

**LNG Review May 2023**  
**- Recent issues and events -**  
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**Introduction**

While both Asian spot LNG and European spot gas prices have been more than 60% lower than those at the end of last year, LNG import projects in the emerging Asian markets are advancing. The Philippines' first FSU has arrived at its planned site, to be followed by another FSRU expected to be delivered around the middle of the year. PetroVietnam Gas has secured a certificate from Vietnam's Ministry of Industry and Trade to import and export LNG, as the company has completed the construction of its LNG terminal with an initial capacity of 1 million tonnes per year. Hong Kong has received its first LNG cargo.

Based on figures from Japan's customs statistics, the country's average LNG import price was USD 13.59 per million Btu and JPY 93,160 per tonne in April 2023, lower than March 2023 and under JPY 100 thousand for the first time since March 2022.

China's monthly LNG import was higher than Japan for the first time in 2023 in April. Japan imported 4.53 million tonnes of LNG in April, 19% lower year-on-year. China imported 4.77 million tonnes of LNG in April 2023, 10% higher than the same month of 2022.

Japan's total import volume during the first four months of 2023 was 23.47 million tonnes, a decrease of 10% from the same period of 2022. China's total LNG import volume during the first four months of 2023 was 21.16 million tonnes, a decrease of 2% from the same period of 2022. On the other hand, China's pipeline gas import during the first four months of 2023 was nearly 2% up from the same period of 2022 at 14.53 million tonnes.

Monthly LNG Imports of China and Japan in 2023  
(In million tonnes. Green indicates the higher of the two)

2023	January	February	March	April
China	5.91	5.16	5.32	4.77
Japan	6.82	6.40	5.72	4.53

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

## **[Asia Pacific]**

Singapore's Pavilion Energy announced on 16 May 2023 that the company had taken delivery of its first LNG cargo paired with a Statement of Greenhouse Gas Emissions (SGE) from QatarEnergy at the Singapore LNG Terminal. The SGE methodology was jointly published by Pavilion Energy, QatarEnergy and Chevron and seeks to become a common standard to measure, report and verify GHG emissions along the LNG value chain to drive greater transparency and enable stronger action on GHG reduction measures. Since its publication in 2021, the SGE methodology has been applied on six delivered LNG cargoes.

PetroVietnam Gas announced on 8 May 2023 that it had received a certificate from the Ministry of Industry and Trade to become the country's first company to import and export LNG in 2023. PetroVietnam Gas said it had completed the construction of its Thị Vải LNG terminal with an initial capacity of 1 million tonnes per year. It aims to raise the capacity to 3 million tonnes.

Vietnam Gas Corporation (PV GAS) announced on 24 May 2023 that it signed a Confirmation Notice with Shell on 22 May to deliver the first LNG cargo to Vietnam. To commission the Thị Vải LNG terminal, PV GAS issued an offer to buy on 27 April. The Thị Vải LNG terminal will be the first and largest LNG terminal in Vietnam, with a capacity of Phase 1 of 1 million tonnes per year, to be expanded later to 3 - 6 million tonnes per year. The Sơn Mỹ LNG import terminal is also under development. The Thị Vải LNG Terminal will primarily supply two gas-fired power plants with a combined capacity of 1.5 GW being built in the neighbouring province of Đồng Nai by PetroVietnam Power.

PetroVietnam Gas Corporation (PV GAS) announced on 19 May 2023 that it held a workshop on its readiness of of Thị Vải LNG.

The Vietnamese government approved on 16 May 2023 its National Power Development Plan 8 (PDP8). Offshore wind power capacity is expected to reach at least 6 GW by the end of this decade and 70 - 91 GW by 2050, the government said in a statement. The final version of the plan is not yet available, but according to media reports gas-fired power plants are expected to represent a combined installed capacity of 37 GW, or close to 25% of the total by 2030.

ADNOC Logistics & Services (ADNOC L&S), the shipping and maritime logistics arm of ADNOC, announced on 27 April 2023 the berthing of LNG carrier, Ish, at the AG&P Philippines LNG (PHLNG) Import Terminal in Batangas Bay. The ship will be commissioned as a Floating Storage Unit (FSU) at the first LNG import terminal in the Philippines. AG&P subsidiary, GasEntec, converted the vessel, which has a capacity of 137,500 cubic meters, to an FSU in five months. The supply, operations and maintenance of the FSU will be undertaken by ADNOC L&S.

The Philippines Department of Energy (DOE) announced on 15 May 2023 that the government had signed the Renewal Agreement for the Malampaya Service Contract No. 38 (SC 38). The 25-year production contract, which shall expire on 22 February 2024, has been renewed for a final fifteen (15) years or until 22 February 2039. Aside from continuing the production operations, the SC 38 Consortium is required to conduct a minimum work program consisting of geological and geophysical studies and the drilling of at least two (2) deep water wells during the Sub-Phase 1 from 2024 to 2029.

China consumed 31.79 bcm of natural gas in April 2023, a 7.3% increase year-on-year, according to NDRC (National Development and Reform Commission). During the first four months of the year, the country consumed 129.26 bcm of gas increasing by 4.1% from one year earlier.

PetroChina International Co Ltd announced on 27 April 2023 that it signed a sales and purchase agreement on 17 April with Malaysia's Petronas to buy LNG, as the two companies' first term LNG sales and purchase agreement.

The Australian Government announced on 7 May 2023 that it would introduce changes to the Petroleum Resource Rent Tax (PRRT). The announcement says that the changes will mean the offshore LNG industry pays more tax sooner. The Government will introduce a cap on the use of deductions from 1 July 2023 targeting the offshore LNG projects. Specifically, the change will limit the proportion of PRRT assessable income that can be offset by deductions to 90%. The change will bring forward PRRT revenue from LNG projects. Under the current rules, most LNG projects are not expected to pay any significant amounts of PRRT until the 2030s.

Venice Energy announced on 4 May 2023 that a joint study by South Australian LNG import terminal developer, Venice Energy, and SEA Gas, the owners of the ~680 km pipeline between Victoria and South Australia, had confirmed the pipeline could be reconfigured to facilitate bi-directional flow between the states when the proposed LNG terminal in the Outer Harbor at Port Adelaide becomes operational in 2026.

Australia's Beach Energy Limited announced on 18 May 2023 that cost and schedule of the Waitsia project were being reviewed.

Shell announced on 29 April 2023 that Shell Australia had signed an agreement with bp for the sale of Shell's interests in the Browse Project.

Santos announced on 3 May 2023 that it had signed four Memoranda of Understanding (MOUs) for the proposed storage of carbon dioxide (CO<sub>2</sub>) emissions from third parties to underpin the initial development of the Bayu-Undan carbon capture and storage (CCS) project, where front end engineering design work (FEED) is nearing completion. The four non-binding MOUs for CO<sub>2</sub> supply to Bayu-Undan CCS have been

executed with potential upstream gas and LNG projects offshore the Northern Territory and in Darwin, and an energy and industrial conglomerate in Korea. The MOUs indicate demand for CO<sub>2</sub> storage at Bayu-Undan CCS could be in excess of 10 million tonnes per year. The Bayu-Undan CCS project is situated within Santos' Darwin and Bayu-Undan Hub, part of Santos' three hub CCS strategy that includes the Moomba CCS project which is under construction and 60% complete. First injection at Moomba CCS is scheduled for 2024. A final investment decision for Bayu-Undan CCS is targeted for 2025.

Santos announced on 1 May 2023 that Kumul Petroleum Holdings Limited (Kumul) had extended the offer period to acquire a 5% interest in PNG LNG until 31 August 2023, after the binding conditional offer was originally made on 27 September 2022 and an extension was made on 23 December 2022 until 30 April 2023. Santos has agreed to deal exclusively with Kumul during the extended period regarding the sale of equity in PNG LNG.

Indonesian engineering company PT Tripatra Engineers and Constructors (TRIPATRA) announced on 3 May 2023 that the company, partnering with PT Saipem Indonesia and Korea's Daewoo Engineering & Construction Co., Ltd., had been awarded the Front-End Engineering and Design (FEED) contract for the upstream facilities of the PNG LNG project. The project in Papua New Guinea (PNG) will involve the construction of upstream facilities, including a central processing facility, well pads and related infrastructure. The contract covers the FEED phase 2 of upstream central processing facilities (CPF) and well pad development for Elk-Antelope.

### **[North America]**

Cheniere Energy Inc. announced on 2 May 2023 its first-quarter 2023 net income of USD 5.4 billion, as compared to approximately its net loss of USD 865 million in the corresponding 2022 period. The favourable change was primarily due to changes in fair value of the company's derivative portfolio of approximately USD 4.7 billion (before tax and non-controlling interests), as well as increased total margins per unit of LNG delivered. In March 2023, Cheniere subsidiaries filed an application with the Federal Energy Regulatory Commission (FERC) for authorization to site, construct and operate the CCL Midscale Trains 8 & 9 Project. In February 2023, subsidiaries of Cheniere Energy Partners, L.P. initiated the pre-filing review process with the FERC for the SPL Expansion Project, and in April 2023, executed a contract with Bechtel Energy Inc. to provide the Front End Engineering and Design (FEED) for the SPL Expansion Project.

Cheniere Energy announced on 16 May 2023 that Cheniere Marketing International LLP, had entered into a long-term LNG sale and purchase agreement (SPA) with Korea Southern Power Co. Ltd (KOSPO). KOSPO has agreed to purchase approximately 0.4 million

tonnes per year of LNG from Cheniere Marketing on a delivered ex-ship (DES) basis from 2027 through 2046, with a smaller annual quantity to be delivered starting in 2024. The price prior to 2027 will be a market-based price, after which the purchase price will be indexed to the Henry Hub price, plus a fee. The volumes from 2028 through 2046 are subject to a positive final investment decision (FID) with respect to the first train of the Sabine Pass Liquefaction Expansion Project. The project is being developed to include up to three liquefaction trains with an expected total production capacity of approximately 20 million tonnes per year of LNG. In February 2023, certain subsidiaries of Cheniere Energy Partners, L.P. initiated the pre-filing review process with respect to the project with the Federal Energy Regulatory Commission (FERC) under the National Environmental Policy Act (NEPA).

Air Products announced on 1 May 2023 that it had signed an agreement with Bechtel Energy Inc. to provide its proprietary LNG process technology, equipment and advisory services to Sempra Infrastructure's Port Arthur LNG Phase 1 project in Texas. Air Products' LNG equipment manufacturing facility in Port Manatee, Florida will manufacture two main cryogenic heat exchangers for its AP-C3MRTM LNG process technology. The expected commercial operation dates for Trains 1 and 2 for Port Arthur LNG are projected for 2027 and 2028. This is the third Sempra Infrastructure project for which Air Products' LNG technology was selected, the first being the three trains at the Cameron, Louisiana LNG facility that have been operating with AP-C3MR technology since 2019, and the second being the Energía Costa Azul (ECA) liquefaction project in Mexico. Air Products will provide engineering, design and manufacturing of the heat exchanger equipment for the liquefaction sections of two large trains, which will use Air Products' proprietary AP-C3MR propane pre-cooled mixed refrigerant liquefaction process technology. In addition, Air Products will provide engineering studies and technical advisory services for the installation and startup of each LNG train.

The U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA) announced on 5 May 2023 that it was proposing a new rule to significantly improve the detection and repair of leaks from gas pipelines. The proposed rule will update decades-old federal leak detection and repair standards in favour of new requirements that add an additional layer of safety by deploying advanced technologies to find and fix leaks of methane and other flammable, toxic, and corrosive gases.

The U.S. EPA (Environmental Protection Agency) announced on 8 May 2023 that it was proposing Clean Air Act emission limits and guidelines for carbon dioxide (CO<sub>2</sub>) from fossil fuel-fired power plants based on cost-effective and available control technologies. The proposals would set limits for new gas-fired combustion turbines, existing coal, oil and gas-fired steam generating units, and certain existing gas-fired combustion turbines. Consistent

with EPA's traditional approach to establishing pollution standards for power plants under section 111 of the Clean Air Act, the proposed standards are based on technologies such as carbon capture and sequestration/storage (CCS), low-GHG hydrogen co-firing, and natural gas co-firing, which can be applied directly to power plants that use fossil fuels to generate electricity. The proposed standards would apply to less than 20% of natural gas power capacity. Generators would have over a decade to comply with many of the emissions limits.

The LNG Canada project announced on 4 May 2023 via its LinkedIn feed that the project had taken delivery of its last large modules. The piece of equipment will be used to operate one of four refrigerant compressors at the LNG export facility in Kitimat. With construction more than 80% complete overall, the project said it was getting ready to commission, start-up and operate.

New Fortress Energy (NFE) on 4 May 2023 confirmed in its financial results for the first quarter of 2023 that its first Fast LNG project would begin commercial operations in August as construction of the first Fast LNG unit was 90%+ complete and deployment to Altamira is expected in June. The company also recently signed a non-binding Letter of Intent with Mexico's CFE to explore installing FLNG 2 and FLNG 3 at an underutilized existing onshore terminal in Altamira. NFE said deployment and ready for installation were expected in the second half of 2024.

### **[Middle East]**

ADNOC announced on 2 May 2023 that its low-carbon LNG project would move forward in the Al Ruwais Industrial City, Al Dhafrah, Abu Dhabi. ADNOC intends to more than double its LNG production capacity. The plant, which is designed with electric-powered processing facilities, will run on renewable and nuclear grid power.

QatarEnergy announced on 16 May 2023 the award of the engineering, procurement, and construction (EPC) contract with a joint venture of Technip Energies and Consolidated Contractors Company (CCC) for the North Field South (NFS) project, which comprises two LNG mega trains with a combined capacity of 16 million tonnes per year. NFS, together with the North Field East (NFE) project, will increase Qatar's LNG production capacity from the current 77 million tonnes per year to 126 million tonnes per year. QatarEnergy holds a 75% interest in the NFS project and has already signed partnership agreements with TotalEnergies, Shell, and ConocoPhillips for the remaining 25%.

### **[Africa]**

According to Golar LNG, FLNG Gimi is 94% technically complete. The yard departure date for the FLNG has been postponed from 1H 2023 to Q3 2023 to allow for vessel

completion and testing and a greater proportion of commissioning work to be performed in Singapore.

Representatives of Equinor and Shell announced on 19 May 2023 that negotiations on key agreements on the Tanzania LNG project between the international energy companies (IECs) and the Tanzanian government had been concluded. Over the coming weeks, the companies anticipate signing of an HGA (Host Government Agreement) that covers the onshore elements of the project, and a PSA (Production Sharing Agreement) that oversees its upstream component. The next steps involve a period of time of detailed engineering design work. In addition to Equinor and Shell as joint operators, the partners include ExxonMobil, MedcoEnergi and Pavilion Energy, as well as TPDC (Tanzania Petroleum Development Corporation).

### **[Europe / Surrounding regions]**

Eurostat announced on 4 May 2023 that, following a 4.3% increase in 2021, inland demand for natural gas in the EU decreased by 13.2% in 2022 to 13.72 million terajoules (343 bcm, or 252 million tonnes). This is the third lowest total registered since 2008, when monthly cumulated data started being collected, after 2012 (12.93 million terajoules) and 2014 (13.2 million terajoules). Between August 2022 and March 2023, EU consumption of natural gas dropped by 17.7%, compared with the average gas consumption for the same months (August-March) between 2017 and 2022. In 2022, the largest natural gas consumers all reduced their demand substantially.

The European Commission announced on 10 May 2023 that it had launched the first international tender for joint purchasing of EU gas supplies through the AggregateEU mechanism. 77 European companies have submitted requests for a total volume of 11.6 bcm of gas demand. LNG demand represents 2.7 bcm, while 8.9 bcm is requested for delivery via pipeline. The first tendering round covers gas deliveries from June 2023 until May 2024. Further tenders will follow the next demand aggregation exercises, scheduled in June, August, October and December 2023. European Commission announced on 16 May that the EU attracted in the first joint gas purchasing tender bids from 25 supplying companies equivalent to more than 13.4 bcm. The international suppliers have already been matched with the European customers on AggregateEU by service provider PRISMA, amounting to an overall volume of 10.9 bcm. This covers 8.7 bcm of gas via pipeline and 2.2 bcm of LNG (1.62 million tonnes).

The first EU-wide legislation on methane emissions, once it comes into force, could reduce the EU's cumulative methane emissions from coal mines by approximately 40% until 2040, according to an analysis by energy think tank Ember.

Gate terminal B.V, a joint venture of Vopak and Gasunie, announced on 25 May 2023 that bp and PetroChina International London Co., Ltd would each separately acquire 2 bcm per year of regassification and corresponding storage capacity for 20 years. In late 2022 Gate terminal B.V. organized an open season to gauge market interest in new storage capacity of 180,000 cubic meters of LNG and a regassification capacity increase of 4 bcm per year. This will bring the total capacity of Gate to 720,000 cubic meters with a regasification capacity of 20 bcm per year. The parties will continue to closely cooperate with a target of achieving FID by September 2023 and a start of commercial operations by the third quarter of 2026.

Germany's Erdgas Südwest announced on 28 April 2023 that REEFUELERY, a joint venture of Erdgas Südwest and avanca, had started building its bio-LNG production plant with a capacity of 180 tonnes per day in Burghaun. The bio-LNG will be used as an alternative fuel for freight and heavy-duty transportation. It will supply the fuel to avanca's network of filling stations for trucks. REEFUELERY expects the plant to go online in 2024.

Gasgrid Finland announced on 21 April 2023 that the LNG carrier Solaris had brought a full cargo of LNG to Floating LNG Terminal Finland's Exemplar vessel in Inkoo. According to the plan there will be 1 - 2 vessels per month arriving to the terminal. The LNG terminal started operating in January 2023.

### **[Global issues]**

The International Monetary Fund (IMF) said on 23 May 2023 that stabilising LNG prices in the long-term entails building more terminals to achieve market integration. The report said companies need 15- to 20-year contracts to obtain bank financing for construction.

Reference: Company announcements, Cedigaz News Report.

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