

LNG Review December 2020 - Recent issues and events -

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Introduction

The assessed spot LNG prices for near-month delivery to Northeast Asia surged in December 2020, due to issues at multiple LNG production facilities, congestion of Panama Canal transit, rapid increases in short-term charter rates of LNG carriers, surge in seasonal demand caused by colder weather in Northeast Asia, and LNG users' inability of procurement of spot volumes fast enough to cope with the rapid demand increases. The assessed prices rose from the middle of USD 7s at the end of November to more than USD 10 in late December and over USD 30 per million Btu in early January 2021.

In December due to the cold weather, China and Japan increased LNG imports. China imported nearly 102 million tonnes of natural gas in the year 2020 - including LNG and pipeline gas - an increase of 5.3% year-on-year.

LNG supply from the United States has increased again to meet the incremental LNG demand mainly in Northeast Asia. According to preliminary figures, LNG export from the country increased by 37% year-on-year during the fourth quarter of 2020, after decreasing by 21% year-on-year during the third quarter. It is estimated that the country exported nearly 50 million tonnes of LNG in 2020, an increase of 31% year-on-year.

In the long-term LNG supply front, deals have been arranged to process third-party gas through the existing North West Shelf (NWS) project facilities in Australia. At the Barossa proposed project also in Australia, a long-term LNG sales and purchase agreement has been signed with contract pricing linked with a spot LNG index.

Among newly emerging LNG importing markets, Croatia has installed an FSRU as the country's first LNG receiving terminal, which received its inaugural cargo on 1 January 2021.

[Asia Pacific]

Saibu Gas announced on 14 December 2020 that the company had started commercial delivery of LNG to JUSDA Energy Technology (Shanghai) Co., Ltd. using ISO

* 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.

tank containers of 18 tonnes, totalling 12 thousand tonnes from December to March 2021 in fourteen weekly shipments.

According to Korea's Customs Statistics, the country imported 40.19 million tonnes of LNG in 2020, slightly (by 1.6%) less than it did in 2019.

Keppel Offshore & Marine Ltd (Keppel O&M) announced on 4 January 2021 that it had delivered Singapore's first LNG bunkering vessel, FueLNG Bellina, to FueLNG. Built in Keppel O&M's Nantong shipyard, FueLNG Bellina is the second LNG bunkering vessel (LBV) and fifth dual-fuel vessel delivered by Keppel O&M.

Energy Capital Vietnam (ECV), a U.S.-based project holding and development company established in 2015 to serve as a platform for private investment into Vietnam, announced on 8 December 2020 the formation of a Joint Venture (JV) with Gunvor International BV (Gunvor). An ECV-led consortium is developing an LNG-to-power project in Mũi Kê Gà, Bình Thuận Province, in Southeast Vietnam. ECV and Gunvor will form a JV responsible for trading and shipping on behalf of ECV. The fully private, multi-phase power project will connect via subsea pipeline to an offshore Floating Storage and Regasification Unit (FSRU) to import LNG. Phase I of the project is targeting Final Investment Decision (FID) in late 2021 and Commercial Operational Delivery (COD) by 2025. The project will consume approximately 1.5 million tonnes per year of LNG.

First Gen Corporation subsidiary FGEN LNG Corporation has shortlisted BW Gas, Dynagas, and Höegh LNG on its procurement of floating storage regasification unit (FSRU) for its interim LNG import facility in Batangas. First Gen is targeting commercial start of the facility by the third quarter of 2022.

According to data from China's Customs Statistics, the country imported 101.66 million tonnes of natural gas - including LNG and pipeline gas - in 2020, an increase of 5.3% year-on-year. In December 2020, the country imported 11.23 million tonnes, an increase of 18.1% year-on-year.

China's Shanghai Petroleum and Natural Gas Exchange (SHPGX) announced on 21 December 2020 launch of the international LNG order consolidation transaction function for multi-user joint procurement on 30 December. CNOOC Gas & Power Group Co. will initiate the first such transaction. According to the announcement, the product spot window period is April 2021, and the lifting period is from April to September 2021. The unloading port and gas lift receiving station are CNOOC's own LNG receiving terminals in Shenzhen, Guangdong and other location.

China's Huaying Natural Gas announced on 19 December 2020 that it had started construction of the largest private-owned LNG terminal in the country with capacity of 6 million tonnes per year in the port city Chaozhou in Guangdong province. The first phase is

expected to start operations in 2023.

Sinopec said on 7 January 2021 that the first phase of Weirong Shale Gas Field of Southwest Sichuan province was completed in 2020 with annual production capacity of 1 bcm. At present, the daily gas production is 3.5 million cubic meters. The Weirong shale gas field is the country's first deep shale gas field with proven reserves of 124.7 bcm, located in Neijiang and Zigong Cities, at an average well depth of 3750 meters.

CPC Corporation announced on Sunday 10 January 2021 that it had started receiving LNG from Cheniere Energy under a 25-year deal signed in 2018, and will get around 2 million tonnes in 30 cargoes annually. Chinese Taipei imported 18.36 million tonnes of LNG in 2020, a 7.8% increase year-on-year, according to its Customs Statistics.

H-Energy announced on 2 December 2020 that it had entered into a binding commitment with Höegh LNG for the supply of its Floating Storage and regasification Unit (FSRU) Höegh Giant under a 10-year agreement, for its LNG regasification terminal project located at Jaigarh Port in Ratnagiri district of Maharashtra, India. The FSRU will be delivered to the Jaigarh project in the first quarter of 2021. The 2017 built Höegh Giant has a storage capacity of 170,000 m³ and has a regasification capacity of approximately 6 million tonnes per year. The LNG terminal will become India's first FSRU based LNG regasification terminal.

Reliance Industries Limited (RIL) and bp announced on 18 December 2020 the start of production from the R Cluster, ultra-deep-water gas field in block KG D6 off the east coast of India. The companies are developing three deepwater gas projects in block KG D6 - R Cluster, Satellites Cluster and MJ. RIL is the operator of KG D6 with a 66.67% participating interest and bp holds a 33.33% participating interest. R Cluster is the first of the three projects to come onstream. The field is located about 60 km from the existing KG D6 Control & Riser Platform (CRP) off the Kakinada coast and comprises a subsea production system tied back to CRP via a subsea pipeline. Located at a water depth of greater than 2000 meters, it is the deepest offshore gas field in Asia. The field is expected to reach plateau gas production of about 12.9 million standard cubic meters per day (3.5 million tonnes per year equivalent) in 2021. The Satellites Cluster is expected to come onstream in 2021 followed by the MJ project in 2022. Peak gas production from the three fields is expected to be around 30 mscmd (8 million tonnes per year equivalent) by 2023.

Viva Energy provided on 7 December 2020 an update on its project to develop an LNG regasification terminal at the site of its Geelong refinery. The company has selected and entered into Memorandums of Understanding (MOU) with two partners in relation to the development of the project and the related capacity at the terminal. The partners comprise two consortiums, the first being a partnership between ENGIE Australia & New Zealand and Mitsui & Co., Ltd. and the second between Vitol and VTTI. A final investment decision could

be taken by mid-2022, with gas supply in 2024.

Santos announced on 1 December 2020 new emissions reduction targets that include by 2030 to reduce Scope 1 and 2 absolute emissions by 26%-30% on 2020 baseline, by 2030 to actively work with customers to reduce their Scope 1 and 2 emissions by >1mtCO₂e per year by 2030, and by 2040 achieve Scope 1 and 2 absolute emissions net-zero. The company said that to achieve global emissions reduction goals it is vital to focus on making hydrocarbon fuels cleaner and eventually zero emissions.

Shell announced on 21 December 2020 that its QGC Common Facilities Company Pty Ltd had agreed to the sale of a 26.25% interest in the Queensland Curtis LNG (QCLNG) Common Facilities to Global Infrastructure Partners Australia. The Common Facilities are currently 100% owned by Shell and include LNG storage tanks, jetties and operations infrastructure that service QCLNG's LNG trains. Upon completion of the transaction, Shell will remain majority owner and operator of the Common Facilities. The sale aligns Shell's interest in the Common Facilities with its 73.75% interest in the overall QCLNG venture. It is expected to complete in the first half of 2021.

Western Australia's Department of Water and Environmental Regulation (DWER) revealed on 21 December 2020 that it had determined to reduce the duration of the licence to operate the Gorgon LNG Project from 20 years to 10 years with the expiry date amended to 29 July 2028, based on WA environment minister's decision on 6 November 2020.

Woodside announced on 23 December 2020 that the North West Shelf (NWS) project participants had executed gas processing agreements (GPAs) for processing third-party gas through the NWS facilities with Woodside Burrup Pty Ltd, in respect of gas from the Pluto fields, and with subsidiaries of Mitsui & Co Ltd and Beach Energy Limited, in respect of the Waitsia Gas Project Stage 2. The GPA with Woodside Burrup is to process approximately 3 million tonnes of LNG in aggregate and approximately 24.7 petajoules of domestic gas at the Karratha Gas Plant (KGP) in the period 2022 - 2025. The gas will be sourced from the offshore Pluto fields and transported to the NWS facilities through the Pluto-KGP Interconnector, which is targeted to be ready for start-up in 2022. The GPA with Mitsui and Beach is to provide gas processing services for gas from the onshore Waitsia Gas Project Stage 2 for an aggregate of approximately 7.5 million tonnes of LNG in the period between H2 2023 and the end of 2028.

Beach Energy Limited announced on 23 December 2020 that the Waitsia Joint Venture (Beach: 50%, AWE Perth Pty Ltd, a related body corporate of Mitsui E&P Australia (MEPAU): 50% and operator) had taken FID for the 250TJ per day (1.68 million tonne per year) Waitsia Gas Project Stage 2 development in the onshore Perth Basin. The WJV has executed and entered into: a Domestic Gas Commitment Agreement (DCA) and Project

Development Deed with the State of Western Australia; a Gas Processing Agreement, Tie-in Agreement, Product Allocation Agreement and Lifting and Offtake Agreements with the NWSPP; and a Gas Transportation Agreement with AGIG, owner and operator of the Dampier to Bunbury Natural Gas Pipeline (DBNGP). The Waitsia Gas Project Stage 2 development will also deliver an emissions reduction profile, reducing or offsetting all reservoir GHG emissions (approximately 60% of the project's total emissions) from the commencement of production the second half of 2023. The Gas Processing Agreement with the NWSPP will enable up to approximately 1.5 million tonnes of LNG per year of Waitsia gas to be tolled and processed into LNG through the NWS facilities in Karratha between the second half of 2023 and the end of 2028.

Woodside expressed its intention on 22 December 2020 to defend its position against a court action in the Supreme Court of Western Australia by the Conservation Council of Western Australia (CCWA) attacking environmental approvals eighteen months earlier to process gas at the North West Shelf and Pluto LNG facilities.

BHP announced on 1 December 2020 that it had awarded its first LNG supply agreement for five LNG-fuelled Newcastlemax bulk carriers, which will transport iron ore between Western Australia and China from 2022. Shell has been awarded the contract to fuel the vessels, which BHP will charter from Eastern Pacific Shipping (EPS) for five-year terms.

Santos announced on 7 December 2020 that it had signed a binding long-term LNG Supply and Purchase Agreement (SPA) with Diamond Gas International Pte Ltd (DGI), a wholly-owned subsidiary of Mitsubishi Corporation, for the supply and purchase of 1.5 million tonnes per year of Santos equity LNG from Barossa for a period of ten years with extension options, at a price based on the Platts Japan Korea Marker (JKM). A final investment decision on Barossa is targeted for the first half of 2021.

Santos, as operator of the Bayu-Undan Joint Venture, announced on 5 January 2021 a Final Investment Decision (FID) for the Phase 3C infill drilling program at the Bayu-Undan field in the Timor Sea, offshore Timor-Leste. The program comprises three production wells (two platform and one subsea) and will develop additional natural gas and liquids reserves, extending field life as well as production from the offshore facilities and the Darwin LNG plant. Production from the first well expected in 3Q 2021. Santos has a 68.4% interest and operatorship in Bayu-Undan and Darwin LNG which will reduce to 43.4% upon completion of a 25% sell down to SK E&S. The sell-down would complete once the Final Investment Decision on Barossa is taken in 1H 2021, the company said.

Japan's INPEX announced on 4 December 2020 that it had signed a memorandum of understanding (MOU) with Indonesia's PT Perusahaan Gas Negara Tbk (PGN) concerning the domestic LNG supply from the Abadi LNG Project.

Chiyoda Corporation announced on 5 January 2021 that it had been awarded the design development and engineering of a new Floating, Storage, Regasification and Power Generation (FSRP) facility by Kumul Petroleum Holdings Limited (KPHL). The new FSRP facility will have capacity to generate 75 MW of power to be supplied to the local transmission grid, in addition to being able to load and store 140,000 m³ of LNG which can be offloaded to small-scale (SS) bulk cargo vessels and redistributed to smaller local power generation locations, and regasify and export gas via pipeline for local heavy industrial power generation. It will be located on the northern coast of PNG, close to Lae, bringing much-needed power generation to the area which contains some of the country's key resources projects.

[North America]

According to preliminary estimates and latest figures from the U.S. Energy Information Administration (EIA) and Department of Energy (DOE), LNG export from the country increased by 37% year-on-year during the fourth quarter of 2020, compared to a 21% decline during the third quarter. It is estimated that the country exported nearly 50 million tonnes of LNG in 2020, an increase of 31% year-on-year. Based on figures in the latest Short-term Energy Outlook by EIA, the country is expected to export 64 million tonnes and 70 million tonnes of LNG in 2021 and 2022, respectively.

According to a rule by DOE published on the Federal Register on 4 December 2020 "National Environmental Policy Act Implementing Procedures", DOE will stop conducting environmental reviews of LNG export and import projects effective 4 January 2021. LNG projects still would require environmental reviews for construction and operating permits conducted by the Federal Energy Regulatory Commission (FERC) under the National Environmental Policy Act (NEPA).

DOE extended on 10 and 31 December 2020, respectively, the terms of seven and five long-term LNG export authorizations through 2050, following 10 LNG export term extensions in October pursuant to an export term policy statement DOE finalized in July. Terms were extended on 10 December for the Golden Pass facility currently under construction in Sabine Pass, Texas, as well as the Texas LNG project proposed for Brownsville, Texas, the proposed Magnolia and Driftwood projects in Louisiana, and the Delfin LNG export project proposed for offshore Louisiana. The approvals also include an extended export term for Sempra Energy's Costa Azul project in Mexico. Terms were extended on 31 December for the Southern LNG export facility operating in Georgia, the Cameron LNG export facility operating in Louisiana, the Annova LNG project proposed in Texas, and Eagle LNG's two small-scale facilities in Florida, including the Maxville facility currently in operation. Long-term LNG export authorizations with export terms through 2050 are now

held by 18 U.S. LNG export projects, as well as the Costa Azul project in Mexico.

DOE announced on 8 January 2021 the issuance of a policy statement that removes the requirement for long-term LNG export authorization holders to seek separate short-term authorizations to export the same volumes approved for long-term exports. Concurrent with this policy statement, DOE is amending several long-term LNG export orders to add short-term export authority to the long-term orders.

ExxonMobil said on 14 December 2020 that it planned further reductions in greenhouse gas emissions over the next five years to support the goals of the Paris Agreement. ExxonMobil plans to reduce the intensity of operated upstream greenhouse gas emissions by 15% - 20% by 2025, compared to 2016 levels.

Cheniere Energy announced on 8 December 2020 that its first commissioning cargo for CCL's (Corpus Christi Liquefaction) Train 3 and also CCL's 200th cargo was loaded onto the La Mancha Knutsen.

Texas LNG Brownsville LLC announced on 21 December 2020 that it had entered into a long-term lease agreement with the Port of Brownsville, securing the Texas LNG export project site for up to 50 years. The lease agreement covers a 625-acre (2.529 km²) site. Texas LNG plans to construct and operate a 4 million tonne per year LNG export plant.

Kinder Morgan, Inc. (KMI) announced on 4 January 2021 that the Permian Highway Pipeline (PHP) began full commercial in-service on 1 January. PHP delivers natural gas from the Waha to Katy, Texas area, with connections to the U.S. Gulf Coast and Mexico markets. Fully subscribed under long-term contracts, PHP provides approximately 2.1 billion cubic feet per day of incremental natural gas capacity, helping to reduce Permian Basin natural gas flaring, KMI said.

FERC approved on 17 December 2020 plans by Marathon Petroleum's subsidiary Trans-Foreland Pipeline to convert the mothballed Kenai LNG plant into an LNG terminal. The project plans propose the import of up to four cargoes per year, with the LNG to be used to fill existing storage tanks and boil off gas to be made available for Marathon's nearby Kenai refinery.

New Fortress Energy (NFE) announced on 21 December 2020 that it had signed two long-term LNG supply agreements to supply its natural gas and electricity businesses in Puerto Rico, Mexico, and Nicaragua. The company said that with these purchases and the previous purchases of LNG for the Jamaican operations, NFE had purchased LNG volumes equal to about 80% of its expected needs across its current portfolio of terminals and assets.

Sempra Energy announced on 2 December 2020 a series of transactions intended to simplify its energy infrastructure investments under one platform. The company announced its intention to launch a stock-for-stock exchange offer for the publicly traded

shares of IEnova (Infraestructura Energética Nova, S.A.B de C.V.), with the Sempra Energy exchange shares to be listed on the Mexican stock exchange (Bolsa Mexicana de Valores, S.A.B de C.V.) (BMV). In addition, the company announced plans for the formation of a new business platform, Sempra Infrastructure Partners, combining Sempra LNG and IEnova. The company also intends to sell a non-controlling interest in Sempra Infrastructure Partners. The company expects to complete these transactions in the first quarter of 2021.

Sempra LNG and IEnova announced on 9 December 2020 that their joint venture, ECA Liquefaction (ECA LNG), had signed an equity investment agreement to finalize Total's participation in the ECA LNG Phase 1 LNG export project in Baja California, Mexico. Total has acquired a 16.6% equity stake in ECA LNG Phase 1, while Sempra LNG and IEnova will each retain 41.7% ownership. Earlier in 2020, Total signed a 20-year sale and purchase agreement for approximately 1.7 million tonnes per year of LNG from the export facility.

On 8 December 2020, DOE granted Singapore's LNG Alliance subsidiary Epsilon LNG the non-FTA export permit for its Amigo LNG project in Sonora, Mexico. Amigo LNG is developing liquefaction and export facilities, with capacity 7.8 million tonnes per year.

[Middle East]

Eni announced on 21 December 2020 that it had signed a Concession Agreement for the acquisition of a 70% stake in the Exploration Offshore Block 3, leading a consortium including a wholly owned subsidiary of Thailand's PTT Exploration and Production Public Company Limited (PTTEP) with the remaining 30% stake. Offshore Block 3, located in the northwest offshore of the Abu Dhabi Emirate, is the largest area to be awarded among those blocks that were offered for commercial bidding by ADNOC in May 2019 as part of Abu Dhabi's second competitive block licensing round.

Eni and Sharjah National Oil Corporation (SNOC) announced on 4 January 2021 production start-up from the Mahani field, located in onshore Concession Area B of the Sharjah Emirate. The start-up was achieved in less than two years from contact signature and less than one year after discovery announcement. Eni holds a 50% stake in the concession with SNOC holding the remaining 50% acting as the operator.

McDermott International announced on 6 January 2021 that it had been awarded a contract from Qatargas to deliver front-end engineering and design (FEED) work for Qatar Petroleum's (QP) North Field South (NFS) project.

QP launched its new Sustainability Strategy on 13 January 2021. The strategy stipulates deploying dedicated Carbon Capture and Storage (CCS) facilities to capture more than 7 million tonnes per year of CO₂ in Qatar. The strategy also acts as a clear direction towards reducing the emissions intensity of Qatar's LNG facilities by 25% and of its upstream

facilities by at least 15%, and reducing flare intensity across upstream facilities by more than 75%. In addition, it sets out a target to eliminate routine flaring by 2030, and limit fugitive methane emissions along the gas value chain by setting a methane intensity target of 0.2% across all facilities by 2025.

Greece's DESFA announced on 11 December 2020 that it had been awarded the operation and maintenance services of LNGI (Liquefied Natural Gas Import), the new terminal of Kuwait's KIPIC for minimum five years. The terminal has eight storage tanks of 225,000 m³ each.

[Africa]

Eni announced on 1 December 2020 that it had signed a series of agreements with the Arab Republic of Egypt (ARE), the Egyptian General Petroleum Corporation (EGPC), the Egyptian Natural Gas Holding Company (EGAS) and Spain's Naturgy, which pave the way for the restart of the Damietta liquefaction plant in Egypt by the first quarter of 2021, the amicable settlement of the pending disputes of Unión Fenosa Gas and SEGAS with EGAS and ARE and the subsequent corporate restructuring of Unión Fenosa Gas itself, whose assets will be shared between the partners Eni and Naturgy. The liquefaction plant's owner is the company SEGAS, which is 80% owned by Unión Fenosa Gas (50% Eni and 50% Naturgy). The plant has a capacity of 7.56 billion cubic meters per year, but has been idle since November 2012. The participation of Unión Fenosa Gas in the Damietta plant (80%) will be transferred 50% to Eni and 30% to EGAS. The resulting shareholding of SEGAS will therefore be Eni 50%, EGAS 40% and EGPC 10%. Eni will also take over the contract for the purchase of natural gas for the plant and will receive corresponding liquefaction rights, which will be available on an FOB basis, with no destination restrictions. As regards Unión Fenosa Gas' assets outside Egypt, Eni will take over the commercial activities of natural gas in Spain, strengthening its presence in the European gas market.

Spain's Reganosa announced on 7 January 2021 that it had been awarded the contract to operate and maintain an LNG regasification terminal in Tema, Ghana. Both the storage (FSU) and regasification (FRU) units are floating. Tema LNG, backed by Helios Investment Partners and Africa Infrastructure Investment Managers (AIIM), is the first offshore LNG receiving terminal in sub-Saharan Africa. The terminal will employ the innovative combination of the FRU twinned with an existing LNG carrier to receive, store and regasify LNG. The purpose-built FRU, which was built by Jiangnan Shipbuilding, a subsidiary of China State Shipbuilding Corporation, left the Jiangnan shipyard at the end of November 2020 and arrived in Ghana on 7 January 2021. LNG will be supplied under a long-term contract with Shell.

Vopak announced on 15 December 2020 that ExxonMobil and Vopak had signed a Memorandum of Understanding (MOU) to work together on a feasibility study to assess the commercial, technical and regulatory aspects of an LNG regasification terminal in South Africa, repurposing older coal power plants, converting peaking power plants and securing supply.

[Europe / Russia]

Fluxys and Titan LNG announced on 2 December 2020 that they had built the FlexFueller 002 LNG bunkering barge to support the shipping industry in the Antwerp port and region. The vessel will start delivering LNG shipping fuel from its home location at Quay 526/528 as from February 2021.

CMA CGM announced on 4 December 2020 that the CMA CGM CHAMPS ELYSEES, sailing under the French flag, had called at Terminal des Flandres at the Grand Port Maritime of Dunkirk, the first call in France by a 23,000 TEU vessel powered by LNG. She joins forces with the CMA CGM JACQUES SAADE, the CMA CGM Group's flagship, on the French Asia Line (FAL 1).

German LNG Terminal GmbH announced on 14 December 2020 that it had received the decision from the German regulatory authority, Bundesnetzagentur, granting it exemption from network access and tariff regulation. However, the decision is subject to review by the European Commission. According to the request it applies to the annual throughput capacity of 8 billion cubic metres of gas on a long-term basis from the date of the Brunsbüttel terminal's commercial launch.

Hanseatic Energy Hub (HEH) announced on 14 December 2020 that Partners Group, the global private markets investment manager, had taken a shareholding in the company on behalf of its clients. Partners Group will support HEH towards the construction and operation of its LNG terminal in an industrial area near the city of Stade, Germany, in the vicinity of the Port of Hamburg. The LNG terminal is planned to have a regasification capacity of 12 bcm per year. It will also enable reloading to LNG tankers, river barges for bunkering, trucks and onsite rail. The terminal will be built in an existing industrial park, allowing the terminal to use waste heat from an industrial partner onsite. HEH launched its Open Season on 9 December 2020.

Russia's NOVATEK announced on 1 December 2020 that Novatek Green Energy had launched its first carbon-neutral LNG fueling station in Rostock, Germany. Carbon neutral offsets from a selected portfolio of emission reduction projects, including wind generation projects in developing countries, will be used to compensate for the LNG's carbon footprint. The certification of emission reduction projects will be performed in accordance

with the authoritative international standard VCS.

Germany's federal ministry for transport and digital infrastructure said on 28 December 2020 that it had extended the period in which it provides grants for equipping and converting vessels to run on LNG fuel by one year until December 2021.

Wärtsilä announced on 18 December 2020 that the company and Grieg Edge was running a project to launch an ammonia-fuelled tanker producing no greenhouse gas emissions by 2024. The MS Green Ammonia project is the result of a Nordic industrial collaboration group founded from the Zeeds (Zero Emissions Energy Distribution at Sea) initiative. Pilot-E, the Norwegian funding scheme will support the project with a NOK 46.3 million (EUR 4.4million) grant.

Avenir LNG Limited announced on 8 January 2021 the launching of its third 7,500 m³ dual-purpose, LNG supply and bunkering vessel, Avenir Aspiration from Nantong CIMC Sinopacific Offshore & Engineering Co. Avenir Aspiration will undergo final outfitting before commissioning, and gas and sea trials in time for a mid-2021 delivery. Nantong CIMC Sinopacific Offshore & Engineering Co. is building an additional 7,500 m³ and two 20,000 m³-capacity LNG carriers all for delivery in 2021, bringing Avenir's total fleet to 6 specialised LNG vessels.

Finland's Gasum announced that on 16 December 2020 the company performed its first ship-to-ship LNG-LBG blend bunkering to a cargo vessel. The bunkering was conducted by Gasum's LNG bunker vessel Coralius at anchorage outside the port of Gothenburg in Sweden. A fuel blend consisting of LNG and 10% renewable liquefied biogas (LBG) was supplied to M/V Auto Energy, a dual fuel LNG pure car, truck carrier (PCTC) operated by United European Car Carriers (UECC).

According to Enagás, demand for natural gas in Spain in 2020 reached 360 TWh, which is 3.1% more than 2018 but 9.6% less than 2019, when demand grew exceptionally (+14%) due to high deliveries of natural gas for electric power generation.

Enagás announced on 22 December 2020 that the European Commission had signed a grant agreement with the company and the Port Authority of Algeciras Bay, giving the green light for co-financing the building of the first vessel to be fully dedicated to LNG bunkering at the Port of Algeciras. This project is supported by the European Union's Connecting Europe Facility which will provide funding for 20% of its execution. The project consists of the construction of a bunkering barge with capacity to store 12,500 m³ of LNG, which will entry into service in 2023.

Enagás announced on 29 December 2020 that it and ACCIONA planned the Power to Green Hydrogen Mallorca industrial project to produce renewable hydrogen to feed a pilot hydrogen ecosystem on the island of Mallorca. The electrolyser will be capable of producing

over 330 tonnes of green hydrogen per year, which will be used primarily as a direct energy source and, where this is not possible, will be injected into the natural gas grid. The partners have adopted a timetable for the project with a view to the plant becoming operational in 2021. The project is the core of Green Hysland, a project to which the European Union's Fuel Cell and Hydrogen Joint Undertaking (FCH JU) has pledged €10 million in funding. The project is also part of "Hydrogen Roadmap: a commitment to renewable hydrogen" adopted by the Spanish government in October 2020, attaining 4 GW of green hydrogen production capacity by 2030, and mobilising an estimated total investment of €8.9 billion.

Italy's Eni announced on 23 December 2020 that Cassa Depositi e Prestiti (CDP), Eni and Snam, had signed a Letter of Intent to start a strategic collaboration for the energy transition.

LNG Croatia announced on 1 December 2020 that the FSRU vessel 'LNG CROATIA' had arrived at the location of the terminal. The LNG vessel Tristar Ruby loaded an LNG cargo at the Cove Point plant in Maryland and had arrived at the terminal, LNG Croatia announced on 1 January 2021.

Following the start of commercial operations on 15 November 2020, the Trans Adriatic Pipeline (TAP) AG confirmed on 31 December 2020 the commencement of gas flows from Azerbaijan. The first gas has reached Greece and Bulgaria, as well as Italy. The operator said that it planned to launch the second phase of its market test in the summer 2021, which would enable the future expansion of TAP, doubling the pipeline's capacity to 20 bcm per year. TAP transports natural gas from the Shah Deniz field in the Azerbaijan sector of the Caspian Sea to Europe. The 878 km long pipeline connects with the Trans Anatolian Pipeline (TANAP) at the Turkish-Greek border in Kipoi, crosses Greece and Albania and the Adriatic Sea, before coming ashore in Southern Italy. TAP's shareholding is comprised of bp (20%), SOCAR (20%), Snam (20%), Fluxys (19%), Enagás (16%) and Axpo (5%).

NOVATEK announced on 14 December 2020 that the first large-scale cryogenic pump manufactured in Russia was tested at the Yamal LNG project. The cryogenic pump was designed and manufactured by Afrikantov OKB Mechanical Engineering (part of JSC Atomenergomash).

NOVATEK and Siemens Energy signed a Strategic Partnership and Cooperation Agreement, Novatek announced on 10 December 2020. The parties intend to develop and implement high-tech solutions to produce LNG, electricity, hydrogen and other products to maintain sustainable development initiatives and achieve the parties' goals to reduce their carbon footprint and increase environmental efficiency. The parties will commence implementing a project to replace fuel natural gas used in the production of electricity and LNG with carbon-neutral hydrogen.

NOVATEK announced on 1 December 2020 that Novatek Gas & Power Asia Pte. Ltd. and Saibu Gas had completed their first joint trial delivery of LNG in ISO containers to China's Tiger Gas for subsequent sales of LNG in China. The LNG was delivered by sea in Tiger Gas-owned ISO containers from the Japanese Hibiki container terminal to Shanghai.

GTT announced on 1 December 2020 that it had received an order from the Korean shipyard Daewoo Shipbuilding & Marine Engineering (DSME) for the tank design of six ARC7 ice-breaking LNGCs. Three of them will be built on behalf of the Japanese ship-owner Mitsui OSK Lines Ltd. (MOL) and the other three on behalf of the Russian ship-owner Sovcomflot (SCF). Each vessel will offer a capacity of 172,500 m³. The tanks will be fitted with the NO96 GW membrane containment system. These vessels will be delivered throughout 2023 and will operate as part of the Russian LNG producer Novatek's "Arctic LNG 2" project.

Gazprom said on 2 December 2020 that the company kept ramping up its gas exports to China via Power of Siberia and for a second consecutive month, gas was being supplied in excess of the planned amounts. Gazprom announced on 6 January 2021 that in 2020 Sakhalin Energy produced and shipped a record amount of LNG, or more than 11.6 million tonnes. Due to technical improvements and upgrade, together with weather and temperature factors, the factual production has been increased by 20% from its original design capacity of 9.6 million tonnes per year.

Japan Oil, Gas and Metals National Corporation (JOGMEC) announced on 24 December 2020 that JOGMEC, Irkutsk Oil Company (IOC), Toyo Engineering Corporation and Itochu Corporation had agreed on the joint feasibility study of low-carbon ammonia value chain between Eastern Siberia and Japan. JOGMEC initiated the feasibility study of a supply chain to transport ammonia converted from hydrogen produced by IOC from eastern Siberia, Russia to Japan by entrusting TOYO and ITOCHU.

[South America]

Total announced on 14 January 2021 that the company and Apache Corporation had made a new oil and gas discovery at the Keskesi East-1 well, in Block 58 off the coast of Suriname. Total assumed operatorship of Block 58 on 1 January 2021, with a 50% working interest.

Gás Natural Açú, a joint venture of bp, Siemens AG and Prumo Logística, controlled by EIG Global Energy Partners, completed the receipt of the first cargo of LNG at its regasification terminal, in Porto do Açú, Brazil, it said on 6 January 2021.

New Fortress Energy (NFE) announced on 13 January 2021 that it had entered into agreements to acquire Hygo Energy Transition (Hygo), a 50-50 joint venture between Golar LNG Limited and Stonepeak Infrastructure Fund II Cayman (G) Ltd., a fund managed by

Stonepeak Infrastructure Partners, and Golar LNG Partners, LP (GMLP). With the acquisition of Hygo, NFE will acquire an operating floating storage and regasification unit (FSRU) terminal and a 50% interest in a 1500 MW power plant in Sergipe, Brazil as well as two other FSRU terminals with 1200 MW of power in advanced stages in Brazil. Hygo's fleet consists of a newbuild FSRU and two operating LNG carriers. NFE will also acquire GMLP's fleet of six FSRUs, four LNG carriers and a 50% interest in Trains 1 and 2 of the Hilli, a floating liquefaction vessel.

NFE also announced on 13 January 2021 that it had signed a Memorandum of Understanding (MOU) with Petrobras Distribuidora S.A. (BR) and CCETC Brasil Holding Ltda. (CCETC) to acquire 288 MW of 15-year power purchase agreements (PPAs) and intends to develop an LNG terminal and gas-fired power plant at the Suape Port in Brazil. BR and CCETC intend to sell to NFE 100% of their respective ownership in power generation companies Pecém Energia S.A. and Energética Camaçari Muricy II S.A., which hold PPAs totaling 288MW. NFE has also entered into an agreement to acquire CH4 Energia Ltda., which owns key permits and authorizations to develop an LNG terminal and up to 1.37 GW of gas-fired power at the Suape Port in the city of Ipojuca, State of Pernambuco, Brazil. The terminal and power plant in the Suape Port are anticipated to begin commercial operations by the end of 2022.

Reference: Company and authority announcements.

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