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# LNG NEWS WEEKLY 23RD MARCH '24

## VENTURE GLOBAL BAGS LNG CARRIER RESALES

First two vessels to be delivered in 2024 but recent resale deal has yet to be fully explained. Venture Global LNG has confirmed the addition of at least three LNG carrier newbuilding resales to its on-order vessels in a move that will increase the company's fleet to nine ships. The US producer said six of its newbuildings will have a cargo capacity of 174,000 cbm and three will deliver as 200,000-cbm vessels. The vessels are being built with two-stroke ME-GA and ME-GI engines, shaft generators and air lubrication systems. A first ship from the nine under-construction vessels will be handed over this year, the company said, without naming the shipyards except to say they are in South Korea. Venture Global is listed on Clarksons' Shipping Intelligence Network as having five 200,000-cbm LNG newbuildings on order at Hanwha Ocean. These vessels — the first three priced at $237m and the second pair at $250m — are scheduled for handover in late 2025 and 2026. On 12 March, TradeWinds reported that Venture Global had been linked to the purchase of three 174,000-cbm LNG carrier newbuilding resales that were originally contracted by interests associated with investment bank JP Morgan. Brokers said the resales were priced at around $270m each. The trio is understood to be due for delivery dates before the end of 2026. The resales combined with the existing orders would give the company at least eight vessels. But the reports of nine ships in total and the discrepancy over the vessels' sizing implies a more complex resale or newbuilding swap arrangement

may have taken place, which has yet to be clarified. In its Sunday statement, Venture Global chief executive Mike Sabel described the company's new fleet as "world-class, next-generation LNG vessels" and said the acquisition further strengthens its "growing role as a major global energy provider". source : www.tradewindsnews.com

## SHIPOWNER SHORTLIST EMERGES FOR TOTALENERGIES BUNKER NEWBUILD

Five names remain in running to build next-up unit as major extends its fuelling reach. Details of the bidders competing for a charter from French energy major TotalEnergies' fuelling arm to back a large LNG bunker vessel newbuilding have started to filter out into the market. Those following the tender process closely named the five shortlisted parties for the business as Dutch shipowner Anthony Veder, small-scale LNG company Avenir LNG, Spain's maritime-focused Grupo Ibaizabal, Japanese shipping giant Mitsui OSK Lines and Bernhard Schulte of Germany. They said TotalEnergies Marine Fuels' tender has been ongoing for several weeks and is not moving particularly quickly. Parties are not due to make their final offers until the May to June period. A final selection had previously been pencilled in for a month earlier. Brokers hinted that the availability of shipyard berths could tighten sharply and warned against delays to the process. They have previously quoted prices in the high $70m to $90m region for LNGBV newbuildings in this size range. But others pointed to the shipowning names shortlisted, the bulk of which they said would likely have some clout for securing scarce slots. TotalEnergies Marine Fuels floated a requirement for a 15,000-cbm to 18,000-cbm LNGBV. The specialist vessel is expected to be sited on the US West Coast, possibly in the Port of Long Beach, California. The major's fuelling arm is understood to be offering a charter-hire period of between five and seven years on the vessel. Industry players watching the tender process comment that almost all the shortlisted parties have experience of, or are owning or operating LNGBVs. MOL built and has chartered two 18,600-cbm LNGBVs — the Gas Agility (built 2020) and Gas Vitality (built 2021) — to TotalEnergies Marine Fuels. Both vessels are deployed for the major in northwest Europe. Anthony Veder has also been active in the sector and small-scale LNG shipping, both in Europe and in the Americas. Avenir LNG — a joint venture between Stolt-Nielsen, Golar LNG and Hoegh LNG — has been working in the European, Mediterranean and Asian markets. The company's five owned vessels are fully deployed and it is expected to move on fleet expansion this year. Bernhard Schulte now controls the 7,500-cbm LNGBV Ascan Schulte (ex-Kairos, built 2018) and has floated plans for its own design of the vessel. Grupo Ibaizabal controls the 600-cbm LNG and oil bunkering vessel Oizmendi (built 2009). The LNGBV sector is approaching a key inflection point. Today the existing LNGBV fleet is seen as somewhat underutilised, but brokers and consultants have been warning for the past year about the looming shortfall of LNGBV tonnage.They expect this to kick in from 2025 but ramp up sharply in 2026 as large numbers of LNG dual-fuelled newbuildings are delivered. In 2023, TotalEnergies Marine Fuels quantified the LNGBV demand from 2026 as equivalent to 35 large LNGBVs of between 12,000 cbm and 18,000 cbm in size. In March, classification society DNV said there are now

over 500 LNG dual-fuelled vessels in operation, with a further 524 under construction for delivery dates that range through into 2028. The bulk of the on-order vessels are container ships, followed by car carriers and chemical tankers. source : www.tradewindsnews.com

## PETRONAS AND YPF LAUNCH FLNG DESIGN TENDER

Partners get ball rolling on planned floating LNG producers, Malaysia's Petronas and Argentinian partner YPF have invited companies to offer in on the initial design work for a planned floating LNG production unit. Shipbuilding sources said the two state energy companies have issued an invitation to tender to five companies for the front-end engineering and design (FEED) of an FLNG unit for Argentina. The FEED work is for an LNG floater with 4 million to 4.5 million tonnes per annum of capacity. It also includes the onshore facilities. Petronas and YPF have specified that the design should be suitable for two FLNG units. Those competing for the work are said to include engineering companies Saipem, JGC and Technip, South Korean shipbuilder Samsung Heavy Industries and Wison Group in China.

**Bids are due at the end of May.**

Petronas is understood to be financing the FEED as YPF has budget constraints. The competitive FEED work is scheduled to take about eight months, which those working on this type of business see as a relatively tight timeline. In March, YPF revealed in a results presentation that it is reviving its plans to monetise Argentina's Vaca Muerta gas reserves with a large FLNG-based project. In September 2022, YPF signed a memorandum of understanding with Petronas to work together on an LNG project and other energy developments. This week, minister of foreign affairs and worship of Argentina Diana Mondino was in Malaysia for talks with Petronas over the LNG project. YPF is aiming to take a final investment decision by mid-2025. The company plans to opt for a quick start-up by using an existing floater which would be operational by 2027. Speculation is swirling about contenders for this job. Sources have told TradeWinds that Petronas' 1.2 mpta PFLNG Satu (built 2016) unit is the top contender. The floater is currently deployed off Sabah state in east Malaysia. YPF said that from 2029 to 2030 it would add new FLNG facilities, which would enable it to boost production by an additional 8 to 9 mtpa. Post-2030, onshore liquefaction modules would enable production to be increased by a further 15 to 20 mpta. The energy company, which is 51% state-owned, said its target is to export between 25 and 30 mtpa of LNG from 2032 onwards. source : www.tradewindsnews.com

## GERMANY'S HEH TAKES FID ON STADE LNG IMPORT TERMINAL

Germany's Hanseatic Energy Hub has taken a final investment decision to build its Stade LNG import terminal near Hamburg worth about 1 billion euros ($1.09 billion). This is Germany's first onshore LNG terminal. After concluding the permitting and commercial phase in late 2023, HEH's shareholders Partners Group, Enagas, Dow, and Buss Group have now successfully secured financing for the large-scale infrastructure project, HEH said in a statement on Thursday. HEH awarded the

engineering, procurement and construction deal for its Stade LNG import terminal to a consortium led by Spain's Tecnicas Reunidas and its partners, FCC and Enka. According to the firm, it plans to hold the official groundbreaking ceremony in the coming weeks.

***Commissioning in 2027***

This final investment decision allows the Hanseatic Energy Hub to make an "important contribution" to securing Europe's energy supplies following its planned commissioning in 2027, it said. Initially, HEH will serve as an import terminal for LNG, SNG (synthetic natural gas) and liquefied biomethane and, subsequently, for ammonia, as a hydrogen-based energy carrier. Once the LNG terminal enters into service, the FSRU Energos Force, chartered by Germany's federal government, will set sail from Stade. The 174,000-cbm FSRU, which has recently arrived in Stade, will "continue to secure the gas supply in the short term until the more efficient land-based terminal is completed," HEH said.

***90 percent of volumes booked***

The LNG terminal will have a total capacity of 13.3 billion cubic meters of natural gas per year. HEH said that 90 percent of this volume has been booked long-term by three European energy majors EnBW, SEFE, and CEZ. The remaining capacity is reserved for short-term bookings. Long-term contracts include the option to switch to hydrogen-based energy carriers at a later stage, it said.

***Enagas boosts stake to 15 percent***

In September last year, Spanish LNG terminal operator Enagas completed the purchase of a 10 percent stake in HEH. HEH said on Thursday that Enagas is increasing its stake from 10 to 15 percent. Enagas is also providing the technical direction of the construction and will also be terminal operator. HEH also said that Johann Killinger, one of the entrepreneurs driving the project up to this point, is stepping down from the management team following the investment decision. He will now focus on his role as a shareholder, handing over to Jan Themlitz the CEO responsibilities for constructing and commissioning the terminal. Themlitz has a long track record of developing energy-related projects as well as extensive LNG experience from having worked with gas majors and power generators for 30 years, HEH said.

***German LNG imports***

Germany currently imports LNG via the Deutsche Energy Terminal-operated FSRU-based LNG terminals in Wilhelmshaven and Brunsbüttel, as well as the private facility in Lubmin, owned by Deutsche ReGas. As previously mentioned, state-owned DET is also starting up the FSRU-based terminal in Stade and plans to start commissioning the second Wilhelmshaven terminal later this year. In addtion, Deutsche ReGas kicked off commissioning activities in February at its FSRU-based LNG import facility in Germany's port of Mukran. The 174,000-cbm, Energos Power, is now located in Mukran and will be joined later this year by the 145,000-cbm, FSRU Neptune, which is in now in Lubmin. Source : www.lngprime.com

## SEFE, OMAN LNG FINALIZE SUPPLY DEAL

State-owned producer Oman LNG and German gas importer Securing Energy for Europe (SEFE) have finalized their previously announced liquefied natural gas supply deal. The two firms signed the binding term sheet in August last year for the supply of LNG from Oman LNG's plant in Qalhat. SEFE said in a statement on Thursday that it has now signed a sales and purchase agreement with Oman LNG following the binding term-sheet last year. Under the deal, SEFE will buy 0.4 million tonnes per annum of LNG between 2026 and 2029. The contract marks a milestone in the strategic energy partnership between Germany and Oman, as SEFE is the first German company to purchase Omani LNG, it said. Egbert Laege, CEO of SEFE said this partnership "diversifies our portfolio and supports our goal to provide Europe with a secure energy supply." "We look forward to this being the first of many agreements and to developing a trusting partnership in the hydrogen economy in the medium and long term," Laege added. SEFE, previously known as Gazprom Germania, recently also signed a larger supply deal with UAE's Adnoc for supplies from the proposed LNG terminal in Al Ruwais. Under this deal, SEFE Marketing & Trading Singapore will buy 1 mtpa of LNG for a period of 15 years. As per Oman LNG, it operates three LNG trains in Qalhat with a nameplate capacity of 10.4 mtpa sourcing gas from the central Oman gas field complex. Due to debottlenecking, the company's complex now has a production capacity of around 11.4 mtpa. Oman LNG, in which the government of Oman holds 51 percent, was quite busy last year and it signed shareholding deals with international companies, including Shell and TotalEnergies. These agreements followed the completion of Oman LNG's large marketing campaign aimed at renewing all of its contracts post 2024. source : www.lngprime.com

## JAPAN'S LNG IMPORTS CONTINUE TO DECLINE

Japan's liquefied natural gas (LNG) imports dropped for the second month in a row in February, according to the provisional data released by the country's Ministry of Finance. The country's LNG imports decreased by 5.9 percent year-on-year in February to 6.02 million tonnes, the data shows. LNG imports dropped slightly compared to 6.1 million tonnes in the previous month, which also marked a decrease year-on-year. Japan's coal imports for power generation also decreased in February compared to the last year. Coal imports were down by 17.7 percent to 7.81 million tonnes, and Japan paid about $1.29 billion for these imports, a drop of 55.6 percent compared to the last year, the data shows.

**LNG import bill down**

The February LNG import bill of about $3.95 billion decreased by 21.1 percent compared to the same month last year, the preliminary data shows. State-run Japan Oil, Gas and Metals National Corp (JOGMEC) did not publish both the contract-based and the arrival-based monthly spot LNG price in January and February as there were less than two companies that imported spot LNG. The average price of spot LNG cargoes that were delivered in Japan within the month of December regardless of the month when the contract was made (arrival-based price) was $16.9/MMBtu. JOGMEC also said in a report this week that the "Northeast Asian assessed spot LNG price JKM for the previous week (March 11 - March 15) stayed the

same as low-USD 9s on March 15 from the previous weekend." "JKM first decreased due to demand decrease, but, increased due to the trouble of US LNG liquefaction plants," it said. JKM for May settled at $9.900/MMBtu on Wednesday. METI's data showed that Japan's LNG inventories for power generation were at 2.29 million tonnes as of February 4, rising 0.13 million tonnes from the previous week. Japan's LNG inventories for power generation were at 2.05 million tonnes as of February 11, 2.09 million tonnes as of February 18, 2.15 million tonnes as of February 25, 1.95 million tonnes as of March 3, 1.71 million tonnes as of March 10, and 1.60 million tonnes as of March 17, the data shows.

**LNG deliveries**

As per LNG shipments going to Japan in February, deliveries from Asia decreased by 7.8 percent to 1.66 million tonnes, the ministry's data shows. Middle East LNG shipments rose by 41.6 percent to 714,000 tonnes in February. Moreover, shipments from Russia increased by 8 percent to 564,000 tonnes, while US deliveries rose by 44.3 percent to 482,000 tonnes in February. Japan was the world's top LNG importer in 2022, overtaking China, but both of the countries took fewer volumes compared to the year before. China has overtaken Japan to become the world's top importer of LNG last year. China's LNG imports rose 12.6 percent to about 71.32 million tonnes in the January-December period. The country imported some 5.17 million tonnes of LNG more than Japan in 2023. Japan's power utilities such as Kansai Electric increased their nuclear power utilization rate in 2023. The Institute of Energy Economics, Japan (IEEJ) said in a report earlier this year that due to the restart of some nuclear power plants and an increase in solar photovoltaics capacity, coupled with a rise in coal-fired power generation capacity, Japan's LNG imports are expected to decline below 60 million tonnes in FY2024.source : www.lngprime.com

## CRYOPEAK TO SUPPLY LNG TO FORAN MINING'S UNIT

Canada's small-scale LNG firm Cryopeak Energy Solutions said it had entered into a long-term agreement to supply liquefied natural gas to McIlvenna Bay Operating, a unit of Foran Mining. Under the deal, Cryopeak will supply LNG for all power generation requirements during the initial project phase and mine air ventilation to the McIlvenna Bay project located in Northern Saskatchewan. LNG will be exclusively used to provide fuel for the multi-megawatt power generation plant and to replace propane for air ventilation heating, Cryopeak said. Under the agreement, Cryopeak will provide all LNG supply over the term of the agreement, it said. The firm did not provide the quantities of LNG or the any other details regarding the deal. Cryopeak added it has started LNG supply to the McIlvenna Bay project in the first quarter of this year. Cryopeak LNG Solutions, controlled by Texas-based private equity firm BP Energy Partners, recently merged with compatriot Ferus Natural Gas Fuels, owned by Texas-based private equity fund Energy & Minerals Group, to create Cryopeak Energy Solutions. In addition, Cryopeak also acquired all LNG assets from Campus Energy Partners Infrastructure, including the regional LNG production facility located in Dawson Creek, British Columbia. Cryopeak will manage three LNG production facilities in Western Canada and operate the largest fleet of LNG transportation, mobile storage, and regasification equipment, the firm said. Back in 2021, Cryopeak launched its small LNG production facility with a capacity of 27,000 LNG gallons per day in Fort Nelson, British

Columbia. Prior to that, Cryopeak also joined forces with Japan's Sumitomo Corp to develop an LNG bunkering supply chain in North America's Pacific Northwest ports. source : www.lngprime.com

## MOLGAS COMPLETES ITS FIRST GERMAN LNG BUNKERING OPERATIONS

European small-scale LNG player Molgas joined forces with Norwegian shipping firm UECC to complete its first LNG bunkering operation in Germany. The group's inaugural truck-to-ship bunkering operation took place on March 17 at the port of Cuxhaven in Germany. During the operation, UECC's LNG-powered hybrid PCTC, Auto Achieve, received 100 metric tons of LNG by multiple trucks, Molgas said in an emailed statement. Back in 2022, the Norway-based joint venture consisting of NYK and Wallenius Lines took delivery of this LNG-powered vessel from China's China's Jiangnan Shipyard. Besides LNG propulsion, it features a battery pack. With this operation, UECC further expands its LNG bunkering network. Last year, the European shortsea ro-ro carrier joined forces with Spanish energy firm Repsol to complete its first LNG bunkering operation in the Mediterranean. On the other hand, Molgas continues to expand its LNG bunkering business after it recently completed its first operations in Belgium. Prior to Belgium, the Madrid-based group, owned by French private equity firm InfraVia Capital Partners, wrapped up its first LNG bunkering operation in France. Molgas also bought a 45 percent stake in Dutch LNG supplier Titan. This deal includes further follow-on rights from Molgas. source : www.lngprime.com

## SEFE FINALISES LNG DEAL WITH OMAN LNG

Germany's SEFE (Securing Energy for Europe) has finalised a deal to purchase LNG from Oman LNG, it announced on March 21. The two companies have executed a sales and purchase agreement following the binding term sheet signed in August 2023. Under the terms of the deal, SEFE will purchase 0.4mn tonnes/year of LNG from Oman LNG, spanning the period from 2026 to 2029. The agreement was formalised on the sidelines of the Berlin Energy Transition Dialogue 2024. Oman LNG is primarily owned by the government of Oman with a 51% stake, alongside ownership shares held by Shell (30%), Total (5.4%), Kogas (5%), and various Japanese and Omani firms holding stakes under 3%. SEFE this week signed a 15-year heads of agreement with ADNOC for the delivery of 1mn tonnes/year of LNG. The LNG will primarily be sourced from ADNOC's Ruwais LNG project, currently under development in Al Ruwais Industrial City, Abu Dhabi. source : www.naturalgasworld.com

## NEBULA TAKEOVER TO HELP AG&P LNG ACCELERATE PROJECTS IN ASIA: INTERVIEW

In January this year, Nebula Energy, a US-based asset manager, acquired a majority stake in LNG terminal developer AG&P LNG, a subsidiary of Singapore-based AG&P Group, for $300mn. Peter Gibson has been appointed as chairman, Sam Abdalla as vice chairman while Karthik Sathyamoorthy will continue to remain the CEO of AG&P LNG. Sathyamoorthy believes the investment will help fast-track LNG terminal development across emerging markets in South and Southeast Asia. "Nebula

Energy's investment represents 80% stake in AG&P LNG, and will fast-track LNG terminal development across emerging markets in South and Southeast Asia. AGP International Holdings retains a minority stake and together with Nebula Energy, it will continue to support AG&P LNG in asset development," Sathyamoorthy tells *NGW*. Sathyamoorthy argued that there are substantial synergies between AG&P LNG and Nebula as the parties can combine their respective expertise in LNG terminal development, downstream and midstream segments. "Nebula Energy's acquisition signifies a strategic investment, with the funds aimed at bolstering the development of downstream LNG / natural gas assets, including but not limited to LNG terminals and downstream gas distribution infrastructure, over the next two to three years, while overseeing and supporting AG&P LNG in operating these assets," he said. "This uniquely positions Nebula Energy to penetrate South and Southeast Asia markets as an integrated energy company that is present across the entire LNG downstream value chain." Sathyamoorthy said that Nebula Energy's operations, spanning LNG supply and midstream activities such as LNG transport, will connect with the assets being developed and operated by AG&P LNG. "AG&P LNG facilitates Nebula Energy's access to crucial markets by advancing the development of LNG terminals and downstream natural gas infrastructure. Nebula Energy's operations, spanning LNG supply and midstream activities such as LNG transport, will intricately connect with the assets being developed and operated by AG&P LNG," he said. "Together, Nebula Energy and AG&P LNG provide a holistic solution, offering integrated and reliable LNG supply to customers through a unified commercial and technical approach to enable energy transition in the emerging and fast-growing markets in south and southeast Asia," Sathyamoorthy added. AG&P LNG has now become an independent subsidiary of Nebula Energy with offices in the UAE, Singapore, India, Vietnam, and Indonesia.

***Six LNG import terminals under development***

AG&P LNG has a total of six LNG terminals under development. The company operates the first LNG import and regasification terminal in the Philippines, known as the Philippines LNG (PHLNG) import terminal, situated in Batangas Bay. The PHLNG terminal serves the 2.5 GW power plants of San Miguel Global Power with additional demand of about 1.8mn tonnes/year from upcoming power plants in Ilijan. In addition, AG&P plans to roll out and/or support a network of compressed natural gas (CNG) stations to service transport demand as well as service demand from the industrial and domestic sectors with identified partners in the country. In February this year, AG&P LNG acquired a 49% stake in the 3mn tonnes/year Cai Mep LNG import terminal in Vũng Tàu district, Vietnam. The $500mn terminal, which can be expanded to 6mn tonnes/year, has been developed by Hai Linh Company and is fully constructed. It is one of the only two existing LNG terminals in Vietnam and is expecting start-up in Q3 2024. It has pipeline connectivity to Vietnam's largest power generation complex, the Phu My industrial zone, boasting a gas-fired capacity of 3.9 GW. The Cai Mep LNG terminal features three onshore tanks with a total LNG storage capacity of 220,000 m3 and break-bulk capabilities, allowing for the reloading of LNG into smaller vessels. Additionally, the terminal has 14 bays for compressed natural gas (CNG) and LNG truck-loading, providing access to LNG through multiple

highways connecting to nearby demand centers. “The six LNG terminals will collectively hold a capacity of 25mn tonnes/year, with one located in India. These projects, while confidential in nature, are currently in advanced stages,” Sathyamoorthy said.

***Nebula Energy sets up shipowner***

Nebula Energy is expanding its presence in the LNG sector by establishing Nebula Energy Shipping, a ship-owning company. This new entity will own and operate all marine assets, providing transportation services to support the expanding demand generated by Nebula Energy's LNG business. “The company will provide efficient and secure transportation services to support the expanding demand of our LNG business. We look forward to sharing more details in due course,” Sathyamoorthy.

***Outlook for LNG remains optimistic***

AG&P LNG believes that despite the growing emphasis on renewable energy and decarbonisation, the outlook for LNG remains optimistic, with LNG continuing to play a vital role in the global energy landscape. “There is a great increase in both LNG exports and demand for clean competitive fuel coming in the next few years. Anticipated oversupply of LNG is projected until 2030, driven by new facilities coming online in the US and Qatar. Nebula Energy and AG&P LNG aim to bridge the surge in gas supply and excess capacity with long-term offtake agreements, particularly in high-growth markets, which will contribute significantly to balance the LNG supply-demand landscape,” Sathyamoorthy said. source : www.naturalgasworld.com

## VENTURE GLOBAL TO BUILD NINE LNG CARRIERS

The company has announced the acquisition and construction of nine new ships, currently under construction at an unnamed yard in South Korea. Six vessels will have a cargo capacity of 174,000 $m^3$ and the remaining three a capacity of 200,000 $m^3$. Venture Global LNG chief executive Mike Sabel said the company expects to take delivery of the first two ships later this year. All nine vessels will use the latest 2-stroke MEGA/MEGI engines. Venture Global said the selected main engine type supported by the shaft generator technology “significantly reduces” methane slip compared with the previous generations of 2-stroke and 4-stroke-propelled LNG carriers. The decision to opt for an owned fleet gives the exporter the option of selling cargoes directly into the spot market without using trading houses or intermediaries. “We are sending a strong signal to the global market of our long-term commitment to meeting the world’s growing energy demand at a large scale, bolstering the security of our customers and allies by providing them with clean, affordable and reliable US LNG as efficiently as possible,” Mr Sabel said. This week, the company lashed out at the Federal Energy Regulatory Commission (FERC) for leaving Calcasieu Pass 2 (CP2) off the agency’s monthly agenda. A statement on social media read: “Venture Global is deeply disappointed that CP2 is yet again absent from the FERC Agenda. It has been eight months since FERC issued a Final Environmental Impact Statement for CP2, making it one of the longest to ever sit before the Commission. We remain confident we have met or exceeded all regulatory requirements that are necessary to move forward with the project.” In January, the Biden administration announced it **would temporarily** pause LNG export approvals, a move that has sparked **concern** from American exporters and beyond given the growing global demand for LNG. Despite the regulatory pause on approvals, Venture Global said it is

proceeding with developing the Calcasieu Pass 2 facility in southwest Louisiana and expects preliminary production as soon as 2026 if the Department of Energy's pause is lifted in the short term. A statement read, "Relying on what has historically been a fair and predictable regulatory regime, free from political interference, we have launched off-site construction and spent billions of dollars on the project. First LNG is expected in 2026 should the federal government act without further delay to approve CP2. Phase One is nearly sold out with 9.25 mta of 10 mta contracted. Two thirds of that capacity is committed to our allies in Germany and Japan who are counting on the LNG to replace lost Russian volumes. We are hopeful that FERC will remain the independent agency it always has been." source : www.rivieramm.com

## CASE STUDY: THE WORLD'S LARGEST FSRU STARTS WORK

As the world's largest FSRU, a lot of attention is paid to the specification of FSRU Bauhinia Spirit, but the jetty arrangement is special, too, as MOL voyage manager Mihails Solovjovs explains in this case study. The world's largest floating storage and regasification unit (FSRU), FSRU Bauhinia Spirit, with a storage capacity of 263,000 $m^3$, arrived in Hong Kong on 13 April 2023. "By the end of October, it had lifted five cargoes and was serving the Hong Kong community as a viable and safe source of green energy to the local state power station," said MOL voyage manager Mihails Solovjovs. The origins of Hong Kong's FSRU terminal plan grew out of a response to the 2017 Paris Agreement and its Climate Action Plan on decarbonisation and climate change. Natural gas is a transition fuel that supports Hong Kong's journey towards its 2050 carbon neutrality target by lowering the carbon intensity of power generation. Hong Kong utility firms CLP Power and HK Electric collaborated to form the Hong Kong LNG Terminal Ltd (HKLTL), a joint venture between the two companies. HKLTL signed a long-term time charter agreement in 2019 with Japan's MOL for a vessel to be moored at the jetty of the LNG terminal and to be used to receive, store and regasify LNG before it is supplied to CLP Power's Black Point Power Station and HK Electric's Lamma Power Station through two separate subsea gas pipelines. MOL's 2017-built MOL FSRU Challenger was chosen for the project and the vessel's regasification equipment was enhanced at Keppel Shipyard (now Seatrium) in Singapore in 2022. This included upgrading the FSRU's original nominal regasification capacity from 540M cubic feet per day (mmcfd) to 600M mmcfd and to increase the maximum from 720 mmcfd to 800 mmcfd. The scope of the modification project included installing an additional vaporiser skid, medium high-pressure pump, high-pressure manifolds, power supply facility for jetty equipment and cryogenic test. The installation of an additional vaporiser skid was key in increasing the regasification capacity of the FSRU. An additional medium high-pressure pump, used to pressurise the LNG before it is sent out to its vaporisers, was installed to cover the increased demand of LNG regasification. MOL FSRU Challenger was fitted with additional high-pressure gas manifolds to improve its operational flexibility and a new power supply facility was installed to provide electricity to the jetty equipment. This installation supports the island jetty design, eliminating the need for submarine cables. Cryogenic testing was

conducted to ensure there was no leakage from the newly installed cryogenic system. Testing was conducted with liquid nitrogen (-196°C), verifying the system's ability to withstand the flow of LNG (-162°C).

FSRU Bauhinia Spirit and the special offshore jetty in Hong Kong (source: MOL)

Mr Solovjovs explained that Hong Kong is cramped and the favoured solution was an offshore jetty for the now renamed FSRU Bauhinia Spirit. Natural gas is supplied to the two power stations through subsea pipelines, on 18 km long and one 40 km long, whose construction was a feat in itself, given the famously crowed waters of Hong Kong. But the jetty is the key feature of the operation, and the item that offers the most learnings and takeaways for other densely occupied locations. The jetty is double-banked, in that it has facilities on both sides, east and west, to receive an LNG shuttle tanker and to berth FSRU Bauhinia Spirit. "It makes it relatively easy for manoeuvring an LNG shuttle tanker because it is a fixed infrastructure – it is not moving," said Mr Solovjovs. The jetty has better geometry for arranging the dolphins to receive the LNG shuttle tanker compared to coming alongside an FSRU, and these can be positioned on either side of the jetty.Why the emphasis on having the jetty double-banked? FSRU Bauhinia Spirit has been enhanced to allow 20 years between drydocking. "We can do everything in the water and keep the vessel for 20 years on site to avoid any disruption of the gas supply," said Mr Solovjovs. The vessel has extra layers of hull coating and structures installed to allow maintenance, including additional isolation valves. The vessel is classed by Bureau Veritas (BV) and Mr Solovjovs paid tribute to BV saying very early on, it was decided on a 20-year in-water operation and the classification did a massive amount of work to align with that requirement. source : www.rivieramm.com

## DYNAMICS BEHIND THE GROWTH OF TRANSITIONAL LNG

Small-scale LNG can be the teaser to pull the development of larger-scale facilities, according to the 2023 edition of the Global Gas Report from the International Gas Union. The role of small-scale LNG in expanding the reach of liquefied natural gas (LNG) to a broader audience and facilitating its development into large-scale LNG ventures is increasingly evident. The versatility of LNG has been underscored in various scenarios, notably during the conflict in Ukraine, where the United States escalated its LNG exports to Europe by 159% from 2021 to 2022. This shift in traditional LNG trade routes from Asia to Europe, as discussed previously, highlights LNG's adaptability. The 2011 Fukushima nuclear disaster in Japan further emphasised the criticality and flexibility of LNG. Japan's gas imports surged following the catastrophe, demonstrating LNG's capability to swiftly offset the loss of key power-generation resources. Consequently, Japan emerged as the world's largest LNG importer, showcasing LNG's pivotal role in ensuring energy accessibility and security. The scalability of LNG is a key driver of its flexibility. It can be sourced from large liquefaction and regasification facilities serving major cities and regions, or from small-scale terminals catering to remote settlements, transport and maritime needs. In regions with limited gas demand and logistical challenges for large-scale distribution, such as small settlements or islands, small-scale LNG emerges as a reliable, cost-effective energy solution, displacing higher-emissions alternatives like diesel and traditional biomass. Sub-Saharan Africa, heavily reliant on oil for decentralised power generation, presents a prime example. The region's significant diesel capacity underscores the urgent need for cleaner energy sources. Moreover, the evolving energy landscape, characterised by the rise of renewables and decentralised systems, amplifies the relevance of small-scale LNG in meeting fluctuating and distributed energy demands. Furthermore, small-scale LNG offers advantages in terms of investment and lead time compared with traditional LNG projects, making it particularly appealing in developing regions. As marginal gas resources become accessible and smaller demand centres emerge, small-scale LNG plays a crucial role in expanding LNG production and utilisation. For instance, projects such as the Port Edward LNG facility in Canada exemplify the efficiency and cost-effectiveness of small-scale LNG. With shorter construction times and lower capital investments compared with larger facilities, small-scale LNG projects like Port Edward are poised to serve both export markets and domestic consumers in remote areas. Moreover, small-scale LNG serves as a sustainable fuel option on land and at sea, offering significant environmental benefits over oil and diesel. In shipping and heavy road transport, LNG's lower emissions make it an attractive alternative, especially in regions grappling with air pollution concerns. Government regulations and initiatives further drive the adoption of LNG as a marine fuel, with significant investments and a growing orderbook for LNG-fuelled vessels. Nigeria's experience illustrates the potential of small-scale LNG to drive domestic market growth and private sector investment, leveraging LNG's cleaner and more affordable attributes to replace emissions-intensive fuels like diesel. Private players like Greenville LNG in Nigeria have invested in mini-LNG facilities, enabling the distribution of LNG via cryogenic-equipped trucks to various regions. This approach not only monetises associated gas from oil production but also democratises access to energy, fostering economic development and industrial growth. In summary, the IGU reports concludes that small-scale LNG plays a pivotal role in extending LNG's reach

to diverse markets and applications, driving economic growth, and mitigating environmental impacts. Its versatility, cost-effectiveness, and environmental benefits position small-scale LNG as a cornerstone of the evolving energy landscape, facilitating a transition towards cleaner and more sustainable energy systems. source : www.rivieramm.com

## HANWHA OCEAN, BV TO DEVELOP NEW LNG CARRIER DESIGN

Bureau Veritas (BV) is partnering with South Korean shipyard Hanwha Ocean to develop a 270,000-$m^3$ LNG carrier (LNGC). Hanwha Ocean's proprietary hull design for this LNGC was developed to fulfil the future demands of the LNG market. By optimising the hull's performance and maximising cargo capacity, it exceeds the capabilities of the existing 263,000-$m^3$ LNG and FSRU design. The companies said the collaboration will showcase BV and Hanwha's combined expertise in advancing cutting-edge LNG carrier technology. The shipbuilder prepared the hull key drawings for the LNGC design in compliance with BV's requirements and relevant regulations. Subsequently, Hanwha Ocean and BV agreed to jointly develop this new size of vessel to secure structural reliability and obtain an approval in principle (AiP). In October 2023, the shipyard received an AiP from DNV for a 270,000-$m^3$ LNG carrier designed with a molded breadth of 55 m, five cargo tanks to minimise sloshing pressure and equipped with an X-DF engine and reliquefaction system. To verify the hull key drawings, Bureau Veritas performed 2D local scantling and 3D cargo hold finite element analysis, assessing the longitudinal strength of the hull, as well as the yielding and buckling of longitudinal and transverse members. Fatigue analysis was conducted using a local fine mesh to evaluate the details of hull structures' sensitive to fatigue.The certification was delivered to Hanwha Ocean on 28 February after the comprehensive verification of the hull design. Hanwha Ocean vice president of basic design department Sang-Don Kang said the newly developed design focuses on minimising unit freight costs, and ensuring structural robustness for the vessel's safety performance. "I am pleased the structural reliability of this new vessel will be verified once again through this JDP with BV." Bureau Veritas country chief executive (South Korea), Drago Pinteric said, "This involvement reinforces BV's commitment to industry leadership, innovation and the promotion of sustainable and safe shipping practices." "Such alliances contribute to enhanced safety, quality assurance and sustainable practices in the ever-evolving maritime landscape." source : www.rivieramm.com

## ADRIATIC LNG BREAKS OUTPUT RECORD IN 2023

In 2023, Adriatic LNG sent 8.5Bn $m^3$ of gas into the national pipeline network, the highest annual value ever recorded, covering approximately 14.5% of Italy's total gas consumption and more than 50% of national LNG imports. In 2023, Adriatic LNG achieved significant results in terms of both reliability and regasified volumes delivered to the national grid, decisively contributing to the security, diversification and competitiveness of the Italian and European energy systems. The regasification terminal, located off the Veneto coast, sent 8.5Bn $m^3$ of natural gas into the national pipeline network, 7% more than in 2022, covering

over 14% of national gas consumption and confirming itself as the third entry source for Italian gas imports. The terminal broke its previous best annual record, scored in 2022, when it sent 7.9Bn $m^3$ of gas into the national grid. These results confirm the increasing relevance of liquefied natural gas (LNG) in the Italian energy mix. In 2023, total LNG imports to Italy amounted to 16.6Bn $m^3$, registering a 16.8% increase compared with 2022, and meeting 27% of the national gas demand (61.5Bn $m^3$). Considering 2023 Italian LNG imports, more than 50% was covered by Adriatic LNG, a reliable and secure infrastructure for its customers, with an operations reliability rate of 99.6%. Adriatic LNG director of external relations Alfredo Balena stated, "In 2023, our terminal confirmed it is a strategic energy infrastructure for Italy and Europe. The 8.5Bn $m^3$ of natural gas injected by Adriatic LNG into the national grid represents an energy quantity equivalent to approximately 93M megawatt-hours, equivalent to the total energy consumed by Veneto and Lombardy regions for a year." In 2023, 75 LNG carriers were received by Adriatic LNG, mainly from Qatar and the United States but also from other geographical areas, including, for the first time, Mozambique, thus contributing to opening new routes for LNG imports to Italy.

In total, from 2009 to 2023, 1,058 LNG carriers have arrived at the regasification terminal, with 92Bn $m^3$ of gas sent into the national gas grid. Mr Balena added, "The security of energy supplies in Europe and Italy is and will increasingly be based on LNG." "The significant growth in LNG imports occurring over the last two years is linked to efforts being made to reduce dependence, and increase resilience, of the European gas system. These efforts are driving Italy and Europe to maximise the use of existing LNG infrastructure and, in many cases, add new LNG import capacity. For this reason, we have submitted a request to authorise a project to increase the regasification capacity of our terminal by 0.5Bn $m^3$ per year. This new capacity, which could be available starting from 2026, has already been allocated for the next 20 years if the authorisation process concludes positively." With a maximum regasification capacity of 9.6Bn $m^3$ per year (including 0.6Bn $m^3$ of not constant capacity), Adriatic LNG is the main Italian regasification terminal and the only one able to receive LNG carriers up to 217,000 $m^3$, among the largest available in the market, with evident benefits in terms of optimising discharged volumes. source : www.rivieramm.com

## HANWHA OCEAN INKS 12 LNG CARRIER DEAL WITH UNNAMED CLIENT

Korean shipyard says memorandum of agreement (MoA) is with Middle East shipping company. Hanwha Ocean signed the MoA to build 12 liquefied natural gas (LNG) carriers with a client widely believed to be Qatar Energy, the state-run energy company of Qatar, according to Korean press outlets. South Korea's HD Hyundai Heavy Industries was awarded a contract to build 17 modern LNG carriers in another deal widely linked to QatarEnergy, in September 2023. The deal, valued at QR14.2Bn (US$3.9Bn), marked the start of the second phase of QatarEnergy's LNG ship acquisition programme. Another

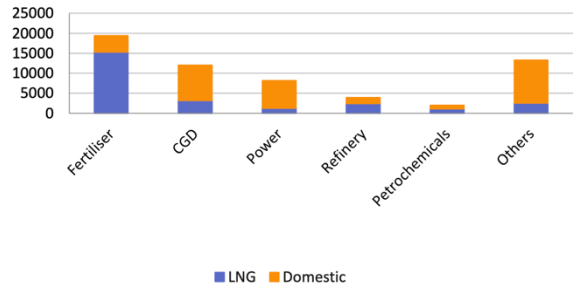
major building contract followed in February 2024 when Samsung Heavy Industries reported its KRW4.6Tn (US$3.4Bn) contract to build 15 liquefied natural gas carriers and press reports linked the deal to the second phase of Qatar's giant LNG project. Rumours about Qatar Energy's newbuilding slot reservations predicted as many as 40 reservations are thought to be in place across multiple shipyards. In late January 2024, marine engine group WinGD said QatarEnergy would soon make decisions on the specifications for the remaining vessels to be ordered. QatarEnergy's LNG shipbuilding programme will support its expanding LNG production capacity from the North Field LNG expansion in the Middle East and Golden Pass LNG export projects in the US as well as its long-term fleet replacement requirements. Some 49 mta of new capacity is considered likely to come online during 2027 and 2028, increasing Qatar's liquefaction volume from 77 mta to 126 mta, and requiring more than 90 LNG carriers holding an average of 170,000-$m^3$ of cargo capacity to transport. QatarEnergy also plans to offtake 70% of the capacity from the US' Golden Pass LNG project, with the remaining 30% to be marketed by ExxonMobil. In total, Qatar reserved 151 newbuilding slots across Asian shipyards to meet its upcoming cargo transport needs. Source : www.rivieramm.com

## FERTILISER SECTOR KEY SUPPORT FOR INDIAN LNG DEMAND

*Falling LNG prices and burgeoning electricity demand could see India reprioritise LNG imports for power generation.* Indian LNG demand is unusual in terms of the proportion consumed by the fertiliser sector, with a relatively small amount now used to generate electricity *(see figure 1)*. But with the government committed to increasing gas's share of total primary energy supply from 6.3% to 15% by 2030, and with constraints in the supply of most other power station fuels, that could change. Indian LNG imports increased steadily in the 2010s. Arrivals more than doubled from 18bn m3 in 2013 to 36.6bn m3 in 2020, according to Energy Institute data. However, imports dropped to 28.4bn m3 in 2022, owing to the impact of COVID-19 and the soaring price of LNG. As the economy has recovered and global LNG prices fallen, import levels have revived, particularly in the second half of 2023. Imports in 2023 totalled 29.34bn m3, according to India's Petroleum Planning & Analysis Cell (PPAC). PPAC also reported that, at almost 2.5bn m3, imports in January 2024 were up 28% on the same month of 2023.

**FIGURE 1** Gas sales by market and source, FY2023 (mn m3)

*Source: Petroleum Planning and Analysis Cell: Monthly Report January 2024*

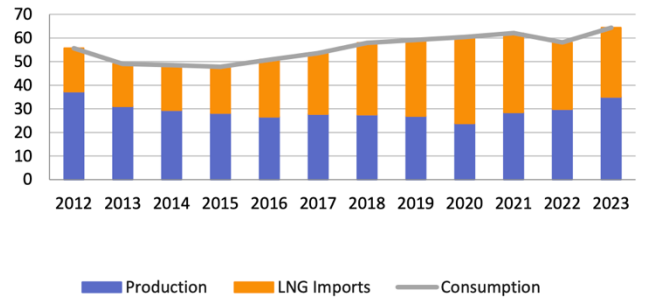



**Limited alternatives to LNG**

LNG imports have prospered in India in the absence of progress on plans to import pipeline gas or jump-start domestic gas production *(see figure 2)*. Piped gas imports from Turkmenistan, Iran or other points west or northwest remain problematic because of the need to bring the fuel through Pakistan, while options to the east such as Myanmar offer relatively limited levels of supply.Expanding domestic gas production has also proved problematic for fiscal, geological and other reasons. In fact, output fell from 37.3bn m3 in 2012 to 23.8bn m3 in 2020. Although production has bounced back, reaching more than 35bn m3 in 2023, questions remain over the more bullish projections for future output. For instance, in February, the US Energy Information Administration (EIA) forecast that output would increase by 3.7%/year from 34.1bn m3 in 2022 to 94.1bn m3 in 2050. The EIA also projected that gas imports – all in the form of LNG – would increase from 37.2bn m3 in 2022 to 141.6bn m3 in 2050 to meet its forecast growth in gas consumption from 71.3bn m3 to 240.0bn m3 over the same period.

**FIGURE 2** Indian gas production, imports and consumption (bn m3)

*Source: Energy Institute Statistical Review 2023 (2012 to 2022 data), PPAC (2023 provisional data)*




**Industrial gas use drives demand**

The EIA noted that its forecast increase in gas usage was driven by demand from industrials, and, in particular, from the fertiliser and oil refining sectors. It projected that industry, which already accounted for more than 70% of Indian gas use in 2022, would account for 80% by 2050. The expectation that Indian gas use will become more concentrated in the industrial sector chimes with trends over the past decade. The fertiliser sector consumed 14.73bn m3 (25.7% of total gas sales) in the financial year ending March 2013 (FY2013). By FY2023, it accounted for 19.4bn m3 (33% of total sales), according to the PPAC, with more than 15.3bn m3 comprising LNG and only 4.1bn m3 coming from domestic output. Fertiliser production thus accounted for almost 60% of all Indian LNG use in FY2023. The figures were similar for the ten months ending January 2024. Indeed, even more of the gas – 15.1bn m3 of 17.7bn m3 – comprised LNG rather than domestic production. City gas demand has also increased over the past decade or so. It more than doubled between FY2013 and FY2023 to reach in excess of 12bn m3 and accounted for about a fifth of total gas sales in the latter year. Most of the gas came from domestic sources.

***LNG-fired power out of favour***

By contrast, gas use for power generation has fallen markedly *(see figure 3)*. Sales to the sector fell from about 16bn m3 in FY2013 to less than 8.2bn m3 in FY2023, according to the PPAC. This came despite an increase in the amount of gas-fired capacity from 18,381 MW in March 2012 to about 25,000 MW in January 2024, with much of the additional capacity comprising efficient combined-cycle plants.A lack of domestic gas and the high cost of LNG has stymied the use of gas for power generation. According to the Central Electricity Authority (CEA), domestic gas supplied to gas-fired plants peaked at 59.3mn m3/d in FY2011. By FY2022, gas-fired plants received only 22.62mn m3/d against a planned requirement of 101.5mn m3/d. Gas-fired generation plummeted from 87.5 TWh in FY2012 to 56.1 TWh in FY2022. Gas-fired plants make up 6.2% of Indian generating capacity, but only 2.4% of total generation in the latter year, with the average plant load factor of gas-fired generators falling to 17.2%. FY2023 was worse still, although there was some upturn in the ten months to January 2024. The National Electricity Plan (NEP) released by the CEA in May 2023 sees little change over the next decade. Gas-fired capacity is projected to remain at just under 25,000 MW over the period to March 2032 – none will be added, while the relative youthfulness of much of the plant means none will be decommissioned *(see figure 4)*.

**FIGURE 3** Indian generating capacity by type, January 2024 (MW)

*Source: Central Electricity Authority*

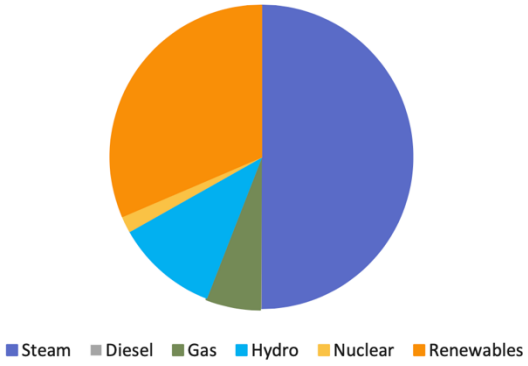
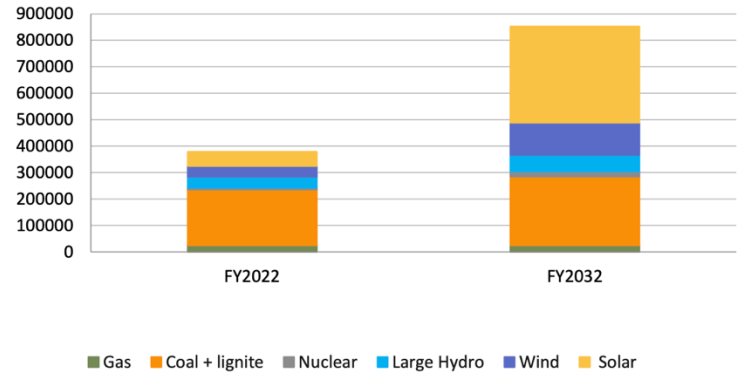



**FIGURE 4** Indian generation capacity projections (MW)

*Source: National Electricity Plan, Central Electricity Authority, May 2023*




It will be used only sparingly at peak periods, with gas-fired generation projected at 34 TWh in FY2027 and 33 TWh in FY2032, when the fuel is forecast to account for only 1.3% of total generation. It is hard to see how the government will meet its targeted increase for gas use in primary energy supply without a jump in both gas-fired generation and LNG imports. At the same time, a substantial increase in gas production (and thus increased supplies to generators) by 2030 seems optimistic, even with the $67bn investment programme announced by the government for the sector in February. The accelerated rollout of city gas networks also seems unlikely to have much impact by 2030. But increased gas-fired generation would have some impact, especially if falling LNG prices makes its use more economically attractive.

**Meeting future power demand**

Gas is the only power station fuel not projected by the NEP to see a substantial – or indeed, any – increase in both capacity and generation over the period to 2032. Many of the projections for other power generating options are highly optimistic. Despite poor implementation performance in the past and the long lead times involved, nuclear capacity is projected to almost triple from 6,780 MW in FY2022 to 19,680 MW in FY2032, with output in the latter year reaching 118 TWh. Similarly optimistic is the projected increase in large hydroelectric capacity from 42 GW in FY2022 to 62 GW in FY2032, given that most potential projects involve very long lead times and face highly contentious issues relating to competing priorities for water use. Issues relating to competing land use are also likely to have an impact on the projected increase in wind and solar capacity. The former is projected to increase from 40.4 GW in March 2022 to 121.9 GW in March 2032, and the latter from 54 GW to 365 GW. Overall renewable output (excluding large hydro) is projected in FY2032 at 934 TWh, or more than a third of the 2,665.7 TWh of total generation projected by the NEP for that year. The projected hikes in renewable, hydro and nuclear output mean that coal-fired generation is projected to fall both in real terms and as a percentage of total electricity production. In 2022, coal produced 1,380 TWh, or 74% of total Indian electricity. The figure is projected by the NEP to fall to 1,336 TWh or 50.1% of total generation in FY2032. But this would still require 1,054mn t of coal for power generation in FY2032, compared with 901.9mn t in 2022. With coal production subject to the same competing priorities over land use as renewable energy installations, accessing the fuel will remain a far from easy task, even before addressing the growing debate within the country about carbon and other emissions.

**Indian LNG demand could surprise**

The fertiliser sector will remain a key buyer of LNG for some time to come if, as seems likely, it retains its current high level of subsidies. Indeed, as the EIA report observes, demand from the fertiliser sector alone could result in LNG consumption growing at a faster rate in India than any other major economy in the years to come. LNG purchases are in cases explicitly linked to the sector, including the 15-year contract signed in February between the local Deepak Fertilisers and Petrochemicals Corp. and Norway's Equinor for about 0.65mn t/yr of LNG from 2026. However, a resurgence in power sector demand for LNG cannot be ruled out. The NEP was finalised at a time of high spot LNG prices. This more than offset the efficiency advantage of gas-fired combined-cycle plants (at 55% compared with 40% for supercritical coal-fired units), resulting in the low priority given in the plan to gas-fired generation. This could change owing to a combination of surplus LNG on world markets and burgeoning electricity demand in an economy currently growing at over 7.5%/yr. The limited ability of other power station fuels to meet the growth in the near to medium term could trigger substantial LNG demand, given a sufficient downward shift in LNG prices. Put simply, the 25 GW of under-utilised gas-fired plants could require about 40bn m3/yr of additional LNG to help keep the lights on. source : www.naturalgasworld.com

## INDIA'S LNG IMPORT COSTS DROP 25% IN APRIL-FEBRUARY

India's LNG import costs for the 11 months of the current fiscal year (FY2024) dropped almost 25% year/year due to relatively subdued global gas prices during this period, according to the provisional data published by the country's oil and gas ministry's Petroleum Planning and Analysis Cell (PPAC) on March 16. The country's LNG import bill for the April-February period amounted to $12bn, down from $15.9bn during the corresponding period in the previous fiscal year.

As a result of the drop in prices, India's LNG imports experienced an upward trend during the period, with cumulative volumes reaching 27.93bn m3, up 17.6% year/year. India heavily relies on LNG imports to meet a significant portion of its domestic gas demand, with LNG accounting for nearly half of the country's total gas consumption. source : www.naturalgasworld.com

## NFE SELLS PUERTO RICO POWER PLANTS, INKS NEW GAS SUPPLY DEAL

US LNG player New Fortress Energy has sold two of its operating power plans to the Puerto Rico Electric Power Authority, while it also secured a new gas supply contract from the latter. The Wes Edens-led company sold the emergency power plants it constructed on behalf of the US Army Corps of Engineers in San Juan and Palo Seco to PREPA for $373 million in cash, subject to certain items and conditions. These plants were developed by NFE in 2023 in rapid response to a competitive bid by the USACE to provide emergency power in order to stabilize the power grid in Puerto Rico. According to NFE, they have become a "cornerstone of Puerto Rico's energy portfolio, delivering critical baseload power to stabilize the grid in the aftermath of recent natural disasters, and as contemplated, their ownership has been transferred to PREPA."

***Gas supply***

Following a competitive bid process, NFE was also awarded and has entered into a new island-wide 80 TBtu gas supply contract with PREPA, ensuring continued gas supply to these power plants for up to four years, it said. The expanded volumes under the contract will enable conversion of other plants on the island from diesel to gas, providing "lower cost, cleaner energy" to Puerto Rico, NFE said. As a result of the early termination of the contracts that have governed the construction, operations, and associated costs of these plants, NFE said it expects to negotiate a "mutually beneficial settlement of all outstanding obligations in the near future." Edens said NFE entered the Puerto Rico market in 2017 based on the island's emergency need for natural gas and power. "The transactions announced today mark a significant milestone in our continued commitment to Puerto Rico's energy security and cost reduction efforts while significantly increasing our business in the region," he said. source : www.lngprime.com

## CHART AND GASLOG IN LH2 PACT

US-based LNG equipment maker Chart Industries will collaborate with Greek LNG shipping firm GasLog to study the development of a commercial scale liquefied hydrogen (LH2) supply chain. This collaboration will leverage GasLog's latest developments of a liquefied hydrogen vessel and Chart's experience in cryogenics and large-scale liquefaction solutions for the global distribution of LH2, according to a joint statement. It aims to support GasLog's participation in recently announced projects to develop a commercial scale LH2 supply chain from export markets in the Middle East to European and Asian destinations for onward distribution by liquid transportation and/or gas via pipelines to various end users, the partners said. Also, Chart said it will leverage its over 158 years of hydrogen experience for this collaboration through hydrogen compression, liquefaction and refrigeration technologies, and cryogenic loading/unloading operations, amongst other products. GasLog's CEO **Paolo Enoizi** said this collaboration is the company's "commitment to explore and support the use of hydrogen, via liquid form, to benefit industries and users globally." "I have confidence that our combined experience from the cryogenic industries will ensure the safety and efficiency of novel liquid hydrogen supply chains across the world," he said. As of February 15, 2024, GasLog's owned LNG carrier fleet consisted of 24 vessels while its bareboat fleet consisted of nine vessels. **Jill Evanko**, CEO and president of Chart welcomed the new collaboration with GasLog. "We see a significant momentum shift from export developers discussing ammonia supply chains twelve months ago to LH2 supply chains today," Evanko said. Source : www.lngprime.com



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