

## LNG Review April 2021 - Recent issues and events -

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### **Introduction**

LNG imports by the big four markets in Northeast Asia (Japan, Korea, China and Chinese Taipei) in the first quarter of 2021 increased by 15% year-on-year to 61.19 million tonnes. Monthly LNG imports into the four markets combined increased year-on-year in each month of the quarter.

According to the "LNG industry - GIIGNL Annual Report" published in late April 2021, global LNG imports reached 356.1 million tonnes in 2020, increasing by 1.4 million tonnes or 0.4% compared with the previous year. Spot and short-term volumes reached 142.5 million tonnes, representing 40% of total trade compared with 34% in 2019. The share of the big four markets in Northeast Asia in total global LNG imports increased from 55.1% in 2019 to 56.7% in 2020.

Following developments in previous months, several more announcements were made on carbon-neutral LNG deals around the world. Toho Gas of Japan and Pavilion Energy of Singapore separately announced that they had imported their first carbon neutral LNG cargoes, respectively. In the United States, the leading LNG exporting company Cheniere Energy announced that its Sabine Pass Liquefaction plant had shipped out a carbon neutral LNG cargo delivered to Europe.

On the new LNG production project front, Santos, as the operator of the Barossa field development in Australia's Northern Territory on which partners made the final investment decision in late March, has indicated its intention to investigate opportunities for carbon-neutral LNG from Barossa. Sempra Energy of the United States has indicated possible delay of the investment decision on Port Arthur LNG into 2022 partly because the project investigates options to reduce its greenhouse gas profile.

On the other hand, a sign of delay has emerged in the onshore liquefaction project development in Mozambique, on which the investment decision was made in 2019. The project operating company Total confirmed in late April 2021 the withdrawal of all the project personnel from the site, due to the security situation in the surrounding area.

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\* 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.

**[Asia Pacific]**

Chevron and Hokkaido Gas announced on 7 April 2021 that they had signed a sale and purchase agreement (SPA) for delivery of LNG from Chevron's global LNG portfolio to the Hokkaido area for 500,000 tonnes over five years starting April 2022.

Toho Gas announced on 8 April 2021 that it received its carbon-neutral LNG cargo at the Chita LNG terminal bought from Diamond Gas International (DGI), a 100% subsidiary of Mitsubishi Corporation, with carbon emissions offset with CO<sub>2</sub> credits.

Saibu Gas announced on 12 April 2021 that the company started year-round delivery of LNG to JUSDA Energy Technology (Shanghai) Co., Ltd. using ISO tank containers of 18 tonnes.

MOL announced on 5 April 2021 New MOL Corporate Mission / MOL Group Vision and Outline of Rolling Plan 2021 which includes plans to invest approximately JPY 200 billion (USD 1.81 billion) in decarbonization initiatives over three fiscal years.

Kawasaki Heavy Industries (KHI), Yanmar Power Technology and Japan Engine announced on 27 April 2021 that they had agreed to form a consortium to develop hydrogen-fuelled engines for large commercial vessels.

Korea's Ministry of Trade, Industry and Energy announced on 27 April 2021 its Long-term Natural Gas Supply Plan which expected the country's LNG demand to rise 15.1% through 2034 on the back of higher LNG demand for bunkering and hydrogen fuel cell cars, as well as a government-led push to reduce power generation by coal and nuclear. The country's LNG demand is forecast to grow to 47.97 million tonnes in 2034 from estimated consumption of 41.69 million tonnes in 2021. LNG demand for power generation is projected to increase at an average pace of 0.33% a year to 20.88 million tonnes in 2034, from an estimated 20.01 million tonnes in 2021. Retail gas companies' demand for households and businesses is forecast to grow at an average of 1.73% a year to 27.09 million tonnes in 2034, from 21.68 million tonnes in 2021.

Korea Gas Corporation (Kogas) announced on 5 April 2021 that maintenance works of 12 LNG carrier ships would be carried out in Korean shipyards in the year. While those maintenance works had been in the past carried out in different countries, including 10 ships (9 in Singapore, 1 in Malaysia) in 2018 and 13 ships (11 in Singapore, 2 in Malaysia) in 2019, seven ships underwent those maintenance works in Korean shipyards in 2020.

Korea's Pan Ocean Co., Ltd. announced on 12 April 2021 that the company had concluded a time charter contract for an LNG bunkering vessel with Shell NA LNG, LLC. The contract will start in May 2023.

Pavilion Energy announced on 15 April 2021 that it had imported a carbon neutral LNG cargo into Singapore - the first for Singapore and Pavilion Energy. Carbon emissions

associated with the LNG cargo from well-to-tank including the extraction, production, transportation, and regasification will be offset by retiring a corresponding amount of carbon credits sourced from its portfolio of carbon offset projects in Peru and in China.

Shell announced on 21 April 2021 that the company would collaborate on a feasibility study to trial the use of hydrogen fuel cells for ships.

FueLNG, MPA (Maritime and Port Authority of Singapore), Keppel Offshore & Marine and Shell announced on 7 May 2021 that FueLNG, together with MPA, had completed Singapore's first bunkering of an LNG-fuelled oil tanker. FueLNG is a joint venture between Keppel O&M and Shell Eastern Petroleum (Pte) Ltd. FueLNG completed the gas-up and cool down operation for the LNG-powered oil tanker 'Pacific Emerald', including the transfer of 3,000 m<sup>3</sup> of LNG from FueLNG Bellina, Singapore's first LNG bunkering vessel, to the tanker. Pacific Emerald is the first of 10 newbuild Aframax tankers chartered by Shell Tankers Singapore (Private) Limited from Sinokor Petrochemical Co Limited.

Petronas announced on 2 April 2021 that PC Myanmar (Hong Kong) Limited (PCML), a subsidiary of PETRONAS, declared Force Majeure (FM) on its Yetagun field on 1 April due to depletion of gas production at the field, located in the Andaman Sea, offshore Myanmar, in Blocks M12, M13 and M14. The decision was made following challenges in the wells deliverability that resulted in the production rate dropping below the technical threshold of the offshore gas processing plant. PCML has temporarily ceased production at the Yetagun field until further notice. PCML has been the operator of the Yetagun Gas Project since 2003, where it holds 40.9% participating interest together with its affiliate, while Myanmar Oil and Gas Enterprise holds 20.5%, Nippon Oil Exploration (Myanmar), Limited holds 19.3% and PTTEP International Limited holds the remaining 19.3%.

Philippines' First Gen Corporation announced on 5 April 2021 that its FGEN LNG unit had entered into a five-year contract to charter the BW Paris floating storage regasification unit (FSRU) from a unit of Norway's BW Gas for the offshore gas terminal project in Batangas. In October 2020, FGEN LNG selected McConnell Dowell Philippines for the LNG terminal's engineering, procurement and construction contract. In the month, First Gen signed a cooperation agreement with Tokyo Gas.

McDermott International announced on 14 April 2021 that its CB&I Storage Solutions business had been awarded a contract by Atlantic Gulf and Pacific Company of Manila Inc. (AG&P) for the engineering, procurement and construction (EPC) of an LNG storage tank for AG&P's Philippines LNG import and regasification terminal, currently under construction in Batangas, Philippines. CB&I Storage Solutions will provide the first of two 60,000 cubic meter full containment steel LNG tanks.

The Philippines' Department of Energy (DOE) approved on 22 April 2021 the Notice

to Proceed (NTP) application of Vires Energy Corporation (VEC) for its Integrated Natural Gas-Fired Power Plant and LNG Storage and Regasification Terminal Project in Batangas. An NTP is valid for six months, during which period the proponent must comply with the NTP conditions, which includes submitting to the DOE all relevant permits from various government agencies, endorsements from the local government units, and proof of financial closing. VEC proposed a Floating Storage and Regasification Unit (FSRU) with approximately 162,400 m<sup>3</sup> of storage capacity, to be located 1.6 km from the southeast coastline of Batangas Bay in Barangay Simlong, Batangas City. The FSRU is a converted LNG Tanker, "BW Paris", built in 2009 with a regasification capacity of up to 3 million tonnes per year. The proposed LNG terminal and regasification project will consist of a Turret Mooring System for the FSRU, a 1.6 km Subsea Gas Pipeline, and a 500-MW Floating Power Plant (FPP). The target commercial operation date of the project is in January 2023.

According to China's National Development and Reform Commission (NDRC), the country's natural gas consumption in March and the first quarter of 2021, was 30 bcm, or 17.5%, and 92.6 bcm, or 18% more than a year ago, respectively. According to preliminary figures from China's Customs Statistics, the country imported 10.146 million tonnes of natural gas - LNG and pipeline gas combined - in April 2021. China's cumulative import of natural gas during the first four months of the year increased by 22.4% year-on-year.

China's Shandong Oil & Gas, CCCC Energy, and Yantai Port announced on 16 April 2021 that they had signed an agreement to cooperate on an LNG import project in the eastern province of Shandong. The plan is to build six 200,000 cubic metres LNG storage tanks in two phases. The receiving capacity of the first phase is expected to be 5 million tonnes per year, while the second one is to double the receiving capacity. The project is expected to start construction in 2022 and to be finished in 2024.

According to Monthly Report on Natural Gas, March 2021, published by India's PPAC (Petroleum Planning & Analysis Cell, Ministry of Petroleum & Natural Gas), the country consumed 14.24 bcm of natural gas in the first quarter of 2021, an increase of 4.2% year-on-year. The country's domestic gas production grew by 5.6% mainly from the private sector while its LNG import shrank by 12% in the same period.

India's H-Energy announced on 12 April 2021 that the country's first Floating Storage and Regasification Unit (FSRU), Höegh Giant, had arrived at the company's Jaigarh Terminal in Maharashtra, sailing from Keppel Shipyard, Singapore. The 2017-built Höegh Giant has storage capacity of 170,000 m<sup>3</sup> and regasification capacity equivalent to about 6 million tonnes per year. H-Energy has chartered the FSRU for 10 years. Höegh Giant will deliver regasified LNG to the 56-km long Jaigarh-Dabhol natural gas pipeline. The facility will also deliver LNG through truck loading facilities for onshore distribution, the facility is

also capable to reload LNG onto small-scale LNG vessels for bunkering services.

India's Minister for Petroleum, Natural Gas said on 15 April 2021 that the government is looking forward to introducing Hydrogen-CNG (H-CNG) to have synergies between natural gas and hydrogen.

Reliance Industries Limited (RIL) and bp announced on 26 April 2021 the start of production from the Satellite Cluster gas field in block KG D6 off the east coast of India. RIL and bp have been developing three deep-water gas developments in block KG D6 - R Cluster, Satellite Cluster and MJ - which together are expected to produce around 30 million standard cubic meters per day (1 billion cubic feet a day) of natural gas by 2023, meeting up to 15% of India's gas demand. The developments will each utilize the existing hub infrastructure in the KG D6 block. RIL is the operator of the block with a 66.67% participating interest and bp holds a 33.33% participating interest. The Satellite Cluster is the second of the three developments to come onstream, following the start-up of R Cluster in December 2020. The field is located about 60 km from the existing onshore terminal at Kakinada on the east coast of India in water depths of up to 1850 meters. The third KG D6 development, MJ, is expected to come onstream towards the latter half of 2022.

Excelerate Energy announced on 6 April 2021 that it completed its 2000th commercial ship-to-ship (STS) transfer of LNG on 3 April at the company's Moheshkhali Floating LNG (MLNG) terminal located offshore Bangladesh in the Bay of Bengal.

Australia's Origin Energy announced on 14 April 2021 that for its export-scale liquid hydrogen project the company had signed a Memorandum of Understanding (MOU) with the Port of Townsville to collaborate on the potential expansion of the port, as well as the development of a liquefaction facility, new berth and associated infrastructure. Origin said that it was collaborating with Japan's Kawasaki Heavy Industries (KHI) on a 300 MW early export project that would produce 36,500 tonnes per year of green liquid hydrogen using renewable energy and sustainable water.

RWE announced on 15 April 2021 that RWE Supply & Trading and Australian hydrogen project developer The Hydrogen Utility Pty Ltd (H2U) had signed a Memorandum of Understanding to bring green hydrogen produced in Australia to Germany. The planned LNG Terminal in Brunsbüttel, where RWE intends to book capacity, can be an ideal location for the future import of hydrogen into Germany.

Esso Australia (a subsidiary of ExxonMobil Australia) said on 20 April 2021 that the Gippsland Basin Joint Venture's West Barracouta project had started delivering gas to Eastern Australia. Esso Australia operates the Gippsland Basin Joint Venture on behalf of a 50-50 joint venture with BHP Petroleum (Bass Strait).

Santos said on 21 April 2021 that the company is well-placed to develop zero-

emissions LNG and hydrogen products through its globally significant Moomba CCS project. The company said that initially it is planned to store up to 1.7 million tonnes of CO<sub>2</sub> per annum, but the Cooper Basin has the capacity to store 20 million tonnes of CO<sub>2</sub> per annum.

Australia's Strandline Resources Limited announced on 27 April 2021 that it had executed a 10-year LNG Supply Agreement (LSA) with Woodside Energy and EDL LNG Fuel to Power Pty Ltd in joint venture (WEJV) for the Coburn mineral sands project. LNG will be supplied via road train from Woodside's Pluto LNG Truck Loading Facility near Karratha WA to Coburn's power generation facilities.

Santos announced on 21 April 2021 that it had signed a new agreement with Rio Tinto to supply up to 15 PJs (0.28 million tonnes) of natural gas to Rio Tinto commencing in late 2021.

TechnipFMC announced on 26 April 2021 that it had received a Notice to Proceed for a subsea production system contract from Santos for the Barossa project.

Santos announced on 30 April 2021 that it had completed the sell-down of 25% interests in Bayu-Undan and Darwin LNG to SK E&S, which is also a partner in Barossa. Santos and SK E&S have also signed a Memorandum of Understanding to jointly investigate opportunities for carbon-neutral LNG from Barossa, including collaboration relating to Santos' Moomba CCS project, bilateral arrangements for carbon credits and potential future development of zero-emissions hydrogen. Completion of the sell-down to SK E&S sees Santos' interest in Bayu-Undan and Darwin LNG change to 43.4%, and Santos remains operator of both assets. The remaining interests are held by SK E&S (25%), INPEX (11.4%), Eni (11%), JERA (6.1%) and Tokyo Gas (3.1%). Santos is also operator of the Barossa project. First gas from Barossa to backfill Darwin LNG is expected in the first half of 2025. Santos said that the company and JERA continued to progress the binding sale and purchase agreement for JERA to acquire a 12.5% interest in Barossa.

Santos and Eni announced on 3 May 2021 that they had signed a Memorandum of Understanding (MOU) to cooperate on opportunities in northern Australia and Timor-Leste. The areas of cooperation include assessing the synergies of sharing possible infrastructures associated with gas field developments around Barossa and Evans Shoal, pipeline to Darwin and onshore associated gas processing leading to LNG expansion developments. This also includes investigating options to re-purpose the Bayu-Undan facilities to extend the life of the project, including a carbon capture and storage project, subject to the agreement of the Timor-Leste government. Other areas of cooperation include the possible development of Petrel and Tern through Blacktip/Yelcherr gas plant facilities.

PETRONAS announced on 7 May 2021 that PETRONAS LNG Ltd (PLL) had introduced the Canada AECO index as a new LNG price indexation to its customers following

the sale of a spot LNG cargo from Bintulu, Malaysia, to a buyer in Asia for August 2021 delivery.

PETRONAS announced on 29 April 2021 that PETRONAS LNG Ltd. (PLL) had signed a time charter party (TCP) for three newbuild 174,000 cubic metres LNG vessels with shipowner, Hyundai LNG Shipping (HLS). HLS had signed contracts with Hyundai Heavy Industries (HHI) for the construction of the three vessels. The vessels are expected to be delivered from the second quarter of 2024 on a staggered basis and will primarily be used to lift cargoes from LNG Canada. With these vessels, PETRONAS has grown its global LNG fleet from 24 to 27 covering small, medium and large sized vessels.

PETRONAS announced on 26 April 2021 that PETRONAS LNG Ltd. had commenced the export of LNG to China in ISO tanks from its filling facility in Pengerang, Johor. The maiden shipment of LNG ISO tanks has been safely delivered to Shanghai from Pasir Gudang Port of Johor on 23 April 2021, following a spot contract signed between PETRONAS and Tiger Gas (Hong Kong) Ltd, an affiliate of Tiger Clean Energy Limited (TCEL). In 2020, PETRONAS and TCEL signed a long-term sale and purchase agreement for the supply of LNG to TCEL's LNG ISO tank filling facility in Bintulu, Sarawak. As part of this agreement, PETRONAS' LNG will be distributed to China using TCEL's ISO tanks, with the first shipment sailed from Bintulu Port to the Port of Long Kou on 25 March 2021.

Avenir LNG on 26 April 2021 announced that it had completed the bunkering of the Avenir Accolade by its sister ship the Avenir Advantage in Pasir Gudang, Pengerang, Malaysia on 26 April 2021. Both ships built by Keppel Offshore & Marine's Nantong Shipyard are 7,500 m<sup>3</sup>, dual purpose, LNG supply and bunkering vessels (LBV). The Avenir Accolade undertook the operation whilst passing through Malaysia on its maiden voyage to deliver the commissioning cargo to Avenir's HIGAS LNG terminal in Sardinia.

Eni announced on 26 April 2021 that it had started gas production from the Merakes Project, in the East Sepinggan block in the Makassar Strait, offshore East Kalimantan, Indonesia. The project will have a production capacity of 450 million standard cubic feet per day, connected to the Jangkrik Floating Production Unit (FPU), optimizing its producing capacity up to 750 million standard cubic feet per day together with the gas flowing from the Jangkrik gas field. Merakes gas will be partially sold to the domestic market and will also contribute to the extension of the life of the Bontang LNG facility. Eni is the operator of East Sepinggan block with a 65% share ownership; the other partners are Neptune Energy East Sepinggan B.V. with 20% share and PT Pertamina Hulu Energi with 15% share.

Total announced on 5 May 2021 that and after a year of delay because of Covid-19, the Government of Papua New Guinea (PNG) and Total as Operator had remobilized the Papua LNG project teams and of other required resources. The objective is to launch the

FEED early 2022 and to prepare for final investment decision (FID) in 2023.

### **[North America]**

According to the company's first-quarter 2021 10-Q report to SEC (United States Securities and Exchange Commission), Cheniere Energy's Sabine Pass LNG Train 6 is 83% complete and is expected to be completed by the first half of 2022. Engineering is 99.6% complete, procurement 99.9%, and construction 61.7%.

Cheniere Energy announced on 4 May 2021 that Sabine Pass Liquefaction, LLC had supplied a carbon neutral cargo of LNG to Shell as part of the companies' long-term LNG Sale and Purchase Agreement. The cargo was delivered to Europe in early April. Offsets used were bought from Shell's global portfolio of nature-based projects with Cheniere purchasing the portion attributable to estimated CO<sub>2</sub>e emissions associated with activities upstream of the FOB delivery point.

Flex LNG announced on 14 April 2021 that it had concluded time charterparty agreements with Cheniere Marketing International for four LNG carriers with the option for a fifth LNG carrier. The firm charter period for each of the four initial LNG carriers is between three and three and a half years, with an option for Cheniere to extend each by up to two additional years.

Sempra Energy said during its Q1 2021 Earnings Call on 5 May 2021 that it was more likely that final investment decision (FID) at Port Arthur LNG would move to 2022 as the company worked on options to reduce the projects' greenhouse gas profile, to improve its competitive position in the global energy transition and to cope with the continued impacts of the pandemic on the global energy markets. Sempra Energy announced on 5 April 2021 that it had entered into an agreement to sell a non-controlling, 20% interest in Sempra Energy's new business platform, Sempra Infrastructure Partners, to KKR, a global investment firm. The announcement is part of transactions to simplify the company's non-utility infrastructure investments under one self-funding platform, combining Sempra LNG and IEnova (Infraestructura Energética Nova, S.A.B de C.V.), one of the largest private energy companies in Mexico and a leading developer and operator of renewables and natural gas infrastructure in that country.

NextDecade Corporation and Mitsubishi Heavy Industries America, Inc. (MHIA) announced on 14 April 2021 that they had signed an engineering services agreement (ESA) for the design, license, and performance guarantee of the KM CDR Process™, a post-combustion carbon capture technology to be applied at NextDecade's Rio Grande LNG project in the Port of Brownsville, Texas. The company and Project Canary announced on 19 April the formation of a joint pilot project for monitoring, reporting, and independent third-

party measurement and certification of the greenhouse gas (GHG) intensity of LNG to be sold from the Rio Grande LNG export facility.

Venture Global LNG announced on 29 April 2021 a new partnership with Zachry Group in the development of the Plaquemines LNG export project. After VGLNG's previous selection of KBR as the EPC contractor, KBR and Zachry Group will together, through a new joint venture, as KZJV, execute the development, engineering, procurement and construction under the EPC contract for Phase 1 of Plaquemines LNG.

GAC Bunker Fuels Limited announced on 4 May 2021 that Puget LNG, LLC and GAC Bunker Fuels had signed a Memorandum of Understanding (MOU) to cooperate in the supply and sale of LNG marine fuel from Puget LNG's terminal to GAC's customers in the Pacific Northwest. When the Tacoma LNG Terminal becomes operational in the second quarter of 2021, it will be the first such terminal on North America's west coast providing direct shoreside loading access for a bunker barge.

The Port of Corpus Christi Authority announced on 4 May 2021 that it and Stabilis Solutions Inc. had entered into a Memorandum of Understanding (MOU) to facilitate the use of LNG as a marine fuel at the port. With the partnership and the increasing availability of LNG, the parties hope to attract more LNG-capable vessels and to encourage the conversions to LNG power. The parties have committed to providing extensive customer education and technical support as well as attracting capital. The port will provide suitable access to dock space for shore-to-ship fuelling operations while Stabilis will deploy its existing fleet of mobile cryogenic assets (including LNG transportation and distribution equipment) from its LNG production plant in South Texas to support LNG fuelling operations.

According to the company's first-quarter 2021 10-Q report to SEC (UNITED STATES SECURITIES AND EXCHANGE COMMISSION), New Fortress Energy Inc. is developing an LNG regasification facility and power plant each at the Port of Pichilingue in Baja California Sur, Mexico ("La Paz Facility") and in Puerto Sandino, Nicaragua ("Puerto Sandino Facility"), respectively. Initially, the La Paz Facility is expected to supply approximately 270,000 gallons of LNG per day (0.158 million tonnes per year) for approximately 100 MW of power. In Puerto Sandino, the company is constructing a 300 MW power plant that will consume approximately 700,000 gallons of LNG per day (0.407 million tonnes per year).

Southern California Gas Co. (SoCalGas) announced on 21 April 2021 that it would demonstrate a technological combination that would produce hydrogen from renewable natural gas (RNG) at SunLine Transit Agency's hydrogen fuelling station in Thousand Palms, California. The research project, called "H2 SilverSTARS," will produce renewable hydrogen to fuel SunLine's fleet of 17 hydrogen fuel cell electric buses and support further expansion.

The combination of new technologies will make it possible to provide renewable hydrogen made from RNG at natural gas fuelling stations - or any location near a natural gas pipeline. The goal is to produce emissions-free renewable hydrogen for fuel cell electric cars and other vehicles at a price competitive with gasoline.

Woodfibre LNG, Pacific Oil & Gas Limited's (PO&G) subsidiary, announced on 6 May 2021 that the company had signed a second LNG Sales and Purchase Agreement (SPA) with BP Gas Marketing Limited (BPGM) for LNG from the export facility near Squamish, British Columbia. BPGM will receive 0.75 million tonnes per year of LNG over 15 years on a free on board (FOB) basis. The latest SPA will increase BPGM's total LNG offtake to 1.5 million tonnes per year, over 70% of Woodfibre LNG's future annual production.

### **[Middle East]**

Delek Drilling of Israel announced on 26 April 2021 the signing of a non-binding Memorandum of Understanding (MoU) with Mubadala Petroleum of Abu Dhabi, UAE for the sale of Delek Drilling's 22% non-operated stake in the Tamar gas field offshore Israel. The partners in the Tamar project are Delek Drilling (22%), Chevron (25% and operator), Isramco (28.75%), Tamar Petroleum (16.75%), Dor Gas (4%) and Everest (3.5%). Under the Gas Framework, outlined by the Government of Israel, Delek Drilling is obliged to sell all of its holdings in Tamar by the end of 2021.

### **[Africa]**

Morocco's Ministry of Energy, Mines and the Environment published on 28 April 2021 a call for proposals to site a floating storage and regasification unit (FSRU) off either its Mediterranean or Atlantic coasts.

bp announced on 26 April 2021 gas production from Raven field, the third stage of its major West Nile Delta (WND) development off the Mediterranean coast in Egypt. The WND development includes five gas fields across the North Alexandria and West Mediterranean Deepwater offshore concession blocks in the Mediterranean Sea.

Karpowership announced on 25 April 2021 that KARMOL's (a Joint Venture between Karpowership and Mitsui OSK Lines) first Floating Storage Regasification Unit (FSRU) was delivered on 15 March at Sembcorp Marine in Singapore and will begin sea trials off Singapore on 25 April ahead of its deployment to Senegal in the coming weeks. The FSRU KARMOL LNGT AFRICA will enable KARMOL to offer LNG-powered electricity to the West African country for the first time using its floating Powership, Karadeniz Powership Aysegül Sultan. In Senegal, Karpowership is operating a 235 MW capacity Powership, around 15% of the country's supply, since August 2019. The first FSRU, operated by KARMOL will soon sail

to the West African country and the Powership is expected to switch to operating with LNG before the end of June.

Due to the security situation in the north of the Cabo Delgado province in Mozambique, Total confirmed on 26 April 2021 the withdrawal of all Mozambique LNG project personnel from the Afungi site. This situation leads Total, as operator of Mozambique LNG project, to declare force majeure. Total estimates at least one year of delays.

### **[Europe / Russia]**

Equinor and SSE Thermal on 8 April 2021 unveiled plans to develop two power stations in the Humber region in the United Kingdom, comprising one of the country's first power stations with carbon capture and storage (CCS) technology, and the world's first 100% hydrogen-fuelled power station.

Shell on 15 April 2021 issued its Energy Transition Strategy publication, which will be put to shareholders for an advisory vote at the company's Annual General Meeting on 18 May 2021. The company says that this is the first time that an energy company has asked shareholders to vote on its energy transition strategy. The vote is purely advisory and will not be binding.

Total announced on 13 April 2021 that the company and Siemens Energy had signed a Technical Collaboration Agreement to study sustainable solutions for CO<sub>2</sub> emissions reduction.

Total announced on 3 May 2021 that it had realized the first ship-to-containership LNG bunkering operation in France. Total's LNG bunker vessel Gas Agility completed on 30 April 2021 the refuelling of the CMA CGM JACQUES SAADE with around 16,400 m<sup>3</sup> of LNG at the Port of Dunkirk.

Hudong-Zhonghua Shipbuilding, a subsidiary of China State Shipbuilding Corporation, announced on 29 April 2021 that it had named and delivered CMA CGM Concorde. The 23,000 TEU containership is the seventh of nine LNG-powered containerships CMA CGM ordered. CMA CGM announced on 8 April that it would support the production of 12,000 tonnes per year of biomethane.

France's Elengy announced on 2 April 2021 that for the first time in France an ISO-container loaded with LNG at the terminal in Fos Cavaou had been transported by rail from Southern France and delivered to a service station near Milan in Italy.

Uniper announced on 14 April 2021 that it planned to establish a German national hub for hydrogen in Wilhelmshaven "Green Wilhelmshaven." An import terminal for green ammonia is planned equipped with an "ammonia cracker" for producing green hydrogen. A 410-MW electrolysis plant is also planned, which - in combination with the import terminal

- would be capable of supplying around 295,000 metric tons or 10% of the demand expected for the whole of Germany in 2030. Commissioning of the new terminal is planned for the second half of this decade. Originally, Uniper explored the idea of constructing a floating import terminal for LNG at the Wilhelmshaven site.

RWE announced on 26 April 2021 that GASCADE, Gasunie, RWE and Shell had signed a declaration of intent to further intensify their collaboration on the AquaDuctus project. The AquaDuctus pipeline will transport green hydrogen from the North Sea directly to the continent. It is part of the AquaVentus initiative, which plans to install 10 gigawatts of electrolysis capacity for green hydrogen production from offshore wind power between Heligoland and the Dogger sand bank.

Norway's Petroleum Safety Authority (PSA) said on 22 April 2021 that it had concluded an investigation into the fire accident at Equinor's Hammerfest LNG facility on 28 September 2020, with PSA's investigation unveiling breaches of the regulations. PSA issued an order to the Hammerfest LNG to identify, implement and follow up measures. Equinor announced on 26 April 2021 that due to the comprehensive scope of work and Covid-19 restrictions, the revised estimated start-up date of the Hammerfest LNG plant on Melkøya is set to 31 March 2022.

InfraVia announced on 8 April 2021 that its subsidiary Molgas Energy Holding had acquired Gasnor, the leading small-scale LNG infrastructure player in Norway, from Shell.

Equinor announced on 6 May 2021 that the company and Vårgrønn had signed a collaboration agreement to develop floating offshore wind at Utsira Nord west off Utsira and Haugalandet in the Norwegian North Sea. Vårgrønn is a renewable energy company established by HitecVision and Eni.

Finland's Gasum announced on 7 April 2021 that the company planned test deliveries of liquefied biogas (LBG) for the Finnish Border Guard from Gasum's plant in Risavika, Norway and the biogas plant in Turku, Finland to Helsinki. Gasum announced on 27 April that the company had opened a biogas plant in Nymölla, Sweden. By turning process water generated by Stora Enso's Nymölla paper mill into liquefied biogas (LBG), the plant will be able to produce 75 - 80 GWh (5,000 tonnes) per year of renewable fuel for the road transport, industry, and maritime sectors.

Spain's Baleària announced on 27 April 2021 that the Eleanor Roosevelt, the world's first fast ferry with natural gas engines, sailed from the Armon shipyard in Gijón bound for Dénia, scheduled to begin operating on 1 May.

The 138,000 m<sup>3</sup> LNG carrier Bilbao Knutsen suffered damage after colliding on 30 April 2021 with product tanker STI Pimlico, operated by Scorpio tankers, offshore the Port of Huelva in Spain, according to the Spanish Transport, Mobility, and Urban Planning

ministry (Ministerio de Transportes, Movilidad y Agenda Urbana = MITMA). Bilbao Knutsen was leaving the Huelva LNG import terminal.

OLT Offshore LNG Toscana announced on 6 April 2021 that the expression of interest for the new small scale service had been published in the commercial area of its website. OLT says that it will be the first regasification terminal in Italy to provide the discharge of LNG into small-scale LNG carriers.

Equinor announced on 5 May 2021 that the company had agreed to buy 100% of the shares in Polish onshore renewables developer Wento from the private equity firm Enterprise Investors. Wento's business plan includes 1.6 GW of solar power capacity in different stages of development. Equinor announced on 4 May that Poland's Energy Regulatory Office (ERO) had awarded Equinor and Polenergia's Bałtyk II and Bałtyk III projects contracts for difference (CfD) under the first phase of Poland's offshore wind development scheme.

MET Croatia announced on 26 April 2021 that Croatia had received its fifth cargo of LNG at the Krk terminal in the northern Adriatic Sea, the first LNG delivery of MET Croatia on the 145,000 m<sup>3</sup> LNG vessel Methane Nile Eagle from the Zeebrugge terminal in Belgium. MET Croatia Energy Trade, part of Swiss-based MET Group, has booked an overall capacity of 2.67 bcm at the Krk LNG terminal for a period of seven years. While this was MET's first delivery to Krk, itself, MET had also supplied the commissioning cargo to the floating storage and regasification vessel LNG Croatia in Sagunto (Spain), in November 2020. Additional two LNG cargoes are due to be delivered by MET Croatia to the Krk terminal before the end of October 2021.

Russia's NOVATEK announced on 28 April 2021 that the company had signed a Heads of Agreement (HOA) with TOTAL on the sale of a 10% participation interest in Arctic Transshipment LLC. Arctic Transshipment LLC is NOVATEK's subsidiary that will operate two LNG transshipment complexes currently under construction in the Kamchatka and Murmansk regions. On the same day, NOVATEK announced that its joint venture Arctic LNG 2 had concluded 20-year LNG Sales and Purchase Agreements (SPAs) for the total LNG production volumes with all the project's participants.

Gazprom announced on 12 April 2021 that the feasibility analysis regarding the construction project for the Soyuz Vostok gas trunkline had been approved. The Soyuz Vostok gas pipeline will become an extension of Russia's Power of Siberia 2 gas pipeline in Mongolian territory. The export capacity of the Power of Siberia 2 gas pipeline might become more than 1.3 times higher than that of Power of Siberia.

### **[South America]**

The Panama Canal Authority announced on 26 April 2021 its plans to be carbon

neutral by 2030.

Hydro announced on 15 April 2021 that it had signed a Memorandum of Understanding (MoU) with New Fortress Energy (NFE) for regasified LNG supply at the Hydro Alunorte alumina refinery in Brazil. The supply of LNG to Barcarena by NFE is expected to start in 2022.

Reference: Company announcements, Cedigaz News Report.

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