

LNG Review September 2019

- Recent issues and events -

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Introduction

The fifth LNG export project in the mainland of the United States and the first with Japanese utility companies' equity participation - Freeport LNG in Texas - shipped out its first commissioning cargo in early September 2019. A sixth, Elba Island Liquefaction, Georgia, was granted approval from the authority to commence commercial operation in late September.

Along with the ongoing capacity expansion, another wave of large-scale LNG export projects continue progressing in the United States. Among them, the Venture Global's Plaquemines LNG was granted approval of construction from the Federal Energy Regulatory Commission (FERC) during the month, following the FID (final investment decision) on the company's first project in August. The federal regulator also granted authorization for construction of smaller LNG export facility planned by Eagle LNG.

In Russia, an FID on the Arctic LNG 2 project was announced in early September - a second large-scale LNG export project in the Russian Arctic region and also a second one led by Novatek. Japanese and Chinese companies have participated in the project as minority partners. Novatek has also secured memoranda on cooperation with other companies in gas consuming countries and a local authority in Russia on potential demand creation.

[Asia Pacific]

Japan's Ministry of Economy, Trade and Industry (METI) hosted three international conferences in the field of energy in Tokyo in late September 2019. Two were on hydrogen and carbon recycling, followed by the 8th LNG Producer-Consumer Conference, where the minister presented Japan's commitment to lead LNG market development by linking new supply sources with growing demand in Asia, by additional USD 10 billion to be provided by Japanese public and private sectors throughout the LNG value chain development and human resource capacity building of 500 additional people.

According to Japan's customs statistics, Japan imported 51.51 million tonnes of LNG

* The writers belong 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.

during the first eight months of 2019, an 8.7% decrease from one year earlier, and the lowest since 2011.

Tokyo Gas and Kyushu Electric Power established Chiba Sodegaura Power Company to conduct a feasibility study of an LNG-fired thermal power plant of up to 2GW, utilizing an unused industrial site owned by Idemitsu Kosan in Sodegaura, Chiba.

Tokyo Gas started receiving electricity from Kobelco Moka Power Station, a natural gas-fired combined cycle power plant with a generating capacity of 1.25 GW (624 MW x 2 units). It is Japan's first large-scale inland natural gas-fired power plant. The first unit has been completed. Tokyo Gas supplies city gas to the power station and receives all electricity during the first 15 years of operation.

Osaka Gas made an investment decision on 1.2 GW capacity out of the total 1.8 GW plans of the Himeji Natural Gas Fired Power Generation project. The plan calls for two 600 MW combined-cycle-gas-turbine units to be fuelled with natural gas from Osaka Gas' Himeji LNG receiving and regasification terminal, to be operational in January 2026.

Mitsui O.S.K. Lines (MOL) participated in the LNG bunkering trial at the Port of Kobe and carried out bunkering on the LNG-fueled tugboat Ishin. LNG fuel for the trial was hauled by a tanker truck from the Himeji LNG Plant of Osaka Gas, and, via a truck-to-ship system, was supplied to Ishin, berthed at Kobe Port's Shinko Pier No.4.

Thailand's Energy Policy Administration Committee (Epac) decided to cancel a purchase order of LNG by the Electricity Generating Authority of Thailand (Egat) from Malaysia's Petronas. Epac also approved Egat's switch to importing LNG from the spot market over the second half of 2019, in the form of two 90,000-tonne shipments.

PTT Tank Terminal Company and Gulf Energy Development established a 30:70 joint-venture Gulf MTP LNG Terminal Company, which entered into a Public Private Partnership (PPP) contract with Industrial Estate Authority of Thailand (IEAT) for development of Map Ta Phut seaport phase III (Section 1) with the joint investment including land reclamation and the right of construction of LNG terminal phase 1 with the capacity of not less than 5 million tonnes per year.

The Gulf MPT LNG Terminal Company Limited - a joint venture between Thailand's Gulf Energy Development (70%) and PTT (30%) - will build an LNG receiving terminal on the country's east coast, according to the Industrial Estate Authority of Thailand (IEAT). Commercial operation is scheduled to start by 2025. The capacity will be at least 5 million tonnes per year in the first phase and up to 10.8 million tonnes per year at a later stage.

AES was granted approval by the Government of Vietnam to develop a 2.2 GW combined cycle gas turbine (CCGT) power plant in the south-central province of Binh Thuan, Vietnam. The Son My 2 plant will have a 20-year contract with the Government of Vietnam,

and is expected to begin commercial operations in 2024. AES' Son My LNG terminal plan received approval from the government in August 2019.

First Gen chose Japan's JGC to handle the engineering, procurement and construction (EPC) of its LNG terminal project in Batangas City. In March 2019, FGEN LNG received a "notice to proceed" (NTP) from the Philippine Department of Energy (DOE). First Gen in December 2018 signed a joint development agreement with Tokyo Gas, which is taking a 20% participating interest in the project. Excelerate Energy received an NTP from the DOE to develop a floating LNG import terminal in the Bay of Batangas. The Luzon LNG project will supply gas to existing and new gas-fired power plants in the region that provide electricity to Luzon including the area of Metro Manila.

According to China's customs statistics, China imported 63.042 million tonnes of natural gas during the first eight months of 2019, increasing by 10.3% from the same period in 2018. The rate compares with the 32% for the whole year of 2018. Based on preliminary figures from NDRC (National Development and Reform Commission), China's natural gas consumption during the first eight months of 2019 was 199 bcm, a 10% increase year-on-year.

H-Energy and Kakinada Seaports Limited (KSPL) signed a Port Service Agreement (PSA). H-Energy will develop an LNG terminal at Kakinada port in Andhra Pradesh. H-Energy shall develop an LNG hub at the Kakinada Port catering to the needs of domestic customers in the state of Andhra Pradesh and shall supply LNG through small LNG vessels to H-energy's upcoming Kukrahati LNG terminal in the state of West Bengal and neighbouring countries like Bangladesh, Myanmar.

Reliance Industries (RIL) and BP sought bids from potential users for the 5 million standard cubic metres per day of natural gas they plan to produce from the R-Cluster Field in KG-D6 block from second quarter of 2020.

ExxonMobil signed an agreement with Universal Gas Distribution Company (UGDC) to supply LNG to Pakistan's transport sector. Meanwhile, Gunvor offered the lowest prices to supply LNG to Pakistan for six cargoes out of ten sought by the importer across the October to December 2019 period.

JERA entered into an agreement with Reliance Power to acquire a 49% interest in a new gas-fired thermal power generation project in Bangladesh. The project is to build, own and operate a 750 MW natural gas combined-cycle power project, located 40 km southeast of Dhaka. Under a long-term power purchase agreement with the Bangladesh Power Development Board (BPDB), the electricity generated will be sold for 22 years.

Australia Pacific LNG (APLNG) will supply an additional 61 petajoules (PJ) of natural gas to the Australian domestic market after reaching a new gas sales agreement with Origin Energy for 2020 and 2021. The contract increases APLNG's total domestic contracted supply

commitment to over 340 PJ (6.25 million tonnes) for 2020 and 2021.

Western Australia's Environmental Protection Authority (EPA) recommended a compliance start date for Chevron Australia's carbon dioxide injection system at its Gorgon Gas Development on Barrow Island, at which Chevron would be accountable for its carbon dioxide injection system. The EPA said the compliance start date should be 14 July 2016 when the first licence for gas processing operations was issued.

Woodside Energy Trading Singapore signed a heads of agreement (HOA) with Uniper Global Commodities for the supply of LNG from Woodside's portfolio for a period of 13 years commencing in 2021. The quantity of LNG to be supplied will initially be up to 0.5 million tonnes per year, increasing to approximately 1 million tonnes from 2025. The HOA remains conditional upon the negotiation and execution of a fully termed LNG sale and purchase agreement, obtaining all necessary approvals and, with respect to supply from 2025, a final investment decision on the Scarborough development.

Western Gas said that the Equus Gas Project is on track for first gas in 2024 following the completion of the Upstream to LNG Development Plan and commencement of project financing and partnering activities. The plan comprises three production wells tied back to a floating production storage and offtake (FPSO) facility, a 160 km dry gas export pipeline to a nearshore 2 million tonne per year floating LNG (FLNG) facility and an onshore pipeline connection. Goldman Sachs is the financial adviser in connection with its partnering process.

ConocoPhillips entered into new production sharing contracts (PSC) for the Bayu-Undan Field with the government of Timor-Leste, pursuant to the ratification of the Maritime Boundary Treaty. The Treaty was ratified by both governments of Australia and Timor-Leste in August 2019. The permanent delimited boundaries give sole jurisdiction over, ownership and management of certain petroleum fields in the Timor Sea, including in the Bayu-Undan Field to Timor-Leste. The Bayu-Undan to Darwin pipeline will be subject to Australia's jurisdiction.

Santos announced the Barossa project awarded a contract for the engineering, procurement, construction and installation (EPCI) of the 260-kilometre gas export pipeline to Allseas Group. The pipeline will tie the Barossa gas field, 300 kilometres north of Darwin, into the existing Bayu Undan to Darwin Pipeline. Santos holds a 25% interest in the Barossa joint venture along with partners ConocoPhillips (37.5% and operator) and SK E&S (37.5%).

TNB Fuel Services Sdn Bhd (TNBF), a 100% subsidiary of Tenaga Nasional Berhad (TNB), signed a Gas Sales Agreement (GSA) with affiliated companies for delivery of gas for power generation via its maiden LNG trial cargo. The cargo is to test the third party access (TPA) arrangement via the Melaka regasification terminal and Peninsular Gas Utilisation (PGU) pipeline network owned by PETRONAS Gas. No other entity has brought in LNG cargo

or delivered gas to the power generation sector except for PETRONAS. The Gas Supply Act 1993 was amended in 2016 and came into effect in January 2017 to provide the legal framework for the TPA system. TNBF also signed a Master Sales Agreement (MSA) for the delivery of gas via its maiden LNG trial cargo with Shell Malaysia Trading Sdn Bhd (SMTSB).

Avenir LNG in collaboration with MISC announced that PETRONAS LNG had awarded a time charter party (TCP) for the provision of its first 7,500 m³ LNG carrier. The vessel will provide bunkering to LNG fuelled vessels across Malaysia in addition to transport services for small-scale terminals in the region.

Papua New Guinea's Petroleum Minister announced that the government will honour a gas deal struck with Total for the Papua LNG project. The project is expected to move forward into the front-end engineering and design (FEED) stage.

[North America]

President of the United States nominated the current FERC (Federal Energy Regulatory Commission) General Counsel to serve as a Republican Commissioner on FERC, with a term ending in 2023. The Democratic Commissioner seat remains unfilled.

CME Group announced its new LNG futures contract - *U.S. LNG Export futures* - will be available for trading on 14 October 2019. It will be the first-ever physically delivered LNG contract. Participants will take delivery at Cheniere Energy's Sabine Pass facility. The Freeport LNG terminal and additional facilities will be included in future delivery months.

The Potential Gas Committee (PGC) released the results of its latest biennial assessment of the nation's natural gas resources, which indicates that the United States possesses a total mean technically recoverable resource base of 3,374 trillion cubic feet (Tcf) as of year-end 2018. This is the highest resource evaluation in the Committee's 54-year history, exceeding the previous high assessment (from year-end 2016) by 557 Tcf (20%).

The Department of Energy's (DOE) Office of Fossil Energy released for public comment the report Life Cycle Greenhouse Gas Perspective on Exporting Liquefied Natural Gas from the United States: 2019 Update (LCA GHG Update). The LCA GHG Update is an update to DOE's 2014 LCA GHG Report. The LCA GHG Update compares life cycle GHG emissions from LNG exports to regional coal and other imported natural gas for electric power generation in Europe and Asia.

Cheniere Energy announced that Substantial Completion of Train 2 of the Corpus Christi liquefaction project was achieved on 28 August 2019. Commissioning is complete and Bechtel turned over care, custody, and control of Train 2 to Cheniere. Under sale and purchase agreements (SPAs) with Électricité de France, Iberdrola, Naturgy, Pertamina, and Woodside, the date of first commercial delivery is expected to occur in May 2020.

Cheniere Energy subsidiaries, Corpus Christi Liquefaction, LLC and Cheniere Corpus Christi Liquefaction Stage III, LLC, entered into long-term gas supply agreements (GSA) with EOG Resources. EOG agreed to sell natural gas to Cheniere over a period of approximately 15 years beginning in early 2020, with the quantity starting at 140,000 million Btu per day and increasing to 440,000 million Btu per day. The LNG associated with 140,000 million Btu per day of this gas supply, or approximately 0.85 million tonnes per year, will be owned and marketed by Cheniere and EOG will receive a price based on the Platts Japan Korea Marker (JKM) for this gas. The remaining 300,000 million Btu per day (1.82 million tonnes per year) will be sold by EOG to Cheniere at a price indexed to Henry Hub. A portion of the transaction is subject to certain conditions precedent, including a positive final investment decision (FID) on Cheniere's Corpus Christi Stage III project. The project is being developed to include up to seven midscale liquefaction trains with a total expected aggregate nominal production capacity of approximately 9.5 million tonnes per year. The Corpus Christi Stage III project received a positive Environmental Assessment from the Federal Energy Regulatory Commission (FERC) in March 2019 and is anticipated to receive all remaining regulatory approvals by the end of 2019.

Centrica loaded its first LNG cargo from the fifth LNG train at the Sabine Pass liquefaction plant in Louisiana under the agreement signed in 2013 with Cheniere Energy. Centrica purchases approximately 1.75 million metric tonnes per year of LNG for an initial 20-year period, with the option for a 10-year extension, on an FOB basis.

Mitsui O.S.K. Lines (MOL) announced the delivery of the LNG carrier MARVEL HERON. It is the second of the three newbuilding LNG carriers under charter contracts signed with Mitsui & Co. in September 2014 and January 2015. The vessels will mainly transport LNG from the Mitsui & Co.-backed Cameron LNG project in Louisiana. The vessel adopts the hybrid dual-shaft Steam Turbine and Gas Engine (STaGE) propulsion system. This is an environment-friendly, economically superior design, which achieves further reduction in fuel costs while minimizing CO₂ emissions.

Sempra Energy also announced that its subsidiary Sempra LNG has entered into a memorandum of understanding with China Three Gorges Corporation (CTG), regarding potential cooperation in supplying LNG to support demand growth in China, including the growth of natural gas power generation.

Freeport LNG shipped the first LNG commissioning cargo for Train 1. Freeport's Train 2 is advancing pre-commissioning to support an in-service date of January 2020. Train 3 is nearing completion to support an in-service date of May 2020. Meanwhile, Toshiba announced completion of withdrawal from its LNG project in the United States.

Freeport LNG Development and Westbourne Capital executed definitive agreements

under which Westbourne and its co-investors will exclusively provide an up to USD 1.025 billion mezzanine loan to a Freeport LNG subsidiary in support of Freeport LNG's proposed fourth liquefaction train (Train 4) expansion efforts. The agreement follows Freeport LNG's receipt of its FERC and DOE authorizations for the Train 4 project and its execution of a Train 4 fixed price EPC contract with KBR.

Freeport LNG and Redwood Markets launched a virtual private storefront for selling LNG cargoes inside the Redwood Marketplace, an online commodity trading platform that enables buyers and sellers of physical LNG to negotiate and confirm commercial terms while offering efficiency, standardization and price discovery to the global community of LNG stakeholders. The Freeport Private Storefront enables Freeport LNG, as the host, to negotiate and match physical, bilateral LNG transactions with potential LNG off-takers in a variety of online trading formats with multiple options for transparency.

Korea Gas Corporation (KOGAS) signed an agreement with BP to buy 1.58 million tonnes of LNG for 15 years starting 2025. The LNG will be delivered from Freeport LNG or Calcasieu Pass. The deal could be expendable for three years at a seller's option.

JERA Global Markets (JERAGM) and Vitol executed the first Atlantic LNG freight swap against The Baltic Exchange's BLNG3 assessment in a bilateral trade arranged by Affinity Financial Products LLP. The BLNG3 assessment provides a freight rate benchmark for LNG shipments between Sabine Pass and Tokyo.

FERC approved a request from Kinder Morgan to place the first train of its liquefaction and export project at Elba Island, Georgia, into service.

Tellurian and Petronet LNG signed a Memorandum of Understanding (MOU) wherein Petronet and its affiliates intend to negotiate the purchase of up to 5 million tonnes per year of LNG from Driftwood, concurrent with its equity investment, which remains subject to further due diligence and approval of its board of directors. Tellurian and Petronet will endeavour to finalize the transaction agreements by March 2020. In April 2019, FERC issued the order granting authorization.

NextDecade and Canada's pipeline company Enbridge announced a Memorandum of Understanding (MOU) to jointly pursue the development of the Rio Bravo Pipeline (Rio Bravo) and other natural gas pipelines in South Texas to transport natural gas to NextDecade's Rio Grande LNG project in Brownsville, Texas. NextDecade issued USD 15 million of common stock to Bechtel. In May 2019, NextDecade executed contracts with Bechtel for the engineering, procurement, and construction (EPC) of the first three trains of the Rio Grande LNG project. As part of these contracts, Bechtel had previously agreed to accept up to USD 15 million in NextDecade common stock in consideration for certain activities. The United States Fish & Wildlife Service said the Rio Grande LNG project and the

related pipeline will not jeopardize the continued survival of the endangered species.

FERC issued an order authorizing Venture Global Plaquemines LNG, LLC to site, construct, and operate a new LNG export terminal and associated facilities along the Mississippi River in Plaquemines Parish, Louisiana, and Venture Global Gator Express, LLC to construct an interconnected pipeline. The Project, to be constructed in two phases, is designed with a total nameplate liquefaction and export capacity of approximately 20 million tonnes per year, and a total peak achievable capacity of 24 million tonnes per year under optimal operating conditions.

Energy Transfer submitted a Request for Extension of Time so that they may construct and place into service the Lake Charles LNG facilities by 16 December 2025, extending the original deadline of December 2020.

Delta Offshore Energy (DeltaOE) and Liquefied Natural Gas Limited (LNGL) formed an alliance with the Bac Lieu Provincial Government in Vietnam to deliver a 3.2 GW LNG-to-power project for the province, including an LNG import terminal. The integrated project is expected to commence operations in 2023. Magnolia LNG shall deliver two million tonnes per year of LNG on an FOB basis for a 20-year term with options to extend the term. DeltaOE shall, in turn, deliver gas to the power plant, generate electricity, and sell its output to the province pursuant to a power purchase agreement (PPA).

Enbridge bought a minority 10.5% ownership stake in the proposed Annova LNG project at the Port of Brownsville, according to recent filings with DOE. Annova LNG is now owned by a consortium of four companies: Exelon 80.55%; Enbridge 10.5%; and Kiewit and Black & Veatch each 4.475%. Annova LNG agreed to a 10-year tax abatement with Cameron County. During construction, Annova LNG will make direct payments to the county of USD 5.5 million for community projects, in addition to property taxes. During operations, Annova LNG will pay USD 500,000 annually in a payment in lieu of taxes (PILOT) for a total of USD 5 million over 10 years. Annova LNG included a regional resident employment commitment to meet a minimum 35% of full-time employees and an assurance to staff the facility with a minimum of 100 full-time employees to demonstrate the organization's commitment to bringing jobs to the region.

West Delta LNG LLC filed an application with the Maritime Administration (MarAd) and the United States Coast Guard (USCG) for the licensing of a deepwater port to be located in the Gulf of Mexico, off the coast of Louisiana. The proposed facility would nominally produce 5 million tonnes per year of LNG. In the optimized case, the project would produce approximately 6.1 million tonnes per year.

Eagle LNG announced that FERC granted authorization for siting and constructing its proposed Jacksonville LNG Export Facility. The facility will have a production capacity of

approximately 1.65 million LNG-gallons per day (1 million tonnes per year). In addition to providing natural gas to the Caribbean basin, the Jacksonville LNG Export Facility is expected to provide LNG for bunkering in the southeast United States.

FERC pushed back its schedule for the environmental review of the Jordan Cove LNG project and related Pacific Connector Gas Pipeline by five weeks, saying the United States Forest Service only recently received key information from the applicant.

Rocky Mountain Institute (RMI) says in its new reports that it found that the role of gas as a "bridge fuel" is a thing of the past and there are both significant cost savings and opportunities if utilities prioritize clean energy over rush to gas. The City of San Jose, California, became the largest city in the United States to ban natural gas in new homes after its city council voted unanimously in favour of new measures.

[Africa]

Total and Qatar Petroleum (QP) signed agreements under which QP will farm into Total-held exploration acreage in Namibia, Guyana and Kenya.

Nigeria LNG signed a Letter of Intent (LOI) for the Engineering, Procurement and Construction (EPC) of the Train 7 project with the preferred bidder - a consortium of SCD - Saipem Chiyoda and Daewoo. The four shareholders - NNPC, Shell, Total and ENI - assured their commitment to ensure that FID for T7 is signed by 31 October 2019.

Kosmos Energy announced that the Yakaar-2 appraisal well encountered approximately 30 meters of net gas pay in high-quality. Partners in the Yakaar-Teranga gas project, located offshore Senegal, include PETROSEN, BP, and Kosmos.

Vitol and ENH (Empresa Nacional de Hidrocarbonetos de Mozambique) launched ENH Energy Trading, a joint venture commodity trading company, initially owned 51% by ENH and 49% by Vitol. It is anticipated ENH's share will increase over time. The company will be incorporated and based in Singapore.

Total announced the closing of the acquisition of Anadarko's 26.5% operated interest in the Mozambique LNG project, which is expected to come into production by 2024.

[Europe / Russia]

Natural gas inventories in Europe are near capacity weeks earlier than usual.

Gas extraction from the Groningen field will fall to 11.8 bcm in the coming gas year. This brings the extraction below the level recommended by State Supervisory Board of Mining (Staatstoezicht op de Mijnen = SodM) of 12 bcm. Gas extraction in Groningen is expected to reach zero by the middle of 2022, eight years earlier than previously contemplated. The gas field will be completely closed at a later time.

Qatar Petroleum (QP) and Fluxys signed a long-term agreement for LNG unloading services at the Zeebrugge LNG Terminal. Qatar Terminal Limited (QTL) will subscribe to the full capacity at the terminal from the expiry of the existing long-term unloading contracts and up to 2044. QTL is already a party to an existing agreement under which approximately 50% of the terminal's capacity is utilized for delivery of Qatari LNG into Belgium

According to France's LNG terminal operator Elengy, the call for capacity subscription currently ongoing at the Montoir terminal will enter its final binding phase in October 2019. It is an opportunity to gain direct access to up to 3.5 bcm per year of firm and existing capacity from October 2021 to December 2035. Elengy reached the mark of 20,000 truck loadings at its LNG import facilities. Since the launch of the service at the Montoir terminal in 2013, this service has also been developed since 2014 at the Fos Tonkin terminal. Elengy will open a new truck loading station at the Fos Cavaou terminal in the coming weeks.

German LNG Terminal GmbH, the joint venture behind the LNG terminal project in Brunsbüttel, Northern Germany, has completed the EPC (Engineering, Procurement and Construction) Contractor pre-qualification process that started at the end of June 2019. Four EPC contractors have been shortlisted to continue the competitive tender process. The EPC tender closing is on 5 December 2019, with subsequent EPC contract award planned before the end of April 2020. The EPC scope contains a jetty with two berths for LNG carriers, both with LNG unloading and loading capabilities, LNG storage tanks, LNG vaporization and distribution facilities for a total capacity up to 8 bcm per year.

Germany's RWE set a new strategy including a goal to achieve carbon neutral by 2040, based on a three-stage CO₂ reduction plan

The demand for natural gas in Spain increased 16.9% in the first nine months of 2019 over the same period the previous year, reaching 294 TWh (19.45 million tonnes), the highest cumulative figure since 2009. This increase was mainly due to an extraordinary demand for natural gas for electricity generation, reaching 85 TWh, an increase of 99%, and higher industrial consumption, reaching 160 TWh, up 3%.

According to Italy's OLT Offshore LNG Toscana, 41 slots on 41 available for the Gas Year 2019/2020 at its LNG terminal have been allocated. It says the data confirms the effectiveness of the new allocation capacity mechanism via auctions introduced in 2018.

A consortium of China Petroleum Pipeline Engineering, Aktor S.A. and Metron S.A., with Hudong-Zhonghua Shipbuilding and Wilhelmsen Ship Management ranked first in the evaluation for the construction of the infrastructure required for the introduction of natural gas in Cyprus under a tender process organised by the state natural gas company Defa. The Floating Storage Regasification Unit (FSRU) project is co-financed by a grant from the EU Connecting Europe Facility (CEF) financing instrument.

European Court of Justice (ECJ) overruled an EU decision in 2016 allowing Russia's Gazprom to raise a cap on use of Opal, which carries gas from the Nord Stream pipeline that crosses the Baltic Sea to Germany and the Czech Republic. The Bundesnetzagentur (BNetzA) ordered OPAL Gastransport and Gazprom to immediately implement the judgment. OPAL Gastransport is not permitted to conduct further auctions of the affected interconnection capacity on the OPAL. The relevant partially regulated, decoupled interconnection capacity has a volume of 15.86 million kWh/h (12.5 bcm per year equivalent). In 2009 BNetzA granted an exemption from the rules on third-party access, for a limited period and with various conditions. A dominant undertaking, such as Gazprom, was restricted in its ability to book capacity at the exit point of the OPAL pipeline in the Czech Republic unless it offered a volume of gas from the pipeline in a "gas release programme". As no such programme was ever introduced, the booking restrictions led to less use of the OPAL pipeline capacity. In 2016, OPAL Gastransport, Gazprom, Gazprom Export and the BNetzA entered into a settlement agreement to improve third-party access to this capacity and utilisation of the OPAL capacity. The European Commission approved the agreement subject to certain changes. The agreement modified the booking restrictions of the original OPAL exemption decision. It allowed both Gazprom and third parties to book capacity outside the restriction in regular award proceedings.

Korolev Prospect, Sovcomflot's LNG-fuelled Aframax crude oil tanker, completed a commercial voyage along the Northern Sea Route (NSR) for the first time in the history of shipping of a large-capacity oil tanker using only LNG fuel.

Mitsui O.S.K. Lines (MOL) announced that a naming ceremony for a conventional LNG carrier, jointly ordered by MOL and China COSCO Shipping, was held at Hudong-Zhonghua Shipbuilding. The vessel is the first of four newbuilding conventional LNG Carriers for the Yamal LNG Project announced at the end of June 2017.

NOVATEK announced that 15 LNG cargos from the Yamal LNG project were shipped eastbound to the Asian Pacific markets directly via the Northern Sea Route (NSR) during third quarter 2019, representing about 25% of all LNG dispatched from Yamal LNG. 15 Arc7 ice-class tankers are expected to be in operation by end of 2019.

NOVATEK announced that the participants of Arctic LNG 2 approved a final investment decision (FID) for the Arctic LNG 2 project, consisting of the development of the Utrenneye field and the construction of a liquefaction plant on the Gydan Peninsula with three (3) liquefaction trains of overall production capacity of 19.8 million tonnes per year. The launch of LNG train #1 is scheduled for 2023, with LNG trains #2 and #3 to be launched in 2024 and 2026, respectively. Arctic LNG 2 employs gravity-based structures (GBS) and provides for localizing the majority of equipment manufacturing and materials fabrication in

Russia. A consortium of TechnipFMC, Saipem and NIPIGAS (Russia) was awarded the contract on engineering, procurement and construction of the LNG plant (EPC contract). More than 90% of long-lead items have been ordered. Drilling of production wells, construction of roads and the field's production infrastructure have been commenced.

NOVATEK and Saibu Gas signed the Heads of Agreement. The parties intend to establish a joint venture focused on marketing LNG and natural gas to end customers and developing the business for bunkering and gas-fired power generation in the Asian region, as well as constructing and operating a new LNG storage tank at the Hibiki LNG terminal.

NOVATEK signed a Memorandum of Understanding (MoU) each with India's Petronet LNG and H-Energy. The MoU with Petronet LNG envisages delivering LNG supplies from NOVATEK's portfolio to the Indian market, as well as investment by Petronet LNG in NOVATEK's future LNG projects and the joint marketing of LNG as motor fuel in India. The MOU with H-Energy envisages cooperation in LNG supplies to India on a long-term basis, joint investment in future LNG terminals of H-Energy and LNG projects of NOVATEK, as well as joint marketing in India, Bangladesh and other markets.

NOVATEK and the Government of the Chukotka Autonomous Area signed a Cooperation Agreement. The company will consider projects introducing LNG as a fuel for distributed power generation, as well as motor fuel for maritime, automotive transport and mining equipment in Chukotka.

NOVATEK and Sovcomflot signed the Heads of Agreement (HoA) on creating a joint shipping company, focusing on managing the construction and operations of Arctic ice-class LNG carriers. NOVATEK's Chairman said, "An optimized model. . . will support the successful implementation of NOVATEK's Arctic LNG projects as well as reaching the goal set by the Russian President to ensure an increase in annual cargo traffic along the Northern Sea Route to 80 million tons in 2024".

Mitsui O.S.K. Lines (MOL), Japan Bank for International Cooperation (JBIC) and NOVATEK signed a Cooperation Agreement for LNG Transshipment Projects in Kamchatka and Murmansk. The Projects will construct floating storage units (FSUs) to transship LNG cargoes from ice-breaking LNG ships to conventional LNG ships.

Gazprom and Linde Engineering signed a Joint Venture Agreement. The parties will create a joint engineering venture to develop process, design and engineering documentation for natural gas processing and liquefaction facilities in Russia.

Shareholders in the Sakhalin-1 project decided to build their own LNG plant in De Kastri in the Khabarovsk region, Rosneft's chief executive said.

[South America]

GasLog signed a 10-year time charter with Sinolam LNG Terminal for the provision of an LNG floating storage unit (FSU) to a gas-fired power project being developed near Colón, Panama, by Sinolam Smarter Energy LNG Power Company (Sinolam). The time charter is expected to be fulfilled through the conversion of the *GasLog Singapore*, a 155,000 m³, tri-fuel diesel electric (TFDE) LNG carrier built in 2010. The delivery of the FSU in Panama is scheduled for November 2020. Sinolam is a subsidiary of private Chinese investment group Shanghai Gorgeous Investment Development Company. The power project has signed long-term power purchase agreements with leading Panamanian utility companies as well as a 15-year LNG sale and purchase agreement with Shell.

Royal Vopak acquired a 49% shareholding in Sociedad Portuaria el Cayao (SPEC) in Cartagena, Colombia. SPEC is the only LNG import facility in Colombia and has been in operation since 2016. The shareholders in SPEC are Promigas (51%) and Royal Vopak (49%).

[Global issues]

According to the IEA's (International Energy Agency) Global Gas Security Review 2019, global natural gas demand is growing strongly, supported by abundant and diversified sources of supply. LNG remains a key enabler of international trade development with double-digit growth three years in a row, and with future growth potential supported by another wave of investment decisions in LNG export facilities throughout the world. Much of the growth in LNG consumption is occurring in countries where LNG competes with other sources of natural gas and fuels, meaning LNG importers want more flexibility. The development of LNG spot trading, the growing share of destination-free supply contracts, and the rise of portfolio players as key buyers are all signs that the LNG market is responding to these increasing demands. North-western Europe has gas security challenges as a major source of domestic supply (the Groningen field in the Netherlands) is phased out.

BP announced that it will deploy continuous measurement of methane emissions in its future BP-operated oil and gas processing projects as part of its programme to detect, measure and reduce methane emissions. Continuous measurement, including instruments such as gas cloud imaging (GCI), will be rolled out to all new major projects worldwide.

The Oil and Gas Climate Initiative (OGCI) announced further initiatives to accelerate the reduction of greenhouse gas emissions and support the goals of the Paris Agreement..

Reference: Company announcements, Reuters, Bangkok Post, Dawn Pakistan, Houston Chronicle, Bay Area News, Cyprus Mail, Cedigaz News Report.

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