

LNG Review August 2018 - Recent issues and events - Hiroshi Hashimoto*

Introduction

Asian LNG spot prices continued being in the highest range in four years in August 2018, partly because of expected higher oil-linked contract prices and partly because of steady growth of demand in Asian countries.

China continues expanding its natural gas production, consumption and imports. In August, the country's natural gas imports (pipeline gas and LNG combined) were 7.769 million tonnes, the third highest monthly tally after 7.89 million tonnes in December 2017 and 7.77 million tonnes in January 2018.

Some LNG production facilities under construction are nearing to production phases, mainly in the United States, and in Russia. There have been also positive developments for proposed LNG production projects around the world advancing to realisation, albeit scarce long-term sales commitments into final consuming markets.

This paper looks at some of notable developments in the global LNG industry in August 2018.

[Asia Pacific]

In early September 2018, JERA, JXTG, and TEPCO Fuel & Power (TEPCO FP) signed a Memorandum of Understanding (MOU) regarding the joint development to replace the Goi Thermal Power Station near Tokyo. Also in early September, Electric Power Development (J-POWER) and ENGIE signed an MOU to collaborate on power projects, particularly in large-scale commercial offshore wind projects.

PetroVietnam signed an agreement with two Japanese companies to sell gas from a South China Sea oil block close to waters disputed by China. Sao Vàng - Đại Nguyệt, located at blocks 05-1b & 05-1c 300 kms southeast of Vietnam's coast, is 43.08% owned by Idemitsu Kosan, 36.92% by Teikoku Oil (Con Son) and 20% by PetroVietnam.

According to China's National Development and Reform Commission (NDRC), the country produced 13 bcm, up 10.5% year-on-year, imported 10.18 bcm, up 28.3%, and consumed 22.88 bcm, up 18.2%, of natural gas, in July 2018. According to China's customs

* The writer belongs to Gas Group, Fossil Fuels and International Cooperation Unit. Some information pieces that some readers may consider very important may not be included due to different reasons.

statistics, the country imported 7.38 million tonnes of natural gas (including 4.15 million tonnes of LNG and 3.23 million tonnes of pipeline gas) in July. The monthly import of natural gas has been the largest in the world since March, taking over the top spot from Japan.

China National Offshore Oil Corporation (CNOOC) started delivery of LNG by trucks from its newly commissioned Shenzhen terminal. CNOOC expects the terminal to deliver 30 tank trucks carrying 600 tonnes per day once its truck-loading bays are all completed. ENN received its first cargo for the country's first privately-owned LNG import (and reloading) terminal at Zhoushan port in Zhejiang from Qatar.

NDRC released a new draft guidance on open access to oil and gas infrastructure for public consultation in early August 2018. It sets out a timetable for operators of pipelines and other basic infrastructure to start disclosing their surplus capacity.

Gail launched an online portal for enabling booking of Common Carrier capacity for natural gas transmission services under pipelines. Out of the earmarked Common Carrier capacity in GAIL's pipelines, around 33% was used by third party shippers during FY 2017-18 (April - March). Up to 25% of the total pipeline capacity is to be earmarked for Common Carrier capacity for providing non-discriminatory open-access on first-come-first-served basis, for transporting third party gas for a period of less than one year.

Total signed a binding Letter of Intent (LOI) with Shell for the sale of its 26% minority equity stake in Hazira LNG regasification terminal in India. Total also signed an agreement to sell 0.5 million tonnes of LNG per year to Shell over 5 years from 2019 to supply the markets of India and neighbouring countries sourced from Total's global LNG portfolio.

Pakistan's Minister for Petroleum and Natural Resources said that the National Accountability Bureau (NAB) is probing the 15-year LNG supply agreement between the Pakistan State Oil (PSO) and Qatargas in February 2016.

Mitsubishi Corporation agreed to acquire a 25% interest in Summit LNG Terminal and to develop an LNG receiving terminal that uses a Floating Storage and Regasification Unit (FSRU) in Bangladesh. 75% of SLNG will be held by Summit Corporation and 25% by MC. SLNG will install an FSRU off the coast of Moheshkali Island, where it will receive and regasify LNG procured by Petrobangla. Construction of the terminal commenced at the end of 2017 and commercial operations are expected to start in March 2019.

AIE (Australian Industrial Energy) entered into an agreement with Höegh LNG to supply the Floating Storage and Regasification Unit (FSRU) for the proposed Port Kembla Gas Terminal (PKGT). The FSRU will be moored at Berth 101 in Port Kembla's inner harbour.

APA Group entered into a conditional Implementation Agreement with CK Infrastructure Holdings Limited (CKI) and its group companies under which the latter will acquire all of the stapled securities in APA.

Origin Energy showed in its 2018 Full Year Results presentation that the Australia Pacific LNG project (APLNG) in the fiscal year 2018 - 2019 (July - June) is expected to see total contracted LNG volumes of 427 petajoules (approximately 7.8 million tonnes), down from 432 PJ in fiscal 2017-2018.

Santos acquired 100% of Quadrant Energy. The acquisition includes Quadrant's 80% share of the Dorado oil and gas discovery in the Bedout subbasin offshore Western Australia.

Woodside said the Scarborough partners are aligned on a concept to develop the field through LNG infrastructure on the Burrup Peninsula. A geophysical survey for the proposed pipeline route was completed in July 2018. The route traverses the Carnarvon Basin, in close proximity to undeveloped fields. Woodside anticipates that the upstream development will be designed for 7 - 9 million tonnes per year capacity (including 1 million tonnes of domestic gas). The proposed downstream development will require an additional train at Pluto LNG. Woodside is targeting an FID in 2020, upstream RFSU (ready for start up) in 2023 and downstream RFSU in 2024.

Woodside said that the Browse partners had agreed the development concept for the resources through existing NWS Project infrastructure. The concept is based on two gas floating production storage and offloading (gFPSO) facilities, delivering gas through an approximately 900 km pipeline to existing NWS infrastructure. Alignment has been reached between the NWS Project participants on key terms and pricing for processing Browse and other resource owners' gas. A preliminary tolling agreement is expected between the NWS Project participants and the Browse Joint Venture in Q3 2018. Woodside is targeting an FID in 2021 and RFSU in 2026 (Calliance and Brecknock fields) and 2027 (Torosa field).

Inpex modified its description on the timing of shipments of production from the Ichthys project to "the shipment of products will commence between the end of the first half and the third quarter (October-December 2018) of the current fiscal year".

Santos announced the Barikewa-3 well, located in Papua New Guinea's onshore Forelands region, confirmed significant natural gas resources close to PNG LNG infrastructure still to be developed. Santos holds a 40% interest in the PRL9 joint venture, operated by Oil Search.

In early 2018, Oil Search established a regional LNG marketing office based in Tokyo, following a decision that LNG from the Papua LNG Project would be equity marketed.

The PNG LNG Project entered into a mid-term LNG sale and purchase agreement (SPA) with BP Singapore commencing in August 2018 for supply of approximately 0.45 million tonnes per year for the first three contract years rising to approximately 0.9 mtpa in the final two contract years.

[North America]

According to data provided by the Department of Energy, the United States exported 491,445,951 (1,000 cf) or approximately 10 million tonnes of LNG (including both bulk exports from Sabine Pass and Cove Point and volumes in ISO containers) in the first half of 2018.

Cheniere Marketing entered into an LNG sale and purchase agreement (SPA) with CPC Corporation, Taiwan. CPC agreed to purchase approximately 2 million tonnes per year from Cheniere Marketing on a delivered ex-ship (DES) basis for a term of 25 years from 2021.

Cheniere Energy confirmed that Sabine Pass Train 5 and Corpus Christi Train 1 are expected to enter service in 1H 2019, followed by Corpus Christi Train 2 in 2H 2019 and Corpus Christi Train 3 in 2H 2021. Cheniere was granted approval by FERC (Federal Energy Regulatory Commission) to begin feeding natural gas into the Corpus Christi project in the middle of August 2018. FERC also approved the introduction of feed gas for the commissioning of Train 5 at Sabine Pass LNG in early September.

GasLog announced the signing of two new charter party agreements, each for seven years, with a wholly owned subsidiary of Cheniere Energy. Two 174,000 cubic meter LNG carriers have been ordered from Samsung Heavy Industries (SHI) in Korea, with expected delivery in late 2020.

The Elba Island Liquefaction in-service is expected in the fourth quarter of 2018, with final units coming online by the third quarter of 2019. FERC authorized the Elba expansion project in June 2016. Construction began in November 2016, and is supported by a 20-year contract with Shell.

FERC approved commissioning of the first liquefaction unit at the Freeport LNG export project in Texas. The first three trains are expected to enter service between September 2019, and May 2020. The Nikkei Newspaper reported that Toshiba had begun talks with several suitors to sell its LNG business in the United States, garnering responses from 10 companies, including Jera, Tellurian and PetroChina.

Freeport LNG and Sumitomo Corporation entered into a binding Heads of Agreement (HOA) for 2.2 million tonnes per year of LNG. Sumitomo agreed to negotiate for a 20-year liquefaction tolling agreement (LTA), expected to start in 2023 upon the commencement of commercial operations of the fourth train (Train 4).

The staff of FERC's Office of Energy Projects issued environmental schedules for 12 LNG export terminal applications. The schedules reflect FERC's efforts to streamline its review process. FERC and the Pipeline and Hazardous Materials Safety Administration (PHMSA) within the federal Department of Transportation signed an agreement to coordinate the siting and safety review of FERC-jurisdictional LNG facilities. The

Memorandum of Understanding (MOU) establishes a framework for coordination between FERC and PHMSA to process LNG applications in a timely and expeditious manner while ensuring decision-makers are fully informed on public safety impacts.

Woodside said that it terminated its agreement with Sempra Energy after deciding not to pursue a potential equity investment in Port Arthur LNG.

Venture Global LNG raised additional private capital of approximately USD 160 million from large institutional investors. The company has raised a total of USD 630 million. In early September 2018, Venture Global entered into a 20-year agreement (SPA) to supply Repsol with 1 million tonnes per year of LNG from the proposed Calcasieu Pass LNG export facility in Cameron Parish, Louisiana.

Crowley Maritime's new container/roll on-roll off "ConRo" ship El Coquí delivered its first cargo from Jacksonville, Florida, to the company's modernized Isla Grande Terminal in San Juan Puerto Rico.

JERA entered into an agreement with Starwood Energy Group to acquire a 50% equity interest in three natural gas-fired thermal power generation plants in the Northeast United States. Development Bank of Japan (DBJ) and Showa Shell Sekiyu established a new joint venture in order to participate in a natural gas-fired thermal power generation project in Ohio through the project's holding company, South Field Energy. Kyushu Electric Power and Shikoku Electric Power will also participate in the project.

Pieridae Energy announced the appointment of KfW IPEX-Bank as an adviser in assisting it to finalize a loan guarantee from the German federal government under its UFK program (Garantien für ungebundene Finanzkredite). In 2013, Pieridae received written confirmation on behalf of the German government that its proposed Goldboro LNG facility will qualify in principle under the UFK program for a guarantee of up to USD 3 billion of debt to be used to construct the Goldboro LNG facility provided that, among other things, at least 1.5 million tonnes per year of LNG is delivered to Germany/Europe as contemplated by Pieridae's 20-years (5 million metric tons per annum) offtake agreement with Uniper Global Commodities. In July 2018, Pieridae applied to the German government to increase in the amount of the guarantee from USD 3 billion. The additional coverage will be used to develop natural gas reserves in both Western and Eastern Canada.

Swiss utility Axpo agreed preliminary terms for a 10-year deal with Canada's Pieridae Energy to receive LNG from Train 2 of the Goldboro LNG facility. Pieridae Energy and Ikkuma Resources entered into a definitive agreement providing for the acquisition by Pieridae of all of the issued and outstanding shares of Ikkuma, which will provide Pieridae with ownership of an extensive area of producing and gas-prone reserve and resource properties primarily in the central Alberta Foothills area.

New Fortress Energy (NFE) won a tender to develop, build and operate an LNG import facility in the port of Pichilingue in Baja California Sur, awarded by the port's administrator, Administración Portuaria Integral de Baja California Sur. The project could start up in 2020.

[Middle East]

JERA entered into a Memorandum of Agreement (MOA) with Abu Dhabi Gas Liquefaction Company Limited (ADNOC LNG) for the sale and purchase of LNG. JERA plans to purchase up to 8 DES cargoes per year for a period of three years beginning in April 2019.

[Africa]

Unión Fenosa Gas, 50% owned by Naturgy UFG, owner of the Egyptian Damietta plant, was granted a favourable award by the International Centre for Settlement of Investment Disputes (ICSID), an institution within the World Bank Group, resolving the claim presented in 2014 against the Arab Republic of Egypt due to a lack of supply to UFG's liquefaction facilities in Damietta. The award argues that the investor was not provided fair and equal treatment.

Nigeria LNG (NLNG) is targeting to deliver the first LNG consignments from its Train-7 plant between 2023 and 2024. NLNG plans to take a final investment decision (FID) by December 2018.

Construction of the hull for the Coral South floating liquefied natural gas (FLNG) vessel started at the Samsung Heavy Industries (SHI) shipyard in Geoje Island, Korea. Eni and its Area 4 partners held a first steel ceremony, 15 months after the project's final investment decision (FID). The FLNG construction started in March 2018 in Singapore with the steel cut for the ship's turret. The FLNG vessel is expected to be completed by the end of 2021. First gas is expected in 2022.

[Europe / Russia]

European Commission said that the EU (European Union) and the United States will work to facilitate trade in LNG based on the Joint Statement in July 2018. EC further said U.S. rules made easier for LNG to be exported to the EU.

New Fortress Energy agreed to buy the Shannon LNG project at Ballylongford in Ireland. The site has planning in place for a deep-water jetty, storage facilities for LNG and connections to the Irish national gas network. The scheme ran aground three years ago when the original owner, Hess, pulled out. EU authorities have designated the scheme as a European Project of Common Interest.

RWE and German LNG Terminal GmbH, the joint venture driving forward Germany's first LNG terminal in Brunsbüttel in Northern Germany, reached an agreement for a considerable part of the terminal's capacity on a long-term basis in early September 2018. The terminal is expected to be operational by the end of 2022.

The Biogas Upgrading and Liquefaction Plant was installed at the Skogn Papermill, Norway. The plant, which will upgrade up to 3,000 m³/hour of raw biogas to Renewable Natural Gas, will be part of the largest biogas liquefaction plant in the Nordic Countries. The plant will convert the cleaned biogas from fishery waste and residual paper mill slurry into liquid bioLNG fuel.

Spain's Enagás and the Belgium's Fluxys agreed to sell jointly and in equal parts to FS Gas Transport AB, an indirectly wholly owned subsidiary of First State Investments managed European Diversified Infrastructure Fund II (First State), their total stake in the Swedish company Swedegas. Swedegas owns Sweden's entire high-pressure gas pipeline network and is operator of the Swedish Gas System.

Gazprom said its gas output grew 7.5% to 325.2 bcm during the first eight months of 2018 and its sales in the "Far Abroad" in the period were set to rise 5.6%, or 7 bcm, from the same period of 2017, amounting to 133.3 Bcm. Gazprom's gas reserves on Russian continental shelf added 768 billion cubic meters in 2018 (A+B1+C1 categories), including 667 billion cubic meters in the Leningradskoye field and 101 billion cubic meters in the Yuzhno-Kirinskoye field. Gazprom Export launched its Electronic Sales Platform (ESP). The platform is designed to physically sell natural gas to the European consumers.

Nord Stream 2 AG handed in an application and Environmental Impact Assessment (EIA) report to the Danish Energy Agency for a route passing through the Danish exclusive economic zone (EEZ), an alternative route that does not pass through Danish territorial waters. Nord Stream 2 received a permit for the installation of an underwater pipeline in the territorial sea of the Russian Federation from Russia's Federal Agency for the Supervision of Natural Resources Use (Rosprirodnadzor). All the permits necessary for construction of the Russian section of the Nord Stream 2 Pipeline have been received. In addition to Russia, Germany, Finland and Sweden have granted all the permits necessary for construction of the planned pipeline within their jurisdictions. Preparations for construction of the Nord Stream-2 pipeline in Russia started in the Kurgalsky protected area in the Leningrad Region by the end of August 2018. In early September, offshore pipelaying commenced in the exclusive economic zone of Finland. Preliminary pipelaying is also being performed in German territorial waters.

The World Trade Organization (WTO) Panel issues report ruling the case brought by the Russian Federation in April 2014 against European Union (EU). The following

measures were recognized inconsistent with the WTO provisions: special treatment inside European regulation to OPAL pipeline; requirement of Third Energy Package Directive on a special certification measures for transmission operators controlled by foreign citizens; and TEN-E measure providing more favourable conditions for the development of projects aimed at diversification sources of natural gas supply to EU of any origin other than Russian.

NOVATEK announced that Yamal LNG has launched the second train and dispatched the first cargo from this unit. NOVATEK said that the second train commissioned six months ahead of its original schedule. The project shipped cumulative four million tonnes on the first 54 cargoes. Yamal LNG is constructing a 17.4 million tonne per year natural gas liquefaction plant comprised of three LNG trains of 5.5 million tonnes per year each and one LNG train at 900 thousand tonnes per year, utilizing the hydrocarbon resources of the South-Tambeyskoye field.

Dynagas LNG Partners entered into an agreement with Yamal Trade Pte. Ltd. for the early commencement of the long-term charter contract for the ice class LNG carrier Yenisei River in the Yamal LNG Project. The Yenisei River will commence operating 180 days earlier.

By early September 2018, a total of 2,010 kilometers of pipes have been welded and laid for the Power of Siberia gas pipeline between Yakutia and the Russian-Chinese border. This translates into 93% of the pipeline length.

[South America]

The Panama Canal announced changes to its Transit Reservation (booking) System for Neopanamax vessels, effective 1 October 2018. By tailoring the reservation process, along with restructured cancellation fees for current LNG carrier practices, the Panama Canal aims to curb unused reservations moving forward, thereby improving slot utilisation and service reliability.

AES inaugurated AES Colón, a 381 MW combined cycle power plant and the first LNG terminal in Central America.

Venezuela and Trinidad and Tobago signed a deal where Trinidad will purchase gas from Venezuela's Dragon Field, Petróleos de Venezuela SA (PDV) said. 150 million cubic feet of per day will be supplied.

Reference: Company announcements, The Nikkei Newspaper, Reuters, Bloomberg, 人民网, The News Pakistan, Natural Gas Intelligence, Savannah Morning News, This Day Nigeria, Independent Ireland, Prime, Offshore Magazine, Interfax, Cedigaz News Report.

Contact: report@tky.ieej.or.jp