however, Myanmar has one of the lowest electrification rates in South-East Asia.⁴ In 2014, the World Bank reported that only 33% of the total population had access to grid electricity.⁵ The table below shows the mix of Myanmar's power generation sources as of 2018, all of which comprise the total installed capacity of 4,976MW.

There are a number of challenges confronting Myanmar's progress towards satisfying its domestic energy demand. While most of Myanmar's installed power generation capacity comes from hydropower, 61% or 3,033MW, its output is impacted by Myanmar's dry season and by the 520MW installed capacity reserved for China.⁶ In addition, many of Myanmar's gas-powered plants are not fully operational due to poor maintenance.

Although Myanmar has significant domestic natural gas resources, most of the current production is exported to China and Thailand under long-term contracts entered into in the 1990s, when the country's offshore production was surplus to its domestic requirements.

These gas exports also significantly contribute to the country's current revenues: from April to September of 2018 alone, gas exports generated income of US\$1bn.⁷

Nevertheless, there are calls from some within the country for new gas fields to contribute more to domestic needs to assist with broader economic growth. U Than Tun, a retired director of the Myanmar Oil & Gas Enterprise, has stated that "[i]f the current volume of electricity generated domestically cannot fulfil local demand, we need to take as much as we need from our national gas reserves".⁸

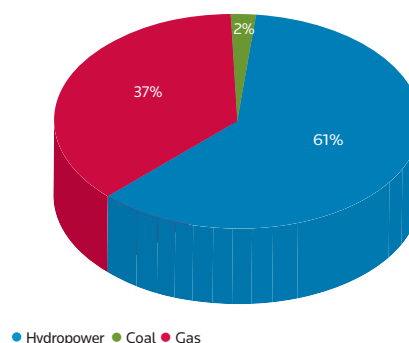
In early 2018, in an effort to improve the country's electrification, Myanmar announced a shift towards LNG. Three new LNG projects – together with a natural gas project in Kyaukphyu in the Rakhine state – are expected to bring an additional 3,100MW to the country's population.⁹

While these projects appear promising and will support Myanmar's electrification efforts, there are concerns that importing LNG will be too costly and that it may result in Myanmar developing a trade deficit.

LNG imports are usually priced based on international market indices, which Myanmar would be increasingly exposed to at the same time as its foreign revenues from exports of natural gas were reduced. In addition, the new projects will rely on private investors to construct and operate the LNG import infrastructure, which will require sufficient revenues to repay lenders and provide investors with an adequate return on investment.

Therefore, Myanmar may experience an increase in its power prices compared with the low prices currently paid: today, the cost of

MYANMAR'S POWER GENERATION



generation for hydropower varies from Kt35 to Kt70 per kWh (currently US\$0.023 to US\$0.046), and Kt120 to Kt130 per kWh for gas (currently US\$0.079 to US\$0.086), which is likely to increase as gas-fired power generation relies on imported LNG.¹⁰

Adopting a robust regulatory framework

• *Philippines, encouraging the growth of LNG* – Like Myanmar, the Philippines has set its sights on LNG to meet its energy demand. The country obtains most of its natural gas domestically, from a single gas field (Malampaya) offshore Palawan that is connected to the onshore gas processing plant in Luzon, the country's largest island. According to Philippine Department of Energy (DOE) estimates, Malampaya gas will run out in less than five years.¹¹

The Lantau Group has identified that commercial potential for LNG exists to either back-up existing power stations now, or fuel existing power stations after the depletion of Malampaya.¹² Imported LNG may also be used to fuel new power stations beginning in 2017.¹³ Many investors have expressed their interest in the Philippine LNG market, but uncertainty as to the country's LNG regulatory framework has resulted in a stalemate that has lasted for more than two years.¹⁴

In 2017, the DOE issued the "Rules and Regulations Governing the Philippine Downstream Natural Gas Industry" (DOE Rules).¹⁵ While the government has continuously expressed that it is agnostic towards technology and remains in favour of a merit-based energy mix,¹⁶ the DOE Rules "ensure that the [natural gas value chain], from its emerging state, will be developed into a mature market to gain greater energy security and stability".¹⁷

In addition to the DOE Rules, President Rodrigo Duterte issued Executive Order No 30 in 2017 (EO 30),¹⁸ to address the regulatory hurdles that energy projects face. Typically, energy projects would take three to five years to obtain the required national and local permits. To ease red tape, EO 30 mandates the:

- i) Establishment of a simplified approval process, harmonisation of the relevant rules and coordination of various agencies to streamline the regulatory process for energy projects;¹⁹ and
- ii) Identification of energy projects of national significance (EPNS), which are projects identified by the DOE as being "in consonance with the policy thrust and implementation of the Philippine Energy Plan".²⁰

A project categorised as an EPNS will receive the necessary support to enable it to obtain national and local permits within 30 days or less.

The urgency brought by the Malampaya depletion coupled with more stable regulations have attracted private sector players. To-date, under the authority of the new regulatory framework, the DOE has issued two notices to proceed (NTPs) – both of which appear to have been issued within the period required under the

Based on the Philippine experience, the real challenge is mustering enough political will to power the projects through to actual completion

DOE rules – and a permit to construct, own and operate. One project has also been tagged as an EPNS.

On the one hand, the NTP is issued at the initial stage of the permitting process after the DOE has evaluated the substantive legal, technical and financial merits of a potential LNG project.²¹

Upon issuance of the NTP, the proponent has six months extendible for a further six months to secure the necessary permits from government agencies and to achieve financial close. On the other hand, a permit to construct, own and operate is issued when the proponent has, among other things, completed all the necessary permits, and exhibited that it has sufficient funding, market and LNG supply for the facility.

The progress that these proponents have achieved under the DOE rules is encouraging, not least because there are now coherent next steps under the new regulations, and a promise of government support under EO 30.

Nevertheless, based on the Philippine experience of the LNG market, the real challenge is mustering enough political will to power the projects through to actual completion. Much depends on how the government will harness the legal framework already in place to secure the country's energy future.

Third-party access

• *Thailand, accessing LNG through a third-party terminal* – Providing third-party access, or TPA, to the necessary infrastructure to regasify, store and transport LNG and regasified LNG allows a country to establish itself as an LNG market and trading hub, which should, in principle, liberalise the natural gas market and encourage competition.

Third-party access is also important in light of fluctuating global LNG demand and fuel mix, ie utilisation of LNG as a fuel source. For a more detailed explanation of TPA in the context of LNG, please refer to our other articles on this subject.²²

While TPA is more common in other more developed gas markets, such as the EU, some Asian countries are looking to follow suit. Thailand is one such country.

Thailand is expected to boost its LNG imports – to 36 mtpa by 2030 from 2.9 mtpa in 2016 – as its domestic supply declines. Currently, state-controlled PTT supplies and imports LNG, and operates Map Ta Phut, the country's only LNG

Terminal, which presently has a capacity of 10mtpa.

It is expected to expand capacity to 11.5mtpa by 2019,²³ and to 20 mtpa over the next 10 years.²⁴ It has been reported that the 1.5 mtpa excess capacity was made available to state-run Electricity Generating Authority of Thailand (EGAT) as part of a 38-year TPA agreement (from 2019 to 2056) with PTT.²⁵

To further increase competition in the sector and effectively drive down the cost of imported LNG,²⁶ EGAT plans to develop a 5mtpa FSRU expected to be ready by 2024.²⁷

EGAT's TPA is a pilot project to help better understand the challenges for other private companies under a TPA regime.²⁸ One challenge is ensuring that market players with the capital to build LNG infrastructure are not deterred by mandatory TPA requirements.

To respond to this, Thailand may need to balance both liberalising the market and encouraging investments in capital-intensive LNG facilities, such as providing an exemption regime for investments that will not take place if TPA is mandated.

Another critical issue is ensuring that the government will have the ability to enforce the TPA rules: an official from the country's Ministry of Energy has stated that Thailand will be "implementing third-party access ... at the end of 2018".²⁹

Thailand will have to work closely with PTT, which continues to hold an effective monopoly over the procurement and distribution of natural gas,³⁰ to ensure effective and transparent access of its facilities for third parties.

Pricing issues

- *Indonesia, crafting the appropriate price structure*

– In most cases, imported LNG is costlier than domestic natural gas, and countries will need a strategy to price imported LNG to enable it to compete (to the extent possible) with gas from domestic sources, or energy from more traditional sources, such as coal.

Under the current gas supply arrangements of Indonesia, PT PLN (Persero) (PLN) supplies the fuel for all new gas-fired projects and bears the impact of gas price fluctuations.³¹ To maximise the procurement of natural gas for gas-fired power plants from domestic sources at the lowest possible price,³² the Ministry of Energy & Mineral Resources (MEMR) issued a regulation³³. Specifically, the regulation provides that:

i) MEMR may make a specific volume of natural gas for domestic needs (the domestic market obligation) available for the PLN or the independent power producer (IPP) to purchase; and

ii) PLN or the IPP may also purchase natural gas from the holder of a gas trading licence with the appropriate natural gas infrastructure and facilities to supply natural gas to the relevant power project.

Under the regulation, MEMR determines the price of natural gas for power generation based on the: (a) economics of the gas field; (b) national and international gas price; (c) payment capacity of domestic gas consumers; and (d) any additional value deriving from the use of domestic natural gas.

PLN or the IPP company may purchase gas through a pipeline at the plant gate, with the highest price being 14.5% of the Indonesian Crude Price (ICP). If that price cannot be achieved, then PLN or the IPP (i) may purchase LNG, provided the price of LNG at the plant gate is lower than the price of any available pipeline natural gas, and (ii) must purchase domestic LNG if the price of the domestic LNG is the same as that of imported LNG.

The effect of the regulation is that PLN (or the IPP) is able to manage the risk of bearing the price fluctuations of imported LNG by procuring LNG from the domestic Indonesian market.

In the Jawa 1 LNG-to-power project,³⁴ it had previously been reported that LNG would be procured from BP Berau Ltd's West Tangguh project in West Papua, Indonesia and would be purchased by PLN at 11.2% of ICP per mmbtu, with a transport cost at 0.4%.³⁵ This would minimise PLN's exposure to international pricing of LNG.

The impact of the regulation on gas prices and the local LNG market is still unknown. While PLN may have secured LNG at a low cost, experience dictates that the consequences of price control mechanisms may ripple across the supply chain.

Gas prices are a result of the interaction and alignment of the economics of the natural gas market and its complex supply chain from exploration all the way up to regasification and sale to the independent power producer.

Recognising this, the Indonesian government has admitted that it is still "searching for the correct formula to bring down the price of natural gas ... at a price point that will not put producers in a disadvantageous position."³⁶

Price control mechanisms ultimately distort the interaction between the production and distribution aspects of the market; accordingly, mandated pricing structures should be carefully studied so that the risks and returns of each adjustment can be measured.

Conclusion

There are many factors to consider when shepherding an industry from birth to maturity. This is especially true for LNG in emerging South-East Asian markets, with the complexities borne by the nature of the product and industry.

Two of the key main challenges for all emerging LNG markets in Asia are how to (a) attract sufficient private-sector investment to develop the industry, and (b) formulate a coherent policy at government level that adequately protects investors and customers. We have sought to discuss some of these issues in this article.

A number of competing factors are at play, such as the interests of state-owned utilities and those of the private sector looking to invest in emerging LNG and power markets. At times, competing or diverging interests can be seen between different departments of the same government.

Another country in which there is currently a lot of interest is Vietnam. Earlier this year the Vietnamese government announced that the use of LNG for power generation was inevitable in Vietnam in the near future and that it agreed in principle to the pass-through of gas prices into electricity tariffs.³⁷

While this agreement in principle will be welcomed by many, it is not clear how it will impact the state utility's model for electricity tariffs under its power generation agreements.

The fact that the Jawa-1 project in Indonesia has reached financial close is an encouraging sign for the market in this region and demonstrates that these projects can be considered bankable for the purposes of project finance if there is sufficient appetite from all stakeholders to address the obstacles to successful project development. We are hopeful that there will be some other successes to follow in some of the jurisdictions we have discussed, and others, in the near future. ■

Footnotes

1 – Energy Insights by McKinsey, Global Gas & LNG Outlook to 2035: 2018 gas and LNG market highlights (September 2018), available at <https://www.mckinsey.com/solutions/energy-insights/global-gas-lng-outlook-to2035/~media/3C7FB7DF5E4A47E393AF0CDB080FAD08.ashx> (last accessed April 3 2019).

2 – Energy Insights by McKinsey, Global Gas & LNG Outlook to 2035: 2018 gas and LNG market highlights (September 2018), available at <https://www.mckinsey.com/solutions/energy-insights/global-gas-lng-outlook-to2035/~media/3C7FB7DF5E4A47E393AF0CDB080FAD08.ashx> (last accessed April 3 2019).

3 – Long-term policy focused on electrification and grid improvements in Myanmar, published in The Report: Myanmar 2018, available at <https://oxfordbusinessgroup.com/overview/road-ahead-country-focus-its-long-term-policy-boosting-electrification-and-grid-improvements> (last accessed April 3 2019).

4 – EuroCham Myanmar, Energy Guide 2018, available at https://www.ccifrance-myanmar.org/sites/ccifrance-myanmar.org/files/resources-documents/energy_guide_2018.pdf (last accessed April 1 2019).

5 – Myanmar targets hydropower and alternative energy sources, published in The Report: Myanmar 2018, available at <https://oxfordbusinessgroup.com/analysis/increasing-access-focus-hydropower-and-other-alternative-energy-sources-meet-long-term-connectivity> (last accessed April 3 2019).

6 – Myanmar targets hydropower and alternative energy sources, published in The

Report: Myanmar 2018, available at <https://oxfordbusinessgroup.com/analysis/increasing-access-focus-hydropower-and-other-alternative-energy-sources-meet-long-term-connectivity> (last accessed April 3 2019).

7 – Chan Mya Htwe, Myanmar's gas production dilemma (October 18 2018), available at <https://www.mmmtimes.com/news/myanmars-gas-production-dilemma.html> (last accessed April 3 2019).

8 – Chan Mya Htwe, Myanmar's gas production dilemma (October 18 2018), available at <https://www.mmmtimes.com/news/myanmars-gas-production-dilemma.html> (last accessed April 3 2019).

9 – Ariffin, Eijas, Can LNG fuel Myanmar's energy demand? (December 23 2019), available at <https://theaseanpost.com/article/can-lng-fuel-myanmars-energy-demand> (last accessed April 3 2019).

10 – EuroCham Myanmar, Energy Guide 2018, available at https://www.ccifrance-myanmar.org/sites/ccifrance-myanmar.org/files/resources-documents/energy_guide_2018.pdf (last accessed April 1, 2019). This assumes an exchange rate of 100 MMK to 0.066 USD as at April 1 2019.

11 – Dais, Tim, Try and Try Again: Philippines Resurrects LNG Ambitions (February 16, 2019), available at <https://oilprice.com/Energy/Natural-Gas/Try-And-Try-Again-Philippines-Resurrects-LNG-Ambitions.html> (last accessed April 3 2019).

12 – Fairhurst, Sarah, Philippines LNG: Developing New Import Markets, presented during the 3rd Annual FSRU Conference Singapore (November 26 2014) https://globalinghub.com/wpcontent/uploads/2018/03/ppt_fsru14_sf.pdf (last accessed April 3 2019).

13 – Fairhurst, Sarah, Philippines LNG: Developing New Import Markets, presented during the 3rd Annual FSRU Conference Singapore (November 26 2014) https://globalinghub.com/wpcontent/uploads/2018/03/ppt_fsru14_sf.pdf (last accessed April 3 2019).

14 – Dais, Tim, Philippines' LNG Hopes are Fading Fast (January 30, 2019), available at <https://oilprice.com/Energy/Natural-Gas/Philippines-LNG-Hopes-Are-Fading-Fast.html> (last accessed April 3 2019).

15 – Prior to the issuance of the DOE Rules, the natural gas industry was governed by the Interim Rules and Regulations Governing the Transmission, Distribution and Supply of Natural Gas (Department of Energy Circular No. 2002-08-005).

16 – LNG remains a hard-sell in the Philippine energy market (April 5, 2018), available at <https://www.spglobal.com/platts/en/market-insights/latest-news/natural-gas/040518-lng-remains-a-hard-sell-in-the-philippine-energy-market> (last accessed on April 3 2019).

17 – Rules and Regulations Governing the Philippine Downstream Natural Gas Industry, Department Circular No. DC 2017-11-0012 (December 4 2017) (hereinafter DOE Rules).

18 – Philippine utilities boost has and renewables' share in energy mix (March 6, 2019), available at <https://asian-power.com/power-utility/in-focus/philippine-utilities-boost-gas-and-renewables-share-in-energy-mix> (last accessed April 3 2019).

19 – Creating the Energy Investment Coordinating Council in order to Streamline the Regulatory Procedures Affecting Energy Projects, Executive Order No 30 (June 28 2017) (hereinafter EO 30).

20 – Section 2, EO 30.

21 – Annex A, DOE Rules.

22 – Richard Nelson and Kristian Whitaker, Gas Market Reform in Asia: an Update on the Implementation of Third Party Access to LNG Import Terminals (January 9, 2018) available at <https://www.kslaw.com/blog-posts/gas-market-reform-in-asia-an-update-on-the-implementation-of-third-party-access-to-lng-import-terminals> (last accessed April 3 2019); Richard Nelson and Kristian Whitaker, Gas Market Reform: the Advent of Third Party Access in Asia? 1 Int'l Energy Law Review 28 (2017) available at https://s3.amazonaws.com/kslaw-staging/attachments/000/004/439/original/3-2-17_International_Energy_Law_Review.pdf?1497764640 (last accessed April 3 2019).

23 – PTT wants to maintain LNG imports (February 6, 2018), available at <https://www.bangkokpost.com/business/news/1408198/ptt-wants-to-maintain-lng-imports> (last accessed April 3 2019).

24 – Walker, Andrew, Thailand reveals LNG import ambitions (October 25 2017), available at <http://interfaxenergy.com/article/28116/thailand-reveals-lng-import-ambitions> (last accessed April 3 2019).

25 – Thailand's EGAT plans first LNG delivery in September (February 19 2019), available at <https://www.ics.com/explore/resources/news/2019/02/19/10321369/thailand-s-egat-plans-first-lng-delivery-in-september/> (last accessed April 3 2019); EGAT's first step of a new mission to import 1.5 million tons of LNG per year (January 15 2018), available at <https://www.egat.co.th/en/news-announcement/news-release/egat-s-first-step-of-a-new-mission-to-import-1-5-million-tons-of-lng-per-year> (last accessed April 3 2019); Thailand's EGAT seeks LNG for first time as market liberalizes (August 21 2018), available at <https://www.todayonline.com/world/thai-power-generator-egat-seeks-lng-supply-first-time> (last accessed April 3 2019). EGAT received a letter dated October 31 2017 from PTT LNG Company Limited informing them of the approval to import the LNG through Map Ta Phut, which will be used to supply EGAT South Bangkok Power Plant, Bang Pakong Power Plant, and Wang Noi Power Plant. See EGAT's first step of a new mission to import 1.5 million tons of LNG per year (January 15 2018), available at <https://www.egat.co.th/en/news-announcement/news-release/egat-s-first-step-of-a-new-mission->

[to-import-1-5-million-tons-of-lng-per-year](https://www.egat.co.th/en/news-announcement/news-release/egat-s-first-step-of-a-new-mission-to-import-1-5-million-tons-of-lng-per-year) (last accessed April 3 2019).

26 – Walker, Andrew, EGAT Breaks Thailand's LNG Import Monopoly (February 28 2019), available at <http://interfaxenergy.com/article/33971/egat-breaks-thailands-lng-import-monopoly> (last accessed April 3 2019).

27 – Thailand's EGAT seeks LNG for first time as market liberalizes (August 21, 2018), available at <https://www.todayonline.com/world/thai-power-generator-egat-seeks-lng-supply-first-time> (last accessed April 3 2019).

28 – Walker, Andrew, EGAT breaks Thailand's LNG import monopoly (February 28, 2019), available at <http://interfaxenergy.com/article/33971/egat-breaks-thailands-lng-import-monopoly> (last accessed April 3 2019).

29 – Walker, Andrew, Thailand reveals LNG import ambitions (December 11, 2017), available at <https://gastechinsights.com/article/thailand-reveals-lng-import-ambitions> (last accessed April 3 2019).

30 – Dodge, Alexander, Thailand's LNG Sector (June 2017), available at <http://norway-connect.com/wpcontent/uploads/2018/02/Thailand-LNG-Report-170626-Final.pdf> (last accessed April 3 2019).

31 – APAC: News Analysis: Indonesia strives to strengthen gas prospects (May 28, 2018), available at <https://www.inframationgroup.com/apac-news-analysis-indonesia-strives-strengthen-gas-prospects> (last accessed April 3 2019).

32 – APAC: News Analysis: Indonesia strives to strengthen gas prospects (May 28, 2018), available at <https://www.inframationgroup.com/apac-news-analysis-indonesia-strives-strengthen-gas-prospects> (last accessed April 3 2019).

33 – MEMR Regulation No 45 of 2017, which revokes and replaces MEMR Regulation No 11 of 2017 regarding Natural Gas Use for Power Plants.

34 – Jawa 1 is the first LNG-to-power project that has reached financial close in Indonesia. It is also the first finance-based gas-to-power project in Asia. See Sojitz Concludes Financing Agreement and Starts Construction on the Jawa 1 Gas-to-Power Project in Indonesia (December 7 2018), available at <https://www.sojitz.com/en/news/2018/12/20181207.php> (last accessed April 3 2019).

35 – Agreement on gas Supply for Java 1 Power Plant Signed (May 18, 2017), available at <https://en.tempo.co/read/876332/agreement-on-gas-supply-for-java-1-power-plant-signed> (last accessed April 3 2019).

36 – Indonesia's PLN Appeals Gas Price for DMO US\$6.5 (July 9, 2018), available at <https://theinsiderstories.com/indonesias-pln-appeals-gas-price-for-dmo-us6-5/> (last accessed April 3 2019).

37 – Notification of Office of the Government on the Prime Minister's Conclusions on LNG Supply Model and Gas Pricing Principles for Nhon Trach 3 and Nhon Trach 4 Power Plants (January 4 2019).