

LNG Review June 2020 - Recent issues and events -

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Introduction

Japan imported 4.580 million tonnes of LNG in May 2020, 18% less than one year ago, and the lowest in a month since 4.233 million tonnes in May 2009. Japan's average LNG import price of USD 9.45 per million Btu in May 2020 was more than three times as high as assessed spot LNG prices in Northeast Asia for delivery in May 2020. Only three cargoes of LNG were imported in Japan at prices of the low assessed spot level during the month.

As most of long-term contract prices to buy LNG in Japan link to crude oil prices except for LNG from the United States, the collapse of international crude oil prices, especially after the middle of March, is expected to affect long-term contract LNG prices. The average crude oil import prices in Japan for April and May were USD 42 and USD 25 per barrel, respectively, down from the previous months. As the crude oil prices imported into Japan are generally reflected in LNG contract prices three months later, the lower LNG prices are expected from July.

China imported 5.23 million tonnes of LNG in May, overtaking Japan as the largest monthly LNG importer in the world for the second time after it did so for the first time in November 2019. China's average import price was less than USD 7 for May 2020.

Proposed LNG production projects continue being pushed back. In June, Tellurian delayed an FID on its Driftwood LNG project to 2021, following similar announcements in May by NextDecade on its Rio Grande LNG, and Canada's Pieridae on its Goldboro LNG. Among those projects under construction, Venture Global LNG announced that Calcasieu Pass LNG had begun installing the first two of eighteen cold boxes to liquefy natural gas four months ahead of schedule.

[Asia Pacific]

The first commingling LNG cargo of Hiroshima Gas and Tokyo Gas transported by Tokyo LNG Tanker (TLT) arrived at the Hatsukaichi LNG terminal of Hiroshima Gas.

The Advanced Hydrogen Energy Chain Association for Technology Development

* 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.

(AHEAD), in which NYK participates, has started the world's first international demonstration operation to transport hydrogen.

Korea's Ministry of Trade, Industry and Energy (MOTIE) announced that it would launch the "LNG bunkering dedicated ship construction support project". Daewoo E&C and SK E&C signed a deal with the Korea Energy Terminal to construct the first stage of a petroleum and LNG terminal in Ulsan.

Following arrival of the first LNG cargoes in the Yangon area in Myanmar, LNG-fired power generation started operations. Meanwhile, a permanent jetty is under construction to allow the plants to run at full capacity. Myanmar called for five emergency projects in 2019. Among the five projects, three are LNG-based projects. All three projects were run by the CNTIC VPower joint venture between Hong Kong's VPower Group and CNTIC (China National Technical Import and Export Corporation). The LNG receiving infrastructure is located in Thanlyin of Yangon.

CNOOC Gas & Power Group signed an agreement with Shell Eastern Trading for two cargoes of the first carbon neutral LNG to China. These cargoes are "carbon neutral" which means that all emissions from exploring for and producing the natural gas, to the use by the final consumers are offset by credits from a variety of nature-based projects including Shell supported projects in China. CNOOC also plans to auction the cargoes through the Shanghai Petroleum and Gas Exchange.

As part of the BGG Tianjin Nangang LNG terminal, GTT has received an order from the company China Huanqiu Contracting & Engineering (HQC) for the design of two Membrane Full Containment LNG storage tanks each with a net capacity of 220,000 m³. The tanks are expected to be commissioned during the last quarter of 2022.

According to PPAC's Snapshot of India's Oil & Gas data, India's LNG import in May 2020 was 2.383 bcm, 0.5% higher year-on-year. The cumulative import during the first five months of the year was 4.330 bcm, 15.6% lower year-on-year. Total consumption of natural gas in May 2020 was 4.598 bcm, 8.63% lower year-on-year. The cumulative consumption during the first five months of the year was 8.611 bcm, 16.95% lower year-on-year.

Indian Energy Exchange (IEX) launched India's first online delivery-based gas trading platform - the Indian Gas Exchange (IGX). IGX will offer products at three physical hubs at Dahej and Hazira in Gujarat and Odoru in Andhra Pradesh. The country's Oil Minister said India will gradually end government control on gas pricing.

India's Petronet LNG said it is close to signing a long-term LNG deal benchmarked to daily or spot prices. Petronet said that during the lockdown the company had issued force majeure notice on 9 LNG cargoes.

Elengy Terminal Pakistan Limited (ETPL), a joint venture between Vopak LNG

Holding B.V. and Engro Corporation intends to design, build, own and operate a multi-functional onshore LNG terminal at Port Qasim, Karachi, Pakistan. The project has invited Expression of Interest from parties that intend to secure regasification, storage and other operational services. The terminal is planned to be developed under an open access business model, expected to start its commercial operations from 2023.

Armour Energy announced that a sale and purchase agreement had been entered into with Australia Pacific LNG (APLNG) for Armour's 10% interest in Petroleum Lease 1084 known as the "Murrungama block" (PL1084) in the Surat Basin Queensland.

Jemena submitted plans to the New South Wales Government to connect a proposed LNG import terminal at Port Kembla to the Eastern Gas Pipeline (EGP). The company intends to modify EGP so it is bi-directional to transport gas between Sydney and Melbourne depending on demand and the dynamics of the gas market.

Chevron Australia filed an environment plan (EP) with Australia's offshore regulator NOPSEMA (National Offshore Petroleum Safety and Environmental Management Authority) for the installation of new subsea infrastructure for Gorgon Stage 2 (GS2). New wells and subsea infrastructure should be added to the Gorgon and Jansz-Io fields to maintain gas supply. Chevron has made the decision to market its non-operated one-sixth interest in the North West Shelf (NWS) project, the company said.

Santos announced that it had entered into a new gas supply agreement with Gold Fields Limited for its three gold mines in Western Australia. Santos will supply nearly 5.5 petajoules (0.1 million tonnes) of natural gas from its Varanus Island gas plant over three years, starting on 1 July 2020.

[North America]

EIA estimated that total working natural gas in storage in the United States had ended May 2020 at almost 2.8 trillion cubic feet (Tcf), 18% more than the five-year (2015 - 19) average. In the forecast, inventories should rise by 2.1 Tcf during the April-through-October injection season to reach more than 4.1 Tcf on 31 October, which would be a record. EIA forecast that LNG exports would average 5.6 Bcf/d (11 million tonnes) in the second quarter of 2020 and 3.7 Bcf/d (7 million tonnes) in the third quarter of 2020.

62 bulk LNG cargos were shipped from the United States in April 2020, from Sabine Pass (27), Cameron (11), Corpus Christi (10), Freeport (9), Cove Point (5), and Elba Island (0), compared to 75 cargos in March 2020 and 42 cargos in April 2019, according to June 2020 | LNG Monthly Report / Office of Fossil Energy, Department of Energy. In volumes, 210.4 Bcf (4.378 million tonnes) was exported in April 2020, decreasing by 13.8% from March 2020 and increasing by 66.0% from April 2019. Top five countries of destination,

representing 47.7% of the total in April 2020 include: Korea (24.3 Bcf), China (21.1 Bcf), Spain (20.0 Bcf), Japan (18.4 Bcf), and India (16.7 Bcf).

The Department of Transportation (USDOT) and the Pipeline and Hazardous Materials Safety Administration (PHMSA), in consultation with the Federal Railroad Administration (FRA), issued a final rule authorizing the bulk transportation of LNG by rail.

FERC (Federal Energy Regulatory Commission) issued a notice of authorization to Elba Liquefaction and Southern LNG Companies to introduce feed gas to Moveable Modular Liquefaction System (MMLS) #9.

Tellurian delayed a final investment decision (FID) on its proposed Driftwood LNG project to 2021, the company said during a presentation in June 2020. Tellurian announced that the Board of Directors had named Charif Souki Executive Chairman. Souki has been Tellurian's non-executive Chairman since founding the company in February 2016.

Venture Global LNG announced that Calcasieu Pass LNG had begun installing the first two of eighteen heat exchangers, or cold boxes, four months ahead of schedule. FERC issued a notice authorizing Venture Global Plaquemines LNG and Gator Express Pipeline to proceed with initial mobilization and limited site preparation.

Glenfarne Group, LLC, a developer, owner-operator and industrial manager of energy and infrastructure assets, announced that it had completed the acquisition of Magnolia LNG export project in Louisiana. Glenfarne also owns Texas LNG Brownsville development project in Texas.

McDermott International announced completion of its restructuring process.

Edge LNG (Edge Gathering Virtual Pipelines 2 LLC) was selected by EXCO Resources to capture and liquefy gas from a stranded well in the Marcellus Shale. Edge LNG deploys its mobile, truck-delivered LNG equipment to the Marcellus site, including three Cryobox liquefaction units. The process is created by Galileo Global Technologies and deployed exclusively by Edge LNG in North America.

Pennsylvania's attorney general released a report into the shale gas industry that uncovers "systematic failure by government agencies" to regulate the "destructive" fracking industry. According to the report, residents near unconventional drilling sites suffered "severe health consequences".

The Alaska Gasline Development Corporation (AGDC) released an updated USD 38.7 billion cost estimate for the Alaska LNG Project. The estimate reflects a USD 5.5 billion (12.4%) cost reduction off the previous estimate compiled in 2015 by the project's previous joint venture leaders, which included BP, ExxonMobil, ConocoPhillips and AGDC. Along with AGDC staff, participants included representatives from BP, ExxonMobil, and Fluor.

[Africa]

Total and Sonatrach signed an agreement to renew their partnership in LNG. The agreement extends the existing supply contracts for 3 years to provide 2 million tonnes per year of Algerian LNG to the French market, primarily through the Fos Cavaou terminal. The agreement also includes the sub-charter of an LNG tanker of Total by Sonatrach.

Eni (as the operator), BP and Total drilled the first exploration well in the North El Hammad license, in the conventional Egyptian waters of the Nile Delta, on the prospect called Bashrush. The partners will begin screening the development options of this new discovery, with the aim of "fast tracking" production through synergies with the area's existing infrastructures.

Siemens Gas and Power entered into an agreement with Total to advance new concepts for green LNG production. Concepts to be explored include the use of gas turbine- and electric-driven compression trains in conjunction with proven single-mixed refrigerant and double-mixed refrigerant technologies; selecting equipment that can minimize or eliminate process flaring; and developing techniques to improve the efficiency of onsite power generation facilities.

[Europe / Russia]

A coalition led by GasNaturally and comprising EU manufacturing industry, the steel and ceramics sectors, the gas industry, trade unions, energy technology producers and other sectors called on the EU to adopt in its upcoming Hydrogen Strategy a technology-neutral approach to hydrogen, so that all clean hydrogen technologies can be used to unlock the nascent hydrogen market.

Wärtsilä will provide its Volatile Organic Compounds (VOC) Recovery System, together with an LNG Fuel Gas Supply System, for two new 124,000 DWT shuttle tankers. The ships have been ordered by Knutsen NYK Offshore Tankers (KNOT) and will be built at the DSME (Daewoo Shipbuilding and Marine Engineering) yard in Korea. The order with Wärtsilä was placed in April 2020.

Total entered into an agreement with SSE Renewables, to acquire a 51% stake in the Seagreen 1 offshore wind farm project. The 1.14 GW project reached simultaneously a final investment decision and financial close. The project will start producing electricity from end of 2022. Once completed, it will be Scotland's largest offshore wind farm.

BP said it estimated that the aggregate second-quarter 2020 non-cash, post-tax PP&E impairment charges and exploration intangible write-offs would be in the range of USD 13 billion to USD 17.5 billion. Shell announced a revised long-term commodity price and margin outlook, resulting in non-cash impairments in the second quarter 2020. Aggregate

post-tax impairment charges in the range of USD 15 to USD 22 billion are expected in the second quarter.

Equinor is leading the Hydrogen to Humber Saltend (H2H Saltend) project to develop one of the United Kingdom's - and the world's - first at-scale facilities to produce hydrogen from natural gas in combination with carbon capture and storage (CCS).

SodM (State Supervision of Mines) advised to the Minister of Economic Affairs and Climate (EZK) about extraction in the gas year 2020 - 2021 that gas production from the Groningen gas field should be reduced from 11.8 bcm to 9.3 bcm.

Fluxys LNG is contemplating the option of creating up to 6 million tonnes per year (or ~10.5 GWh/h) of additional firm regasification capacity in Zeebrugge in the future. From summer 2020, the company plans to offer 1.7 million tonnes per year (or ~3 GWh/h) of additional regasification capacity. From 17 June until 17 July 2020, Fluxys is running a call for market interest regarding the expansion of the truck loading capacity at the terminal. The terminal now offers 8000 loading slots per year at two loading bays.

Total has joined the Getting to Zero Coalition to support the maritime industry's decarbonisation by collaborating with companies across the maritime, energy, infrastructure and finance sectors. The Getting to Zero Coalition's ambition is to help achieve the target set by the International Maritime Organisation (IMO) to reduce Greenhouse Gases (GHGs) emissions from shipping by at least 50% by 2050 - compared to 2008 levels.

The Port of Marseille Fos completed a second LNG bunkering operation after the first ship-to-ship LNG bunkering operation in early May. The port said it seeks to become the LNG hub for the Mediterranean.

GTT received an order from Korea's Daewoo Shipbuilding & Marine Engineering (DSME) for the design of a new floating storage and regasification unit (FSRU) for MOL (Mitsui O.S.K. Lines). The FSRU with a capacity of 263,000 m³ will be fitted with the NO96 membrane cryogenic containment system. The vessel delivery is scheduled in 2023. It will be located in Wilhelmshaven, Germany.

RWE and German LNG Terminal, the joint venture developing Germany's first LNG terminal in Brunsbüttel, signed a Memorandum of Understanding to promote the use of hydrogen produced from renewable sources.

For the first time, vehicles from Europe are transported from Europe to North and Central America on a car freighter powered by LNG, according to Volkswagen Group.

The Bahama Mama was bunkered with LNG by an LNG truck at the Port of Algeciras in June 2020. The vessel is the fifth new Baleària vessel to be fuelled by LNG.

Eni is creating two new business groups: Natural Resources and Energy Evolution, dedicated to supporting the evolution of the company's power generation, product

transformation and marketing from fossil to bio, blue and green.

Polskie LNG from the GAZ-SYSTEM Group and Szczecin and Świnoujście Seaport Authority signed agreements with the consortium of companies PORR S.A. and TGE Gas Engineering GmbH for the Lech Kaczyński LNG Terminal expansion. The project includes a new LNG tank with a capacity of 180,000 m³ and a new berth intended for LNG loading, unloading and bunkering. By the end of 2023, with the completion of the project, the regasification capacity will reach 8.3 bcm per year. PGNiG signed a contract to build a regasification plant providing 19,000 tonnes of LNG for five years with Korean company LG Electronics. The LNG will power a facility at the Kobierzyce industrial park near Wrocław, southwestern Poland, making electric car batteries.

LNG Hrvatska announced that all free terminal capacity had been booked for the next 3 gas years and that there is no more available capacity. The company also noted that POWERGLOBE QATAR had booked capacity at the terminal from 2021 to 2035.

Key contracts were signed as part of the project for the creation of the Complex for processing ethane-containing gas (including an integrated complex for natural gas processing and liquefaction, as well as a gas chemical complex) in the Leningrad Region. Gazprom and RusKhimAlyans (the project operator of the integrated complex for natural gas processing and liquefaction; the company was established on a parity basis by Gazprom and RusGazDobycha) signed 20-year commercial contracts for supplies of feed gas and sales gas. 45 bcm per year of ethane-containing natural gas will be supplied from Gazprom's fields to RusKhimAlyans. The 18 bcm per year of gas remaining after the processing (extraction of ethane fraction and other valuable components) and production of LNG will go into the Gazprom's gas transmission system.

Gazprom said it saved 3.3 billion cubic meters of gas, 330.3 million kWh of electricity, and 252,700 Gcal of heat in 2019. At the same time, gas production rose by 0.5% to 500.1 bcm. Compared to 2018, the company cut its air emissions by 31,300 tonnes, its water consumption by 358.8 million cubic meters, and its waste generation by 218,000 tonnes. The company claimed that the amount of greenhouse gas emissions from the supplies of Russian gas via the Nord Stream and TurkStream gas pipelines is more than three times lower than that from LNG supplies from the United States to Europe. It also claimed that methane emissions across Gazprom's entire production chain are close to zero. The company's greenhouse gas emissions fell by 3.52 million tonnes of CO₂ equivalent, or 1.5%, in 2019 compared to 2018, the company said.

Spudding of the first producing well commenced at the Kharasaveyskoye field of the Yamal gas production center. The field is the second most important field (after the Bovanenkovskoye field) in Gazprom's Yamal gas production center, the company said.

NOVATEK revealed that the overall progress for the Arctic LNG 2 project is estimated at 19%, with concrete casting of the first GBS platform estimated to be completed by 37%. Nine (9) production wells have already been drilled at the Utrenneye field.

Daewoo Shipbuilding & Marine Engineering (DSME) won an order to build two 360,000 m³ LNG barges for Novatek with an option for two additional units. The units will serve Novatek's planned projects in Murmansk and Kamchatka that the company will develop with Mitsui O.S.K. Lines (MOL). The units will transship Yamal and Arctic 2 cargoes from ice-breaking LNG carriers to conventional ships. DSME expects to deliver the two barges by the end of 2022. GTT received an order from DSME for the tank design.

GTT received, at the end of June 2020, an order from the Russian shipyard Zvezda Shipbuilding Complex for the tank design of five ARC7 ice-breaking LNG carriers for a Russian ship-owner. The vessels will contribute to the Arctic projects of Novatek. The delivery of the vessels is planned in 2023.

[South America]

Colon LNG Marketing and Tropigas Natural signed a deal to distribute LNG via trucks in Panama and Costa Rica from the AES's LNG import terminal in Colon, Panama.

EXMAR received notification of force majeure from YPF under the Charter Agreement and Services Agreement for the TANGO FLNG for the period starting the second half of March 2020.

Gas Natural Açú (GNA) - a joint venture between BP, Siemens and private equity-backed Prumo Logística - said that the FSRU BW Magna is moored at the Açú LNG terminal. The terminal will be able to send out up to 21 million cubic meters per day for two thermal power plants: GNA I (1,338MW) and GNA II (1,672MW), in addition to future expansions.

Golar Power entered into a strategic alliance with Galileo Technologies, which will provide its LNG-related solutions in Brazil. Golar Power intends to increase the share of local LNG in its supply by switching from diesel fuel, LPG or heavy fuel oil (HFO) to natural gas. Furthermore, the agreement targets achieving a cleaner fuel source by focusing on the production of Bio-LNG.

Sempre Energy announced that it has completed the sale of its Chilean businesses. The sale to State Grid International Development Limited (SGID) includes Sempra's 100% stake in Chilquinta Energía, completing the divestiture of all of Sempra's South American assets.

Reference: Company announcements, Reuters, Cedigaz News Report.

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