

LNG Review September 2022 - Recent issues and events - Hiroshi Hashimoto*

Introduction

Japan's average LNG import price, measured in the Japanese currency, was JPY 139,371 per tonne in August 2022, the highest ever again after the previous high in July. It was the fourth time to renew the highest in 2022 alone. The price measured in the U.S. dollars in August was also the highest in the history approaching USD 20 per million Btu, surpassing the previous record in July 2012. Among the supply sources, volumes from Russia were priced USD 5 less expensive than the average of the total in August 2022.

Uncertainty continues over Russian gas supply in both Pacific and European regions. Pipeline gas flows through the Nord Stream pipeline into Germany stopped in late August for ad-hoc maintenance works and had not returned yet when the pipes were damaged on 26 September, which apparently eliminated resumption of gas flows by the route in the near future.

The two Japanese partners have joined the new Russian entity that has taken over the Sakhalin 2 LNG project, although Shell did not. According to a Russia's government decree, the criteria - to take over the 27.5% stake in the Sakhalin 2 project previously held by Shell - stipulates that the successor must have experience of operating an LNG production project with a capacity of at least 4 million tonnes per year and a total cumulative volume produced of 40 million tonnes - representing a significant presence in the LNG business.

The Australian Government has announced a new Heads of Agreement (HOA) with the three East Coast LNG Exporters to secure gas supply for the domestic market. The new commitments from the companies will lead to an extra 157 PJ (2.88 million tonnes) for the domestic market in 2023, covering the shortfall of 56 PJ forecast in July by the Australian Competition and Consumer Commission (ACCC). The announcement is in line with the respect for existing LNG sales contracts that has been repeatedly emphasised by Australian officials. According to the announcement, the government does not need to activate the Australian Domestic Gas Security Mechanism (ADGSM) this time - effectively avoiding potential adverse effects of enforcement measures by securing the

* 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.

voluntary commitment.

Woodside has published the final Environmental Impact Statement (EIS) for the Browse-to-North West Shelf (NWS) Project as directed by the authority. The project would send gas to the NWS plant, with production capacity of 11.4 million tonnes per year (LNG, LPG and domestic gas).

[Asia Pacific]

Japan's METI (Ministry of Economy, Trade and Industry) announced on 29 September 2022 JBIC would support Japanese companies' procurement of LNG.

The Tomakomai Port Authority and Japan Petroleum Exploration Co., Ltd. (JAPEX) announced on 8 September 2022 that a trial of LNG bunkering by truck-to-ship method was conducted at the Tomakomai Port in Hokkaido. The trial was conducted with an LNG-fuelled tugboat "Ishin" under cooperation of Mitsui O.S.K. Lines, Ltd. (MOL) as the tugboat owner, Nihon Tug-Boat Co., Ltd. as the tugboat operator, and MOL Marine & Engineering Co., Ltd. as serving marine consulting services.

First Gen Corporation subsidiary FGEN LNG Corporation is developing the interim offshore LNG receiving terminal in Batangas City, Philippines. This is slated for completion by the end of the first quarter of 2023.

Mitsui O.S.K. Lines, Ltd. (MOL) announced on 8 September 2022 that through its subsidiary had signed a long-term charter contract for three newbuilding LNG carriers with ENN LNG (Singapore) Pte. Ltd., a subsidiary of China's ENN Natural Gas Co., Ltd.

India's Ministry of Petroleum and Natural Gas announced on 30 September 2022 the price of locally produced gas USD 8.57 per million Btu for the period Oct 2022 - March 2023. For gas produced in Deepwater, Ultra-Deepwater and High-Pressure-High-Temperature areas, the gas price ceiling for the period has been set at USD 12.46.

The Australian Government announced on 29 September 2022 that it had signed a new Heads of Agreement (HOA) with East Coast LNG Exporters to secure gas for the domestic market. In July, the Australian Competition and Consumer Commission (ACCC) forecast a gas shortfall of 56 petajoules (PJ) for the domestic market in 2023. The announcement this time claims that new commitments from LNG exporters will lead to an extra 157 PJ (2.88 million tonnes) for the domestic market in 2023. According to the Minister for Resources, the government does "not need to take steps to activate the Australian Domestic Gas Security Mechanism."

Australia's Central Petroleum, the operator of the Mereenie project in the Northern Territory, announced on Thursday 15 September 2022 a one-year gas supply agreement, aggregated with existing Mereenie gas supply owned by Macquarie Mereenie Pty Ltd (MM),

NZOG Mereenie Pty Ltd (NZOG) and Cue Mereenie Pty Ltd (Cue), to supply a total of 3.65 PJs (67 thousand tonnes) in 2025 to Shell Energy.

Chevron Corporation announced on 29 September 2022 that Chevron U.S.A. Inc. (Singapore Branch) had delivered its first shipment of offset-paired LNG cargo. The announcement claims that greenhouse gas (GHG) emissions for the cargo, from the Gorgon project delivered to CPC Corporation, Taiwan, will be fully offset via the retirement of high-quality nature-based and energy efficiency offsets in Cambodia, Indonesia and Nepal.

Woodside Energy Ltd, BP Developments Australia Pty Ltd (bp), Japan Australia LNG (MIMI) Pty Ltd (MIMI), which is owned equally by Mitsubishi Corporation and Mitsui & Co., Ltd, Shell Australia Pty Ltd and Chevron Australia Pty Ltd, have been awarded the greenhouse gas assessment permit [G-10-AP], located in the Northern Carnarvon Basin off the coast of Western Australia. The Permit contains the depleted Angel Gas Field. The Joint Venture assesses feasibility of capturing carbon emitted by multiple industries.

Woodside published on 15 September 2022 the final Environmental Impact Statement (EIS) for the proposed Browse to North West Shelf (NWS) Project. The project would send feed gas from fields in the offshore Browse Basin to be processed at the NWS Project's Karratha Gas Plant, with production capacity of 11.4 million tonnes per year (LNG, LPG and Domestic Gas).

Woodside announced on 15 September 2022 that the company, Japan Oil, Gas and Metals National Corporation (JOGMEC), Marubeni Corporation, Hokuriku Electric Power Company, The Kansai Electric Power Co., Inc., Tohoku Electric Power Co., Inc., and Hokkaido Electric Power Co., Inc. had signed a joint research agreement under which they will conduct a feasibility study (Phase 2) on the establishment of a lower-emissions fuel ammonia supply chain from Australia to Japan.

Woodside announced on 23 September 2022 that it had signed the Aiming for Zero Methane Emissions Initiative, becoming the first Australasian company to do so. By signing the initiative Woodside said it was committing to striving to reach near-zero methane emissions from its operated assets by 2030. The Aiming for Zero Methane Emissions Initiative is led by the Oil and Gas Climate Initiative (OGCI).

Shell resumed LNG loadings at its Prelude floating LNG (FLNG) facility offshore Western Australia in September 2022 following a shutdown because of industrial action.

Santos noted on 21 September 2022 a decision by the Federal Court to set aside the acceptance by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) of an environmental plan covering the drilling and completion activities in relation to the Barossa Gas Project. As a result of the decision, the drilling activities will be suspended pending a favourable appeal outcome or the approval of a fresh

Environment Plan. Santos said it would be seeking to expedite these processes. The company said that the Barossa Gas Project was approximately 46% complete.

Shell announced on 5 September 2022 that Shell Berhad (SSB) (80%, Operator) and PETRONAS Carigali Sdn Bhd (20%) had taken a final investment decision (FID) to develop the Rosmari-Marjoram gas project. Rosmari-Marjoram fields are situated 220 km off the coast of Bintulu, Sarawak, Malaysia. The development is intended to supply to the PETRONAS LNG Complex and is designed to produce 0.8 bcf per day (6 million tonnes per year). Gas production is expected to start in 2026.

Indonesia's Abadi LNG project's onstreaming may be delayed for two years from 2027, the industry regulator SKK Migas said on 22 September 2022.

Australia's Santos announced on 27 September 2022 that it had received a binding offer from Papua New Guinea's Kumul Petroleum to buy a 5% stake in the PNG LNG project.

[North America]

The U.S. Environmental Protection Agency (EPA) on 6 September 2022 denied a request by Cheniere Energy to exempt two Gulf Coast plants from a federal air pollution rule that should limit emissions of formaldehyde released by gas-fired turbines. Cheniere said it disagrees with EPA's decision but will work with regulators to "develop solutions that ensure compliance" with the hazardous-pollution rule.

Cove Point LNG LP has filed a preliminary request to the Federal Energy Regulatory Commission for a small unit that could add 20 million cf/d (0.15 million tonnes per year) of capacity. These additional volumes would be captured and liquified from boil-off gas that was being evaporated during normal operations.

JERA Co., Inc. and Germany's Uniper announced on 5 September 2022 that JERA Americas Inc., and Uniper Global Commodities S.E. and Uniper Global Commodities North America L.L.C. had entered into memorandums of understanding (MOU) on procurement and sale of LNG, and clean ammonia from the United States. JERA and ConocoPhillips are considering development of projects on the US Gulf Coast to produce hydrogen and convert it into clean ammonia to be supplied to JERA and Uniper.

Kinder Morgan, Inc. (KMI) announced on 27 September 2022 that it had closed on the sale of a 25.5% equity interest out of its membership interest in Elba Liquefaction Company, L.L.C. (ELC) to an undisclosed financial buyer. KMI and the buyer will each hold a 25.5% interest and Blackstone Credit will continue to hold a 49% interest in ELC.

The Federal Energy Regulatory Commission (FERC) issued on 15 September 2022 a final environmental impact statement (EIS) for a Tellurian pipeline project that would serve natural gas demand in Southwestern Louisiana and the company's Driftwood LNG export

project. FERC concluded that construction and operation of the Line 200 and Line 300 would result in some adverse environmental impacts during construction.

Tellurian announced on 19 September 2022 that it had withdrawn its proposed public offering of units consisting of 11.25% senior secured notes due 2027 and warrants to purchase shares of Tellurian common stock. The company will seek equity partners to help finance its LNG project. The cancelled bond sale puts the planned 2026 startup of the Driftwood LNG complex in Louisiana in jeopardy, the company chairman said in a video posted on YouTube on the next day. The company announced on 23 September that it had updated its Driftwood LNG financing strategy to prioritize securing equity partners. Part of the strategy includes introducing flexibility in its LNG portfolio with the termination of two current sales and purchase agreements.

Delfin Midstream Inc. and Devon Energy Corporation announced on 5 September 2022 that they had entered into an LNG export partnership that includes an executed Heads of Agreement (HOA) for long-term liquefaction capacity and a pre-Financial Investment Decision (FID) investment by Devon in Delfin. The HOA provides the framework for a long-term tolling agreement representing 1 million tonnes per year of liquefaction capacity in Delfin's first Floating LNG vessel.

In documents published on 13 September 2022, the Maritime Administration (MARAD) confirmed it had paused the review of NFE's (New Fortress Energy) Fast LNG project with its letter to the company of 13 August. NFE asked that the pause be suspended, as the agency hadn't contacted NFE or informed it of the specific information that was lacking. NFE had planned to start construction in 1Q2023 and initiate liquefaction with the first phase of the project by the summer, management disclosed in April.

NFE announced on 20 September 2022 that the company planned to host an FLNG Investor Day at the Kiewit Offshore Services (KOS) shipyard near Corpus Christi, Texas, on 2 November. The KOS facility is home to NFE's Fast LNG program and the ongoing conversion of marine infrastructure into floating liquefaction units.

Commonwealth LNG and Woodside Energy Trading Singapore Pte Ltd announced on 5 September 2022 the conversion of their non-binding heads of agreement (HOA) into two binding LNG Sale and Purchase Agreements (SPAs), signed on 2 September 2022. The SPAs are for the supply of up to 2.5 million tonnes per year of LNG over 20 years from Commonwealth's LNG export facility under development in Cameron Parish, Louisiana. First deliveries are expected to commence in mid-2026.

FERC announced on 9 September 2022 that the staff of FERC has prepared a final environmental impact statement (EIS) for the Commonwealth LNG project, an 8.4 million tonne per year liquefaction plant and its associated facilities. The staff has concluded that the

project, with the mitigation measures recommended in the EIS, would result in some adverse environmental impacts, most of which would be reduced to less than significant levels. FERC staff conclude there would be significant impacts on visual resources and impacts on environmental justice communities.

Stabilis Solutions, Inc. announced on 21 September 2022 that it had received authorization from the U.S. Department of Energy (DOE) to export domestically produced LNG to all free trade and non-free trade countries, up to 51.75 billion cubic feet (0.393 million tonnes) per year for 28 years.

LNG Canada said the project was over 70% complete. The partners are also considering a second phase.

[Middle East]

Germany's RWE announced on 25 September 2022 that it had reached agreements with two companies from Abu Dhabi: With Abu Dhabi National Oil Company (ADNOC) on LNG supplies and with Masdar, Abu Dhabi's renewable energy company, on cooperation in offshore wind. ADNOC and RWE have signed a supply agreement on the first delivery of a cargo of LNG to be supplied to 'Elbehafen LNG' at Brunsbüttel, near Hamburg, Germany. Elbehafen LNG will operate one of the two Floating Storage and Regasification Unit (FRSU), that RWE chartered on behalf of the German government. The cargo is expected to be shipped from Das Island, Abu Dhabi and to arrive in Germany in late December 2022. The two companies have signed a Memorandum of Understanding (MoU) on multi-year LNG supplies where cargoes will be delivered to Germany starting from 2023.

TotalEnergies announced on 24 September 2022 that it had been selected as the first international partner in the 16 million tonnes per year North Field South (NFS) LNG project. TotalEnergies will obtain a 9.375% participating interest in the NFS project - out of a total 25% interest available for international partners - while QatarEnergy will hold the remaining 75%. Through its combined interests in NFE (6.25%) and NFS, TotalEnergies will add 3.5 million tonnes per year of LNG production to its LNG portfolio by 2028.

TotalEnergies announced on 16 September 2022 that along with its partners the company had signed an Exploration and Production Sharing Agreement (EPSA) with the Ministry of Energy and Minerals (MEM) of Oman in the onshore Block 11. TotalEnergies will hold a 22.5% interest in the block, OQ 10% and Shell with 67.5% will be the operator.

[Africa]

Eni and bp announced on 7 September 2022 that ENI would acquire bp business in Algeria, including the two gas-producing concessions "In Amenas" and "In Salah" (45.89%

and 33.15% working interest respectively). In 2021 they produced approximately 11 bcm of gas, 12 million barrels of condensates and LPG.

Bechtel announced on 8 September 2022 that Shell Egypt, EGAS and Petronas had awarded a front-end engineering and design (FEED) contract to a Bechtel-led coalition that includes Enppi and Petrojet to study a proposed unified power system between the onshore gas processing plant of the West Delta Deep Marine (WDDM) gas fields in the Mediterranean Sea off the coast and the Egyptian LNG export plant (ELNG) in Idku, east of Alexandria.

According to media reports, Portugal could face supply problems in winter if Nigeria does not deliver all the LNG it is due to, Portugal's Environment and Energy Minister said. Nigeria LNG Bonny Island plant is reportedly operating at 60% capacity.

China's Cosco Shipping Heavy Industry said on 13 September 2022 that its Qidong yard had completed the construction of the floating production, storage, and offloading (FPSO) unit that will serve bp's Greater Tortue Ahmeyim FLNG development offshore Mauritania and Senegal.

Mozambique's Finance Minister said that he was "very optimistic" that TotalEnergies would make a decision by March 2023 to resume work on its LNG project.

[Europe / Russia]

EU energy ministers on 30 September 2022 reached a political agreement on a proposal for a Council Regulation to address high energy prices. The regulation introduces common measures to reduce electricity demand and to collect and redistribute the energy sector's surplus revenues to final customers.

Gate terminal B.V, a joint venture of Vopak and Gasunie, announced on 5 September 2022 that it was launching an Open Season to gauge market interest in an additional 4 BCM per year of capacity, inviting market parties to formulate a non-binding expression of interest (EOI).

EemsEnergyTerminal announced on 7 September 2022 that the two FSRUs (Floating Storage Regasification Units) had arrived at Eemshaven; the Golar Igloo (built by New Fortress Energy) arrived on 4 September and the Eemshaven LNG installation (built by Exmar) arrived on 6 September. On 8 September, the construction phase officially started with arrival of the first LNG tanker. The LNG terminal is expected to be operating at full capacity by the end of November/beginning of December. The terminal expects to be able to receive around 18 LNG cargoes during the period up to 31 December.

The German government announced on 29 September 2022 that it would take on €200 billion in fresh debt to implement a gas price cap. The state will set a limit for gas prices and pay the difference between that cap and what gas importers pay on the world market.

The German grid agency (Bundesnetzagentur) revealed on 5 September 2022 details what would happen in case of a Level 3 gas emergency, in which it would ration gas according to priority. Essential and social services (e.g. electricity/water/swage, hospitals/doctors, police/armed forces/fire brigade, schools) would be safeguarded as a top priority. All others could face rationing.

Germany's Deutsche ReGas started construction of its LNG terminal in Lubmin on 20 September 2022. The company announced on 27 September that it would launch the binding open season for capacity allocation for the first phase on 10 October. The company also plans to start a non-binding open season on the same date for the second phase which includes an additional FSRU and the capacity would be available from December 2023. Separately the company said on 23 September 2022 that Macquarie Capital is taking a minority stake in Deutsche ReGas.

Woodside and Uniper announced on 5 September 2022 that they had entered into a flexible long-term sale and purchase agreement (SPA) for Woodside to supply LNG from its global portfolio into Europe, including Germany, for a term up to 2039, commencing in January 2023. The quantity is up to twelve cargoes per year (equivalent to more than 0.8 million tonnes per year). Supply from September 2031 is conditional upon Uniper finalising its long-term capacity bookings in Northwest Europe, expected by March 2023.

Germany's Tree Energy Solutions (TES), E.ON and ENGIE announced on 1 September 2022 that they had been selected by the German Federal Ministry of Economics and Climate Protection (BMWK) to jointly develop and implement the fifth Floating Storage Regasification Unit (FSRU) import terminal in Germany. The terminal plans to start in the beginning of the heating period 2023, with an annual importing capacity of 5 bcm in Wilhelmshaven. The development of TES' hydrogen terminal will be accelerated by the FSRU project. TES aims to integrate the import of green molecules within the first 12 months that the FSRU is in operation. ENGIE is responsible for chartering of the FSRU on behalf of the BMWK, for part of its LNG supply, and with TES for the development and the operation of the FSRU. The five-year-chartered FSRU will be provided by Excelebrate Energy. TES has been developing the hydrogen terminal since 2019 to start large-scale imports by 2025. The TES terminal's structure will ultimately include 6 ship berths, 2,000,000 m³ of onshore storage using 10 on-site tanks, and direct access to the natural gas, hydrogen, and CO₂ pipeline networks.

Germany's Uniper announced on 21 September 2022 that the Federal Government, Uniper SE and Fortum Oyj agreed on an amendment to the package of measures announced on 22 July 2022. The package contains three core elements: A capital increase of €8 billion subscribed exclusively by the Federal Government, gas surcharge, KfW credit line.

Additionally, the Federal Government will acquire the Uniper shares held by Fortum, resulting in a Federal Government stake of approximately 99% in Uniper. The state-owned bank KfW will provide financing to Uniper according to its liquidity needs. Uniper already extended KfW Bank credit lines to €13 billion at the end of August. The credit line provided by Fortum, consisting of €4 billion shareholder loan and €4 billion guarantee line, will be replaced by the Federal Government following the acquisition of the Fortum stake.

Norway's Equinor and Poland's PGNiG announced on 23 September 2022 a long-term gas sales agreement for 10 years from January 2023 with a volume of around 2.4 bcm of gas per year to be transported through the new Baltic Pipe from Norway to Poland.

According to Finland's Gasum, Greenpeace activists blocked the entry of Coral Energy to Nynäshamn LNG terminal in Sweden on 8 September 2022, protesting the import of Russian LNG to Sweden. After the local police removed the activists from the terminal site, Coral Energy unload the cargo on 9 September. According to Helsinki Times, Coral Energy arrived in Hamina in southeast Finland on 19 September carrying LNG from Vysotsk, Russia. Gasum has procured LNG from Russia since 2018.

Spain's Repsol announced on 7 September 2022 that the company had agreed to partner with U.S. institutional investor EIG in its upstream business with a 25% stake. Repsol will retain operational control of this business.

The capacity of a Spain-France gas pipeline has been increased by 1.5 billion cubic meters to a total of 8.5 bcm, according to Spain's Environmental Transition Ministry.

Slovakia's gas supplier SPP announced on 8 September 2022 that it had signed a contract with ExxonMobil to buy LNG.

Russia's Gazprom announced on 16 September 2022 that from 1 January to 15 September 2022, Gazprom 300.8 bcm of gas, 15.9% (56.8 bcm) less than 2021. Exports to non-CIS countries amounted to 84.8 bcm - by 38.8% (53.7 bcm) less than the same period of 2021. Gas exports to China are growing.

Russia's Gazprom said on 2 September 2022 that the Nord Stream pipeline will not resume flows on 3 September as expected, citing equipment maintenance. Sabotage has been suspected in the damage to the Nord Stream 1 and 2 pipelines on 26 September.

Russia's Sovcomflot announced on 23 September 2022 that it and Gazprom Neft had completed the first ship-to-ship (STS) LNG bunkering operation in Russia.

According to a Russia's government decree on Tuesday 6 September 2022, the criteria - to take over the 27.5% stake in the Sakhalin 2 project previously held by Shell - stipulates that candidates must have experience of operating an LNG production project with a capacity of at least 4 million tonnes per year and a total cumulative volume produced of 40 million tonnes. Shell has confirmed that it has notified the Russian Federal Government and

its partners in Sakhalin Energy Investment Company Ltd (SEIC) that Shell will not take equity in the new LLC and that Shell reserves all its legal rights.

[South America]

Malaysia's PETRONAS and Argentina's YPF announced on 1 September 2022 that they signed a Memorandum of Understanding (MoU) to pursue collaboration in Argentina in an integrated LNG project and other areas. YPF and PETRONAS E&P Argentina S.A. executed a Joint Study and Development Agreement (JSDA) towards the study and potential development of the Argentina Integrated LNG project.

TotalEnergies announced on 19 September 2022 that it had approved the final investment decision for the Fenix gas development, located 60 km off the coast of Tierra del Fuego in southern Argentina. Through its Total Austral affiliate, TotalEnergies operates the project with a 37.5% interest, in partnership with WintershallDea (37.5%) and Pan American Sur (25%). At production start-up, expected early 2025, Fenix will produce 10 million cubic meters per day of natural gas (2.68 million tonnes per year LNG equivalent).

[Global issues]

According to OIES paper "Greenhouse Gas Emissions from LNG Trade: from carbon neutral to GHG-verified" of 20 September 2022, carbon-neutral LNG has become progressively limited to a relatively small number of trades in Asia and cannot be considered a credible or relevant environmental standard. Cargos should be 'greenhouse gas verified' and should set out the methodologies used to measure, report, and verify emissions, the paper said.

Reference: Company announcements, Cedigaz News Report.

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