

LNG Review November 2021 - Recent issues and events -

Hiroshi Hashimoto*

Introduction

The impacts of extremely high spot LNG prices have spilled over to overall LNG prices in Asia. After seeing a spectacular jump of assessed spot prices in September 2021, the average landed prices in October stepped up more than USD 1 per million Btu in all the four big markets in Northeast Asia.

Japan imported 4.628 million tonnes of LNG in October, which was the smallest import volume for October after 2005. Although the weighted average price was USD 11.87, at least eleven cargoes, out of approximately 70 cargoes, were priced at more than USD 15. Meanwhile in China, where 6.169 million tonnes of LNG was imported in October, nearly a quarter of the volume was estimated to be over USD 15. As spot LNG prices stayed in higher ranges in October and crude oil prices were on the rise, further increases in average landed prices in Asia are anticipated for November imports.

China imported 64.50 million tonnes of LNG during the first ten months of 2021, increasing year-on-year by 22.5% and higher than Japan's 61.42 million tonnes during the same period in 2021.

Australia's Woodside announced in late November final investment decisions (FIDs) on the Scarborough and Pluto Train 2 developments. The announcement represents the second LNG liquefaction FID globally (following the Qatari mega-trains and the effective third green light after Russia's Ust-Luga construction commence) and the second LNG production-related FID in Australia in 2021, following the one on the Barossa development aimed at feeding into the existing Darwin LNG plant in the Northern Territory.

Cheniere Energy Partners announced in late November 2021 that LNG had been produced at Train 6 of the Sabine Pass Liquefaction facility. After the expected substantial completion of the train in the first quarter of 2022, Sabine Pass' total production capacity is expected to be 30 million tonnes per year.

[Asia Pacific]

Sumitomo Corporation and Tokyo Gas announced on 25 November 2021 that

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

Malaysia's PETRONAS and the two Japanese companies had agreed to conduct a feasibility study to establish a supply chain of carbon neutral methane to Japan, produced in Malaysia by methanation, using green hydrogen from renewable energy and carbon dioxide. Tokyo Gas and Mitsubishi Corporation announced on 26 November 2021 that they would explore feasibility for a synthetic methane supply chain in LNG exporting countries produced from green hydrogen using renewable electricity and CO₂.

Japan's Agency for Natural Resources and Energy started posting on its website information of collective inventory of LNG owned by the nation's major power generators on weekly basis on 1 December 2021.

According to Japan's customs statistics, the nation imported 4.628 million tonnes of LNG in October 2021, the lowest for October since 2005.

Pavilion Energy, QatarEnergy, and Chevron announced on 17 November 2021 that they had jointly published a quantification and reporting methodology to produce a statement of greenhouse gas emissions (SGE) for delivered LNG cargoes. The methodology will be applied to sales and purchase agreements (SPAs), specifically the executed SPAs by Pavilion Energy with QatarEnergy and Chevron.

Singapore LNG Corporation (SLNG) announced on 29 November 2021 that SLNG and Linde Gas Singapore had signed a Memorandum of Understanding (MOU) to explore the feasibility and development of a Carbon Dioxide (CO₂) Liquefaction and Storage Facility, located adjacent to the SLNG Terminal on Jurong Island. The project concept involves using cold energy from the SLNG Terminal's operations to liquefy CO₂.

According to China's Trade Statistics, the country imported 64.50 million tonnes of LNG during the first ten months of 2021, increasing year-on-year by 22.5% and higher than Japan's 61.42 million tonnes during the same period in 2021.

TGE Gas Engineering announced on 22 November 2021 that its consortium with China Chengda Engineering Co. Ltd. had signed the EPC contract for the Yangjiang LNG Peak Shaving Storage Project in Guangdong Province. The project includes 2 x 160,000 m³ prestressed concrete full containment LNG storage tanks, a process facility of 1 x 175,000 m³ LNG Jetty, sea water drainage system, 12 LNG Truck Loading Stations, LNG gasification facilities and auxiliary facilities.

China Gas Holdings Limited announced on 26 November 2021 that the company and Vitol entered into a strategic cooperation agreement on 25 November. The companies intend to establish a joint venture company in Singapore. Resource provision for all of the new LNG import business in China will be incorporated into the JV company. The JV company shall supply LNG of no less than 800,000 tonnes to China Gas in 2023, and from 2024 the supply shall be no less than 1 million tonnes per year. In the fifth year since its

establishment, the JV company shall achieve an import volume of 5 million tonnes per year.

Hong Kong's CLP Power Hong Kong Limited (CLP Power) and The Hongkong Electric Co., Ltd (HK Electric) plan to develop an offshore LNG terminal using Floating Storage and Regasification Unit (FSRU) technology.

The Competition Commission of Pakistan (CCP) on 24 November 2021 approved QatarEnergy's bid to acquire a 49% stake in a private-sector Energas LNG terminal project.

The Australian Government released on 26 November 2021 the first National Gas Infrastructure Plan (NGIP) to identify a long-term development pathway for gas supply and infrastructure out to 2041.

Santos and Beach Energy announced on 1 November 2021 a final investment decision (FID) to proceed with the Moomba carbon capture and storage (CCS) project in South Australia, with startup expected in 2024.

Australian Industrial Energy (AIE) announced on 30 November 2021 that the company and Norway's Höegh LNG had concluded a long-term charter for floating storage and regasification unit (FSRU) Höegh Galleon at the Port Kembla energy terminal and agreed to collaborate on the future design and development of a new generation FSRU capable of receiving fuels such as green hydrogen.

Chevron Australia, as operator of the Gorgon Project, announced on 11 November 2021 an AUD 40 million investment in Western Australian lower carbon projects. The investment is part of an offsets package Chevron will implement to address a carbon dioxide injection shortfall at the Gorgon natural gas facility over the five-year period until 17 July 2021. The package will also see Chevron fulfil its regulatory obligations through the acquisition and surrender of 5.23 million greenhouse gas offsets. The company said that since starting up in August 2019, the Gorgon carbon capture and storage system had injected approximately 5.5 million tonnes of greenhouse gas emissions.

Woodside announced on 5 November 2021 a 10% decrease in proved and probable (2P) gas reserves estimate for its Greater Pluto region off Western Australia. The company reported an increase of 1P total reserves by 10% for the region.

Woodside announced on 15 November 2021 that it had entered into a sale and purchase agreement with Global Infrastructure Partners (GIP) for the sale of a 49% non-operating participating interest in the Pluto Train 2 Joint Venture. The effective date of the Transaction is 1 October 2021 and completion is expected to occur in January 2022.

Woodside announced on 22 November 2021 that final investment decisions (FIDs) had been made on the Scarborough and Pluto Train 2 developments, including new domestic gas facilities and modifications to Pluto Train 1. The first LNG cargo is targeted for 2026. The Scarborough and Pluto Train 2 joint ventures have executed a processing and services

agreement (PSA) for the processing of Scarborough gas through the Pluto LNG facilities. The PSA provides for the Scarborough Joint Venture to access LNG and domestic gas processing services at a rate of up to 8 million tonnes per year of LNG and up to 225 terajoules per day (1.5 million tonnes per year) of domestic gas for an initial period of 20 years. The Scarborough Joint Venture comprises Woodside Energy Scarborough Pty Ltd (73.5%) and BHP Petroleum (Australia) Pty Ltd (26.5%). Expansion of Pluto LNG will include the construction of Pluto Train 2, associated domestic gas processing facilities, supporting infrastructure and modifications to Pluto Train 1 to allow it to process Scarborough gas. The Pluto Train 2 Joint Venture will comprise Woodside Burrup Train 2 A Pty Ltd (51%) and Global Infrastructure Partners (49%).

Woodside and BHP signed a binding share sale agreement (SSA) for the merger of BHP's oil and gas portfolio with Woodside on 22 November 2021. Completion is targeted for Q2 2022. The effective date of the Merger will be 1 July 2021.

Woodside said on 23 November 2021 that the Pluto 2 development would process 5 million tonnes per year of LNG plus up to 3 million tonnes per year through the existing Pluto Train 1. The development also delivers 225 terajoules per day of new domestic gas capacity. The company also said it had secured a 20-year contract of domestic gas supply with Perdaman Chemicals and Fertilisers, and LNG supply agreements with Uniper for 13 years, with Pertamina for 15 years, and with RWE for seven years.

Woodside said on 30 November 2021 that the company had received a proceeding in the Supreme Court of Western Australia challenging a Western Australian State Government works approval for the Pluto Train 2 project. The proceeding has been commenced by the Conservation Council of Western Australia (CCWA). Woodside said that the company would defend its position.

AGIG announced on 17 November 2021 the completion of the Pluto NW Shelf Interconnector (PNI). The PNI consists of a 30-inch pipeline connecting the inlet facilities next to the Pluto LNG plant, via the metering facilities at Dampier to the outlet facilities within the Karratha Gas Plant. Commissioning and Operations are expected in early 2022. The PNI is for Woodside to transport gas from the Pluto LNG Plant to the North West Shelf's Karratha Gas Plant for both LNG export and domestic supply. The Interconnector is just over 3 km long and will initially transport about 250 TJ/day potentially rising to over 900 TJ/day (6 million tonnes per year) during its operations.

BW Offshore said on 23 November 2021 that during the third quarter of 2021 the company completed the debt financing and the equity joint venture partnership for the Barossa FPSO project. First steel cut for the FPSO hull was achieved in September ahead of original schedule. The company added that due to price inflation for materials, the project

was experiencing some cost increases which were covered by the project contingency.

ExxonMobil announced in early November 2021 that it signed a Memorandum of Understanding (MoU) each with Indonesia's Pertamina and Malaysia's PETRONAS to collaborate on carbon capture and storage technologies projects in the respective countries.

PETRONAS announced on 30 November 2021 a gas discovery from its Nangka-1 wildcat exploration well in Block SK417, in the shallow waters of Baram Province, about 180 kilometres off the coast of Sarawak, Malaysia. PTTEP HK Offshore Limited is the operator for the block with 80% interest, while PETRONAS Carigali Sdn Bhd holds the remaining 20%.

PETRONAS announced on 1 December 2021 that the company had awarded two Front End Engineering Design (FEED) contracts to a JGC Corporation-Samsung Heavy Industries consortium and to SAIPEM Spa as part of an international dual FEED design competition for a nearshore LNG project in Sabah with a minimum capacity of 2 million tonnes per year. The Final Investment Decision (FID) is planned for end of 2022. PETRONAS said that the winning FEED contractor would be rolled over to the Engineering, Procurement, Construction and Commissioning (EPCC) phase. The nearshore LNG plant is planned to be Ready for Start Up (RFSU) by end of 2026.

[North America]

The U.S. Environmental Protection Agency (EPA) proposed on 2 November 2021 new protections to reduce pollution from the oil and natural gas industry - including, for the first time, reductions from existing sources nationwide. The proposed new Clean Air Act rule tries to significantly reduce methane emissions and other air pollutants.

The Industrial Energy Consumers of America (IECA) suggested on 22 November 2021 that increasing LNG exports had been responsible for soaring gas prices in the United States, calling on the Department of Energy (DOE) to cap exports.

Cheniere Energy announced on 23 November 2021 that LNG had been produced at Train 6 of the Sabine Pass Liquefaction facility. The company expects Substantial Completion of Train 6 to be achieved in the first quarter of 2022, approximately 1 year ahead of the guaranteed completion date.

Cheniere Energy announced on 5 November 2021 that Cheniere Marketing had entered into a binding LNG sale and purchase agreement (SPA) with China's Sinochem Group. Sinochem has agreed to purchase an initial volume of 0.9 million tonnes per year beginning in July 2022, which increases to 1.8 million tonnes per year. The SPA has a term of 17.5 years and Sinochem will purchase the LNG volumes on an FOB basis.

Cheniere Energy announced on 24 November 2021 that Cheniere Marketing International, LLP had entered into a binding 20-year LNG sale and purchase agreement

(SPA) with China's Foran Energy Group Co., Ltd. Foran has agreed to purchase 0.3 million tonnes per year of LNG from Cheniere Marketing on a delivered ex-ship (DES) basis for 20 years beginning in January 2023.

JERA announced on 15 November 2021 that it had decided to invest in Freeport LNG Development, L.P. (FLNG), which operates the Freeport LNG project in the United States, and has concluded a securities purchase agreement with Global Infrastructure Partners (GIP) to acquire the 25.7% interest in FLNG. JERA, together with FLNG, has contributed to the operation of Train 1 of the project through its participation in FLIQ 1 Holdings, LLC. As a result of the Transaction, JERA will not only be involved in the entire existing Freeport LNG project (three trains with an annual production capacity of approximately 15.45 million tonnes per year) but will also work with FLNG to advance new LNG projects including production capacity expansion and the development of Train 4.

Freeport LNG Development, L.P. and Talos Energy announced on 15 November 2021 that the companies had executed a letter of intent (LOI) to develop a carbon capture and sequestration (CCS) project, the Freeport LNG CCS project (FLNG CCS), adjacent to Freeport LNG's natural gas pretreatment facilities in Texas on the Gulf Coast. The companies anticipate first injection could occur by year-end 2024. The FLNG CCS project will utilize a Freeport LNG-owned geological sequestration site located near point of capture with up to a 30-year injection term and will permanently sequester CO₂. The site is also located close proximity of up to an additional 15 million tonnes per year of incremental CO₂ emissions from major industrial sources, which offers the potential for expansion in the future.

NextDecade filed an application on 17 November 2021 with the Federal Energy Regulatory Commission (FERC) to include carbon capture and sequestration (CCS) systems at its proposed Rio Grande LNG (RGLNG) export project in Texas. The company requested a "limited amendment" to the authorization so that it can incorporate CCS technology into the approved site and design.

Venture Global LNG and China Petroleum & Chemical Corp. (Sinopec) announced on 4 November 2021 the signing of two 20-year Sales and Purchase Agreements (SPA) for the supply of a total of 4 million tonnes per year of LNG from Venture Global's Plaquemines LNG export facility, in Plaquemines Parish Louisiana. In addition, UNIPEC, a Sinopec subsidiary has agreed to purchase 3.5 million tonnes of LNG from Venture Global's Calcasieu Pass LNG facility for a shorter duration. Venture Global LNG said that this represented the largest single LNG supply deal to China ever signed by a U.S. company.

Jordan Cove Energy Project L.P. (JCEP) and Pacific Connector Gas Pipeline, LP (PCGP) asked FERC on 1 December 2021 to vacate the authorizations.

TotalEnergies announced on 30 November 2021 that through their joint venture,

TotalEnergies and its U.S. partner Clean Energy Fuels were launching construction of their first biomethane production unit, in Friona, Texas. The facility will be fuelled by the onsite supply of livestock manure to produce more than 40 GWh of biomethane per year (2,646 tonnes). TotalEnergies is the largest shareholder of Clean Energy Fuels with a stake of 19%.

Environmental organization Friends of the Earth Japan on 24 November 2021 urged the Japanese public authority and companies involved in the Coastal GasLink pipeline project and the LNG Canada project to withdraw from the projects.

McDermott International announced on 23 November 2021 that the company had signed an Engineering, Procurement, Fabrication, and Construction (EPFC) contract with Woodfibre LNG.

According to media reports, Sempra announced specifics about plans of the Vista Pacifico LNG in Topolobampo, Sinaloa.

[Middle East]

Abu Dhabi National Oil Company (ADNOC) and ADQ announced on 16 November 2021 that Japan's Mitsui & Co., Ltd and Korea's GS Energy Corporation had agreed to partner with TA'ZIZ and Fertiglobe to develop the world-scale low-carbon blue ammonia facility at the TA'ZIZ Industrial Chemicals Zone in Ruwais.

QatarEnergy announced on 7 November 2021 that it had placed LNG shipbuilding orders with Korean shipyards consisting of four vessels from Daewoo Shipbuilding & Marine Engineering (DSME) and two vessels from Samsung Heavy Industries (SHI).

A consortium of Korea's Hyundai Engineering, Hyundai Engineering & Construction and Korea Gas Corporation (Kogas) announced on 18 November 2021 that Kuwait's Al-Zour LNG Import Terminal had completed trials of the regasification facilities and the storage tanks and started commercial operation.

[Africa]

Eni on behalf of its Mozambique Area 4 Partners (ExxonMobil, CNPC, GALP, KOGAS and ENH) held on 15 November 2021 the naming and sail away ceremony of the Coral-Sul FLNG at Samsung Heavy Industries (SHI) shipyard in Geoje, Korea. The FLNG will be towed and moored at its operating site in the Rovuma basin offshore Mozambique. Production startup is expected in the second half of 2022.

DNG Energy said on 16 November 2021 that South Africa had received its first-ever container of LNG from the Netherlands. The company said it planned to commission its first floating storage unit in the first quarter of 2022. The company has signed up agreements with transportation companies interested in trialling LNG as a fuel.

[Europe / Russia]

The European Commission is expected to propose a regulation aimed at cutting down methane emissions as part of a gas package of legislation due on 14 December 2021.

The Board of Royal Dutch Shell plc (Shell) announced on 15 November 2021 a proposal to simplify the company's share structure.

Neptune Energy announced on 9 November 2021 that it had been awarded Gold Standard status by the Oil & Gas Methane Partnership (OGMP) for setting ambitious targets and establishing credible plans to reach a net zero methane intensity by 2030.

bp announced on 29 November 2021 a plan of HyGreen Teesside hydrogen production facility in the North East of England that could deliver up to 500 Mwe (megawatt electrical input) of hydrogen production by 2030.

ENGIE's storage subsidiary Storengy announced on 5 November 2021 that in France, Germany and the United Kingdom Storengy had reached the "Gold Standard" of the OGMP 2.0 (Oil & Gas Methane Partnership) with an estimated reduction in methane emissions by 25 to 45% by 2025 with comprehensive implementation plans.

Mitsui O.S.K. Lines, Ltd. (MOL) announced on 1 November 2021 the conclusion of a Transition linked loan to finance one of the world's largest LNG bunkering vessels 'Gas Vitality'. The vessel is owned by MOL's subsidiary Emerald Blue Maritime. The loan is provided by Société Générale and Sumitomo Mitsui Banking Corporation. The vessel 'Gas Vitality' is the sister ship to the 'Gas Agility', which was delivered in April 2020. The 'Gas Vitality' was delivered at Hudong-Zhonghua Shipbuilding in China on 31 October 2021 and chartered to TotalEnergies Marine Fuels.

Gasum announced on 2 November 2021 that it had reached an agreement with North Sea Midstream Partners (NSMP) on the divestment of the Risavika LNG plant while continuing under a long-term contract as an offtaker of the LNG and LBG (liquefied biogas).

Italy's Eni and Snam announced on 27 November 2021 an agreement for the sale by Eni to Snam of a 49.9% stake in certain companies operating two groups of international gas pipelines connecting Algeria to Italy. Eni will contribute its entire ownership interests in the two pipelines to a newly incorporated Italian company (NewCo) in which Eni will continue to hold a 50.1% stake, whereas the remaining 49.9% will be sold to Snam.

Snam announced on 29 November 2021 its new strategic plan including its target of €23 billion investments in 'green' gas infrastructure by 2030. It plans €12 billion in investments developing a hydrogen network.

According to preliminary data from the company, Gazprom produced 467.6 bcm of gas in January-November of 2021, which is 14.7% (or 60 billion cubic meters) more than in

the same period of 2020. Gazprom ramped up its domestic supplies by 15.8% (or by 30.4 bcm) over said period of 2021. The company increased its gas exports to the countries beyond the FSU to 171.5 bcm, which is higher than the figure for the same period of 2020 by 6.6% (or by 10.6 bcm). Gas supplies to China via the Power of Siberia pipeline continue growing. The company added since November, supplies had been topping Gazprom's daily contractual obligations by more than one-third every day as requested by China.

Germany's regulator Bundesnetzagentur on 16 November 2021 suspended certification process of Nord Stream 2 AG as an independent transmission operator.

Gazprom announced on 2 November 2021 registration of Gazprom Dobycha Tambey Limited Liability Company, a joint venture between Gazprom and RusGazDobycha. The joint venture will develop the Tambeykoye field in the Yamal Peninsula, with gas production scheduled to start in 2026. Mitsubishi Heavy Industries (MHI) announced on 25 November 2021 that MHI had been awarded by Linde Engineering the main refrigeration gas compression trains for the Ust-Luga LNG project in Russia. The order consists of dual shaft 120 MW H-100 gas turbines and centrifugal compressors.

Russia's Arctic LNG 2 project announced on 30 November 2021 the loan agreements with international financial institutions and commercial banks.

Gazprom said on 11 November 2021 that the expansion of the Sakhalin - Khabarovsk - Vladivostok gas trunkline at the section between Komsomolsk-on-Amur and Khabarovsk was at its final stage. To date, as many as 376 out of 390.8 kilometers of the linear part (including backup strings and submerged crossings) have been welded, laid, and backfilled. It is planned to finish the construction and installation operations in 2021. The company said that the launch of the section would enable the company to boost gas supply in the Khabarovsk Territory, as well as for setting up new connections for gas consumers to switch them from the Okha - Komsomolsk-on-Amur gas pipeline (not owned by Gazprom).

[South America]

New Fortress Energy (NFE) said on 2 November 2021 that the company expected to complete LNG terminal and power plant construction in Nicaragua in Q4 2021 and to begin commissioning of the company's power plant in Q1 2022.

[Global issues]

GIIGNL announced on 17 November 2021 a Framework for GHG emissions reporting and offsetting designed for LNG cargoes, with all stages from upstream to downstream taken into account.

The United States, the European Union, and 103 countries on 2 November 2021

launched the Global Methane Pledge to reduce global methane emissions.

The United Nations and the European Commission announced on 31 October 2021 that the UN Environment Programme (UNEP) with support from the European Union launched the International Methane Emissions Observatory (IMEO).

McDermott announced on 29 November 2021 that the company had completed an LNG construction study identifying reduction pathways toward net-zero construction emissions on behalf of Shell Global Solutions International B.V.

Reference: Company announcements, Cedigaz News Report.

Contact: report@tky.ieej.or.jp