

LNG Review April 2023 - Recent issues and events - Hiroshi Hashimoto*

Introduction

Progresses have been observed in new LNG importers among emerging Asian economies. AG&P announced the arrival of its long-term chartered FSU (floating storage unit) at its LNG importing site in Batangas Bay, Philippines. CLP Holdings announced that an FSRU (floating storage and regasification unit) had arrived in Hong Kong.

As the largest LNG importing countries in the world, Japan and China imported 18.95 and 16.43 million tonnes of LNG during the first quarter of 2023, declining by 7% and 4.5% year-on-year, respectively. The European Union and the United Kingdom increased their combined LNG imports by 8% or 2.1 million tonnes to 29 million tonnes during the same period, partly offsetting the declining flows of Russian pipeline gas into Europe of around 15 million tonnes equivalent.

Japan imported 70.55 million tonnes of LNG in the fiscal year 2022 (April 2022 - March 2023), a 1.3% decline year-on-year. The average unit price for the fiscal year was 50% higher year-on-year at USD 17.97 per million Btu and 80% higher year-on-year at JPY 126,049 per tonne, due to the weaker Japanese currency during the fiscal year.

G7 Climate, Energy and Environment Ministers issued a Communiqué in the middle of April 2023 including their endorsement of investment in the gas sector, if implemented in a manner consistent with climate objectives.

The IEA (International Energy Agency) published a report on the outlook of the gas market, preceding the G7 Ministers' Meeting. The report says: even with flat or declining natural gas demand in the STEPS (Stated Policies Scenario) and APS (Announced Pledges Scenario), new investments in upstream gas supply remain necessary to offset declines from existing fields; and projected demand growth in emerging economies requires investment in new LNG infrastructure in these scenarios.

[Asia Pacific]

Japan's JERA Co., Inc. announced on 10 April 2023 that it had entered into a

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Memorandum of Understanding (MOU) with Korea Gas Corporation (KOGAS), regarding cooperation in the LNG business.

Japan's Mitsui O.S.K. Lines, Ltd. (MOL) announced on 13 April 2023 that as of 16 March the company joined the Methane Abatement in Maritime Innovation Initiative (MAMII) tasked with reducing methane emissions across the maritime industry in the world, which initiative led by Safetytech Accelerator being a non-profit established by Lloyd's Register and the Lloyd's Register Foundation.

MOL announced on 17 April 2023 that the second of Japan's first two LNG-fuelled ferries, the Sunflower Murasaki, owned by MOL and operated by its group company Ferry Sunflower Co., Ltd., entered service on 14 April.

MOL announced on 14 April 2023 that the company, along with TSUNEISHI SHIPBUILDING Co., Ltd. and Mitsui E&S Shipbuilding Co., Ltd. (MES-S) had conducted risk assessments of their ammonia-fuelled ocean-going liquefied gas carrier, and on 10 April, received Approvals in Principle (AiPs) for the vessel from Nippon Kaiji Kyokai (ClassNK) and Lloyd's Register of Shipping.

JBIC (Japan bank for International Cooperation) announced on 14 April 2023 that the bank had signed a loan agreement with Chugoku Electric Power.

Singapore's piped town gas producer and gas utility provider, City Energy, announced on 18 April 2023 that the company and clean energy solutions provider Gentari Sdn Bhd (Gentari), a wholly-owned subsidiary of PETRONAS, had signed two Memorandum of Understanding (MOU) to conduct feasibility studies of a hydrogen supply chain from Malaysia to Singapore, as well as to allow customers to access both parties' electric vehicle (EV) charging network across Singapore and Malaysia.

Australia's Woodside Energy announced on 26 April 2023 that Woodside and Keppel Data Centres Holding Pte Ltd had signed a non-binding Heads of Agreement (HOA) to evaluate the potential supply of liquid hydrogen to Singapore from Woodside's portfolio of facilities, including its proposed H2Perth facility in Perth, Western Australia.

An LNG vessel owned by Hong Kong-based CNTIC VPower, which arrived in Myanmar in 2020 to provide gas for power, left Yangon on 31 March 2023.

Vitor announced on 3 April 2023 that it would supply the first LNG cargo to the Philippines from its global LNG portfolio. AG&P announced on 10 April the arrival of the commissioning cargo. AG&P further announced on 27 April the arrival of the ISH Floating Storage Unit (FSU) at the Philippines LNG (PHLNG) Import Terminal in Batangas Bay.

According to a LinkedIn feed by BW LNG, the FSRU BW Batangas, previously called BW Paris, is undergoing modifications at MMHE Shipyard in Johor, Malaysia, with the delivery expected around the end of Q2 or at the beginning of Q3 of 2023. The modifications

are being made ahead of the FSRU's deployment with First Gen's Batangas LNG terminal where the FSRU will be chartered for up to ten years.

China Petrochemical Corporation (Sinopec) announced on 11 April 2023 that the company planned a 400 km green hydrogen pipeline from Inner Mongolia to Beijing with initial capacity of 100k tonnes per year. The "West-to-East Hydrogen Transmission" pipeline demonstration project has been included in the "Implementation Plan for the Construction of a 'National One Network' for Oil and Gas".

Hong Kong's CLP Holdings Limited announced on 13 April 2023 that an FSRU (floating storage and regasification unit) had arrived in Hong Kong. The terminal is developed by CLP Power Hong Kong Limited and The Hongkong Electric Co., Ltd.

The Indian government introduced a gas prices cap for two years in the new guidelines published on 7 April 2023. For the gas produced by ONGC & OIL from their nomination fields, the APM (Administered Price Mechanism) price shall be subject to a floor and a ceiling. The initial floor and ceiling prices shall be USD 4 per million Btu and USD 6.5 respectively. The ceiling would be maintained for the next two years (FY 2023-24 and 2024-25) and then increased by USD 0.25 each year.

TotalEnergies announced on 17 April 2023 the delivery of a first LNG cargo to the Dhamra LNG terminal in Odisha on the east coast of India and owned and operated by Adani Total Private Limited (ATPL), a 50-50 joint venture between TotalEnergies and Adani.

Japan's JERA announced on 27 April 2023 that JERA, through its subsidiary JERA Asia Pte. Ltd. concluded a Memorandum of Understanding (MOU) with Summit Corporation Limited, a subsidiary company of Summit Power International Limited, the largest independent power producer in Bangladesh to collaborate on the development of LNG supply, storage and regasification and LNG.

The Australian Department of Industry, Science and Resources said in The Resources and Energy quarterly (REQ) on 3 April 2023 that after reaching 83 million tonnes (Mt) in 2021 - 22, Australia's LNG export volumes are forecast to stabilise at 80 Mt.

The Australian Government released on 26 April 2023 for final consultation the mandatory code of conduct (Gas Code) which aims to ensure sufficient supply of Australian gas for Australian users at reasonable prices, give producers the certainty they need to invest in supply, and ensure Australia remains a reliable trading partner by allowing LNG producers to meet their export commitments.

Australia's Woodside CEO said on 19 April 2023 that the development of the Australian gas industry had been only possible with support of international investors and customers. At its 2023 Annual General Meeting on 28 April, the CEO said that the company was on track to meet its 2025 and 2030 emissions reduction targets of 15% and 30%

respectively, towards an aspiration of net zero by 2050 or sooner.

Woodside announced on 26 April that all conditions relating to its long-term gas sale and purchase agreement (GSPA) with Perdaman Chemicals and Fertilisers Pty Ltd had been satisfied. Supply under the GSPA is for approximately 130 Terajoules per day (TJ/day) (0.87 million tonnes per year) over 20 years from either 2026 or 2027. Gas will be supplied from Woodside's portfolio and sourced primarily from the Scarborough project.

Baker Hughes announced on 19 April 2023 that it had been awarded an order to be booked in the first quarter of 2023, by Black & Veatch, a subcontractor to the JGC and Samsung Heavy Industries (SHI) consortium, to deliver two compressor trains of 1 million tonnes per year each for the PETRONAS nearshore LNG facility in Sabah, Malaysia.

Japan's INPEX CORPORATION announced on 4 April 2023 that it had submitted a revised Plan of Development (POD) for Abadi LNG Project incorporating a carbon capture and storage (CCS) component to the Indonesian authorities. INPEX expects to reach a final investment decision (FID) in the latter half of the 2020s and production in the early 2030s.

JOGMEC (Japan Organization for Metals and Energy Security) announced on 17 April 2023 that JOGMEC and Indonesia's Pertamina had signed a Memorandum of Understanding (MOU) to promote discussion to create future business opportunities in contributing to energy transition and security in Indonesia and Japan. The parties will commence discussion to promote projects related to CO₂-EOR/EGR, hydrogen and ammonia production with CCS, and industrial CCS.

[North America]

The U.S. DOE (Department of Energy) approved on 21 April 2023 a request from a Sempra affiliate to extend the export deadline for the Port Arthur LNG facility. The order was consistent with another from the Federal Energy Regulatory Commission (FERC) that extended the project's construction and in-service deadlines. The Port Arthur project was sanctioned in March 2023.

The FERC on 21 April 2023 issued orders reaffirming its 2019 approvals for the Rio Grande LNG project, along with the Rio Bravo Pipeline and the Texas LNG export project, were in the public's interest, 18 months after the U.S. Court of Appeals for the District of Columbia Circuit ordered the Commission to review its authorizations for the projects.

Venture Global LNG announced on 17 April 2023 the raising of the roof of the second LNG storage tank at the Plaquemines LNG export facility in Plaquemines Parish, Louisiana. This is the second tank of four in total for Plaquemines LNG. When operational it will be capable of storing 200,000 m³ of LNG.

Japan's JERA and Venture Global CP2 LNG, LLC announced on 28 April 2023 that

they had signed an LNG Sales and Purchase Agreement (SPA). JERA will purchase 1 million tonnes per year of LNG from the CP2 project after the commencement of commercial operation for 20 years.

The U.S. DOE denied on 21 April 2023 Energy Transfer's request to again extend the deadline for starting exports from its proposed Lake Charles LNG facility in Louisiana. DOE reaffirmed its expectations that LNG projects should be able to start exporting within seven years of export authorization.

Delfin Midstream Inc. announced on 24 April 2023 that Delfin LNG LLC had finalized an LNG Sale and Purchase Agreement (SPA) with Hartree Partners Power & Gas Company (UK) Limited, a wholly owned subsidiary of Hartree Partners, LP. Delfin LNG will supply 0.6 million tonnes per year on an FOB (free on-board) basis to Hartree for 20 years.

The U.S. DOE issued on 13 April 2023 a document approving exports of LNG from the proposed Alaska project to non-free trade agreement (non-FTA) countries for a term of 30 years. If granted all required permits, the project would be operational in 2030.

Hy2gen of Germany had entrusted the completion of a pre-FEED study for its COURANT project in Canada to Technip Energies, the company announced on 3 April 2023. The pre-FEED study began in March 2023. Hy2gen expects the plant to be mechanically completed by mid-2028 to start production of climate-neutral renewable ammonia.

[Middle East]

JOGMEC (Japan Organization for Metals and Energy Security) announced on 18 April 2023 that JOGMEC, ADNOC, Mitsui & Co., and INPEX, had signed a Strategic Collaboration Agreement (SCA) for a joint study to verify the greenhouse gas (GHG) emissions of clean ammonia production project in the United Arab Emirates (UAE).

Baker Hughes announced on 3 April 2023 an order to be booked in the first quarter of 2023 with QatarEnergy to supply two main refrigerant compressors (MRCs) for the North Field South (NFS) project. The MRCs are part of two LNG "mega trains" representing 16 million tonnes per year of additional capacity that is estimated to further boost Qatar's LNG production capacity to 126 million tonnes per year.

QatarEnergy announced on 12 April 2023 a partnership agreement with China's Sinopec for the North Field East (NFE) project. Sinopec will be a shareholder in one of the NFE joint venture companies. QatarEnergy will transfer to Sinopec a 5% interest in the equivalent of one NFE train.

TotalEnergies announced on 5 April 2023 that TotalEnergies and the Iraqi Government had defined the necessary conditions and mutual insurances to move forward with the Gas Growth Integrated Project (GGIP). The government and TotalEnergies have

agreed on a 30% stake for the Basrah Oil Company (BOC) in the GGIP. TotalEnergies has invited QatarEnergy to take a 25% stake in the GGIP. The consortium will thus be composed of TotalEnergies (45%), Basrah Oil Company (30%) and QatarEnergy (25%).

[Africa]

NNPC (Nigerian National Petroleum Corporation) tweeted on 27 April 2023 that NNPC had signed a Memorandum of Understanding (MoU) with Golar LNG to build a Floating Liquefied Natural Gas (LNG) plant in Nigeria.

According to a LinkedIn feed of Wison Offshore & Marine Limited, the hull steel-cutting ceremony was held on 31 March 2023 in Nantong Yard for Eni's second FLNG unit being built for deployment offshore Congo. Wison is advancing construction works on a 2.4 million tonnes per year floating LNG (FLNG) unit ordered by Eni.

Eni announced on 25 April 2023 that the foundation stone of Congo LNG was laid. The project is expected to reach an overall LNG production capacity of 3 million tonnes per year from 2025. Congo LNG will exploit the gas resources of Marine XII, fulfilling the country's power generation needs while also fuelling LNG exports focusing on Europe. The project will see the installation of two floating natural gas liquefaction plants (FLNG) at the Nenè and Litchendjili fields - already in production - and at the fields yet to be developed. The first FLNG plant, currently under conversion and with a capacity of 0.6 million tonnes per year, will begin production in 2023. The second FLNG plant - already under construction - will become operative in 2025 with a capacity of 2.4 million tonnes per year.

[Europe / Russia]

The European Commission announced on 18 April 2023 that on 25 April, the EU Energy Platform for the joint purchasing of gas - via its AggregateEU service - would launch the first call for placing a demand to buy gas.

ACER (European Union Agency for the Cooperation of Energy Regulators) announced on 3 April 2023 that it launched its daily LNG benchmark on 31 March 2023, as required by Council Regulation (EU) 2022/2576.

The White House and the European Commission presented on 3 April 2023 the one-year progress report of the joint U.S.-EU Task Force on Energy Security.

According to "Joint Statement on the U.S. - EU Energy Council" released from the U.S. State Department on 4 April 2023, the Council intends to continue advancing the reduction of global methane emissions in line with the Global Methane Pledge and the Joint Declaration from Energy Importers and Exporters on Reducing Greenhouse Gas Emissions from Fossil Fuels.

European Parliament announced on 26 April 2023 that its Environment and Industry Committees adopted their position on reducing methane emissions in the energy sector. Parliament is scheduled to adopt its mandate during the 8 - 11 May 2023 Plenary session after which negotiations with Council on the final text of the legislation can start.

Department for Energy Security & Net Zero of the United Kingdom released on 4 April 2023 its latest update of energy security policy "Powering Up Britain: Energy Security Plan". The document says the government is working with industry to increase LNG import capacity and make best use of existing facilities.

Vopak announced on 11 April 2023 Gasunie and Vopak entered into an agreement whereby Vopak would acquire 50% of the shares in EemsEnergyTerminal B.V. The terminal has been operational since 15 September 2022. A fourth tank is planned at the Gate terminal with the aim to reach a final investment decision (FID) by September 2023.

ENGIE Global Energy Management & Sales revealed on 13 April 2023 that it had delivered its first cargo at the new Eemshaven FSRU in the Netherlands. In summer 2022, ENGIE Global Energy Management & Sales acquired the equivalent of 10 TWh/year (0.66 million tonnes) regasification capacities at Eemshaven over the next 5 years.

France's energy regulator CRE (Commission de régulation de l'énergie) published on 4 April 2023 its report on the future of gas infrastructures in the context of achieving carbon neutrality by 2050. LNG terminals will remain necessary for security of supply and for European solidarity in the medium or even long term, the document said.

The German gas transmission system operators (TSOs) presented on 31 March 2023 the draft Gas Network Development Plan 2022-2032. According to the plan, the proposed projects will require some €4.4 billion of investment, €1.9 billion of which will be network expansion projects for new LNG facilities.

Germany's Hanseatic Energy Hub (HEH) announced on 18 April 2023 that it had commissioned a consortium headed by Spain's Técnicas Reunidas to undertake engineering, procurement and construction (EPC) works on its planned in-land terminal in Stade. The announcement says that the Hanseatic Energy Hub is a future-flexible modular system for the energy transition. LNG as well as green energy sources such as Bio-LNG and Synthetic Natural Gas (SNG) can be imported from 2027. HEH announced on 25 April that EnBW had booked additional import rights of 3 bcm per year on a long-term basis.

Vitol announced on 3 April 2023 that on 2 April Vitol delivered the first LNG cargo into Finland's new Inkoo terminal. The cargo was ordered by Elenger. The cargo originates from Vitol's portfolio, specifically the Venture Global Calcasieu Pass facility.

Rag Austria announced on 27 April 2023 that the Underground Sun hydrogen storage facility had started operation.

Poland's GAZ-SYSTEM announced on 6 April 2023 that it had completed a non-binding procedure in the period from 6 March to 20 March to identify the demand for additional regasification capacity of the FSRU Terminal in the Gulf of Gdańsk.

Lithuania's Amber Grid announced on 14 April 2023 that the company on behalf of the Nordic-Baltic Hydrogen Corridor project partners had launched an international tender for a pre-feasibility study of the development of Europe's hydrogen infrastructure, involving transmission system operators of six European Union countries: Gasgrid Finland (Finland), Elering (Estonia), Conexus Baltic Grid (Latvia), Amber Grid (Lithuania), GAZ-SYSTEM (Poland) and ONTRAS (Germany).

According to Eng.LSM.lv (Latvian Public Broadcasting) the country's Ministry of Climate and Energy (KEM) would start work on arranging joint use of the Paldiski LNG terminal in Estonia, the KEM said in a statement on 12 April 2023.

Russia's NOVATEK announced on 13 April 2023 that the company had obtained a Russian patent for its proprietary liquefaction technology "Arctic Cascade Modified" (ACM), built upon NOVATEK's patented Arctic Cascade process implemented at the Yamal LNG project's Train 4. The ACM liquefaction process is intended for the Company's large-scale LNG projects in the Arctic with a production capacity of 3 million tonne per year LNG train.

The Prime Minister of Russia issued an order to approve the decision to sell 27.49999998621683% of the authorized capital of Sakhalin Energy to Novatek.

Azerbaijan's President announced on 25 April 2023 "Memorandum of Understanding for encouraging cooperation among Bulgartransgaz (Bulgaria), Transgaz (Romania), FGSZ (Hungary), Eustream (Slovakia) and the State Oil Company of the Azerbaijan Republic (SOCAR)".

[South America]

Based on the projected level of Gatun Lake, the Panama Canal Authority (ACP) announced on 26 March, 5, 13, and 18 April 2023 tentative reductions of the maximum authorized draft allowed for vessels transiting the Neopanamax locks for the next weeks. Despite water-saving measures in the transit operation, the level of Gatun Lake has been falling faster than originally predicted, the authority says. The precipitation in the Canal watershed for the first 11 days of April is approximately 70% below the historical average, and the water supplied by the rivers to the Canal's watershed is 80% below average, the authority further says. The allowance will be 13.72 m from 17 May, down from the previous 15.24 m.

Reference: Company announcements, Cedigaz News Report.

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