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International Gas Union sees next LNG wave facing difficult decisions

Industry's leading body charts road ahead and issues for final investments in projects

The International Gas Union said a "huge wave" of liquefied natural gas export project liquefaction capacity is currently still in the pre-Final Investment Decision stage and when given the go-ahead would provide more clean fuel especially for Asian nations.

"Most of this capacity is in the US and Canada, and a significant proportion in Africa and the Middle East (93.3 million tonnes per annum each)," said the IGU President Joo-Myung Kang in his introduction to the 2020 annual report.

Charter

The IGU was established in 1931 and brings together natural gas associations and corporations, including 91 charter members and 51 associate members, representing 97 percent of the global gas industry.

Its agenda is to promote natural gas use in a safe manner for global economic progress.

The IGU said LNG continued to play a key role in improving air quality in markets such as China as annual global trade increased to 354.7 million tonnes.

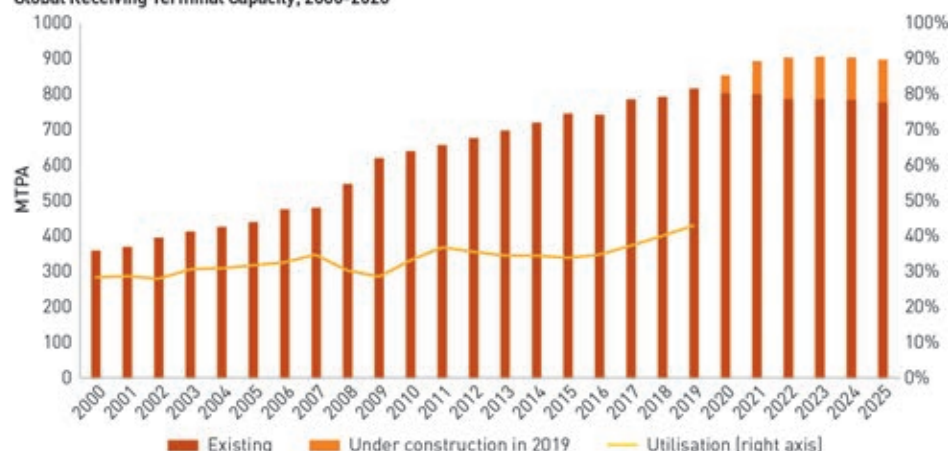
"This was on the back of increased exports from the USA, Russia and Australia as well as Algeria and Egypt," added the report.

"The Asia-Pacific region and Asia again imported the most volumes, together accounting for almost 70 percent of global LNG imports," it said.

However, the largest change in imports was observed in Europe, where the UK, France, Spain, the Netherlands, Italy and Belgium together imported 32MT more than in the previous year.

"Furthermore, 70.8 MTPA of liquefaction capacity was sanctioned, and 41.8 MTPA in capacity was brought on-stream in 2019, mostly from Russia,

Global Receiving Terminal Capacity, 2000-2020



Existing and planned LNG import terminal and utilization through 2025

Australia and the US," noted the IGU.

The IGU, whose next three-yearly World Gas Conference is scheduled to take place in Daegu, South Korea in June 2021 as the 28th of the series, also reported on the LNG shipping industry keeping pace with the growth of infrastructure.

"Another 42 new vessels were added, bringing the total to 541 active vessels at the end of 2019," said the report.

Flexible

"The fleet includes 34 floating storage and regasification units (FSRUs) and four floating storage units (FSUs), demonstrating the continued interest in flexible solutions to enable markets to start importing LNG or to increase their LNG imports as energy demand grows," it stated.

Regasification capacity continued to absorb the increase in supply and meet demand growth, adding 23.4 MTPA in 2019 and reaching 821 MTPA by February 2020.

"Six new terminals began importing cargoes in 2019, and three expansion projects were completed," said the IGU.

The Asia-Pacific took the lion's share of regas capacity additions with a total of

14.2 MTPA, while India added 7.5 MTPA. A total of 37 markets are now equipped to import LNG.

Construction

A further 120.4 MTPA of regas capacity is currently under construction (as of February 2020), including 12 FSRUs.

Around 47 MTPA of capacity is expected to be on line by the end of 2020, potentially adding at least two new importing nations, Ghana and the Philippines.

There was also steady growth last year, specifically for floating regas terminals with FSRUs being added in Jamaica, Turkey and Bangladesh.

In addition to the traditional risks liquefaction project developers face, the currently oversupplied LNG market is deterring many projects.

This LNG "glut" is largely driven by the rapid growth in LNG supplies, coming mostly from Australia, the USA and Russia over the past few years.

Essential

Demand for LNG is not responding in tandem to enable a balanced market at an acceptable price to all, resulting in a current lower price environment.

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“Essential to reaching FID on an LNG project is the treatment of risk; assessing and quantifying its likelihood and potential severity,” said the IGU.

“LNG projects have long business development cycles, which may span a decade (or much more) from upstream resource discovery through to FID, followed by the four-plus year EPC phase, involving many teams from different partners and contractors,” explained the report.

“This increases the complexity of the overall task and adds many risk components,” it added.

An oversupplied market is challenging for new LNG export projects, and developers need to brace themselves for a continued glut as further production is added, outpacing global demand potentially for another two years.

Depressed prices

“This will mean continued depressed prices. This is then likely followed by a period of recovery, with renewed uncertainty around the middle of the decade,” said the report.

This outlook is expected to set the tone among the projects that are actively under development and have yet to take FIDs.

“How many will go forward,

versus potential upside and downsides to forecast demand, is key to determining exactly when the market balances,” explained the IGU.

“Projects typically have a lead time of 5 years between FID and commercial operations, and thus pre-FID developers will have to

Global Liquefaction Capacity Development from 1990 to 2025



How production capacity may still increase out to 2025

think through this uncertainty from the mid-2020s onwards,” said the report.

“While it is relatively easy to see what’s coming on the supply side, given the long lead times for liquefaction projects, predicting demand is much more difficult,” it added.

The IGU noted that the significant number of FIDs which have been taken in 2019 imply that developers believe the current glut in the market is expected to fade after 2020, and their volumes will find markets.

Supply

The 42.5 MTPA of new liquefaction capacity added in 2019, is expected to prolong excess supply in the global LNG market into the mid 2020s, well beyond the 2022-2023 forecast of

said the report. However, the current wave of additional supply and persistent weak

global prices are challenging new projects seeking FIDs and the current slump in LNG prices could lead to these decisions being delayed.

“There are more than a dozen liquefaction plants scheduled for FIDs in 2020 and if buyers remain hesitant to sign long-term agreements, some of these will have to be deferred or cancelled.

There is a significant competitive advantage for LNG developers in geographic locations with access to low cost resources, proximity to high volume and/or high value markets, and opportunity to achieve competitive liquefaction project costs.

Equity investment

“Financing multibillion dollar projects involves equity investments, shareholder and commercial loans or, where applicable, project finance with the involvement of export credit agencies and the World Bank providing political risk insurance for markets lacking sufficient regulatory and mega-project track record,” stated the report.

“In such a complex and challenging business environment, expansion of existing projects with a proven track record and strong balance sheets also have a significant competitive advantage,” it said.

Additionally, the potential for relatively lower cost expansions and backfill opportunities, in addition to expiring contracts at legacy projects, may reduce the amount of capacity required from new projects in the near term.

“With downward pressure on costs and contract pricing and higher oil prices, it is possible that FIDs could continue the upward trend seen in 2018 and 2019, particularly if suppliers show a willingness and ability to invest without contracts,” said the report. ■

“While it is relatively easy to see what’s coming on the supply side, given the long lead times for liquefaction projects, predicting demand is much more difficult”

just a year ago.

“Adding to that potential surplus is the Qatar

North Field LNG Expansion (the world’s most cost-competitive source of LNG) which will add a further 49 MTPA of supply, to come onstream between 2024 and 2027, which would extend the expected period of oversupply by a couple of years,”

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How natural gas and LNG have fared in 2020 as problems rose and prices then converged

International Energy Agency gives a rundown on effects of Covid-19 on supply and demand

Natural gas consumption was falling over the first months of 2020 in major markets even before the Covid-19 pandemic, mainly due to historically mild temperatures in the northern hemisphere.

In Europe, milder weather pushed down natural gas demand by an estimated 2.6 percent during the first quarter of 2020 relative to the same period a year before, according to the International Energy Agency Global Energy Review 2020 covering Natural Gas and the impacts of the Covid-19 crisis.

Gas use

Consumption by distribution customers (mainly residential and commercial) dropped by 3 percent, while gas-fired power generation declined by over 5 percent, squeezed by a combination of high wind generation and lower heating-related electricity consumption.

Similarly, US natural gas demand decreased by an estimated 4.5 percent in the first quarter compared with the same 2019 period, dragged down by a sharp decline of 18 percent in residential and commercial demand.

On entering the second quarter, on May 7, 2020, there was a historic price convergence of the Henry Hub, the Asian spot price and European values,

all below \$2.00 per million British thermal units.

Mature Asian markets also experienced a contraction in natural gas consumption and LNG imports in Japan fell by 3 percent in the first quarter of 2020 relative to the same three months of 2019.

In South Korea domestic sales for January and February fell by 2.5 percent.

Forecasts

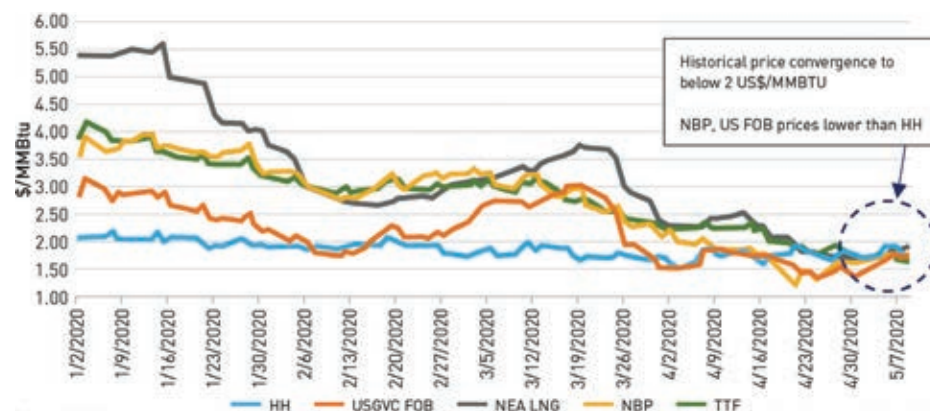
Global natural gas demand could decrease by 5 percent in 2020, based on our broad assumptions for the year.

"This decline is less than the anticipated fall in oil demand, reflecting the fact that natural gas is less exposed to the collapse in demand for transportation fuels," said the IEA.

"But it nonetheless represents a huge shock to a gas industry that is used to robust growth in consumption," it added.

"This drop would be the first in annual consumption since 2009, when consumption fell by 2 percent, and the largest recorded year-on-year drop in consumption since natural gas demand developed at scale during the second half of the 20th century," the report stated.

Natural gas consumption is expected to fall in every sector and region in 2020 compared with 2019, but most of the declines are in power generation.



Historic global spot gas and LNG price convergence in May 2020

"Gas consumption in power generation would drop by around 7 percent, accounting for almost 60 percent of the decrease in global demand," said the IEA.

Europe

"The decline would be especially sharp in Europe, where the dominant role of natural gas in thermal generation would be squeezed by the decrease in electricity consumption from industry and commercial sectors, while non-fossil fuel generation remains more resilient," it noted.

"Very low natural gas prices mean that the impact on gas-fired generation is expected to be less severe in North America," said the IEA.

The industry sector accounts for about 25 percent of the global decrease, dropping by about 5 percent.

On top of the direct impact of reduced activity during lockdowns, natural gas demand from industry is further dampened by the slowdown in consumer spending for manufactured goods, which affects gas use in export-driven economies, especially in Asia.

Data coverage

The IEA said that data covering half of global demand suggest that gas consumption fell by more than 3 percent in the first quarter of 2020.

It explained that this finding is based on a sample of key markets in Asia, North America and Europe.

Perspectives from other regions are mixed. Demand in the Russian Federation and other Eurasian markets is assumed to have been similarly pushed down by mild temperatures," said the IEA.

Russia's electricity consumption, the main component of gas demand, declined by 1.9 percent in the first quarter.

But other regions, such as Southeast Asia or the Middle East, have almost no space heating needs and would have therefore experienced more typical consumption profiles.

Natural gas supply did not adjust to this drop in consumption, resulting in a considerable build-up of gas in storage.

US output

US dry gas production grew by 7 percent in the first quarter relative to the prior-year quarter, while global LNG trade increased by an estimated 13 percent.

"Europe accounted for about 60 percent of the increase in LNG imports over this period. While pipeline imports decreased

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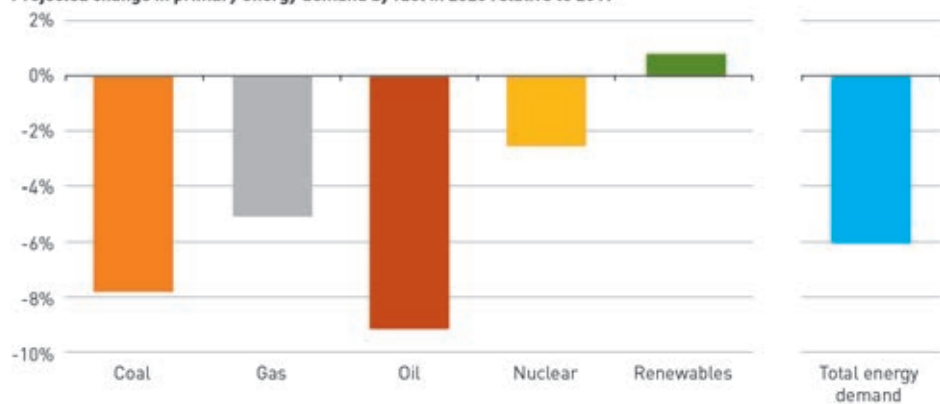


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Projected change in primary energy demand by fuel in 2020 relative to 2019



Demand is set to decline in LNG, pipeline gas, oil and other fuels

in both markets underground storage inventories experienced a strong build-up,” said the report.

In the US they rose by 77 percent compared with 2019, 17 percent above the five-year average as of the end of March.

In Europe they rose 40 percent, to reach 80 percent above the five-year average.

These increases were supported by the exceptionally low spot prices, with the US Henry Hub price at its lowest first-quarter average since 1999, and the European TTF price at its lowest first

quarter average since its establishment in 2003.

“In China, where the Covid-19 outbreak reached its peak in February, gas consumption growth was close to zero,” said the report.

Lockdowns

It cited the Chinese National Development and Reform Commission saying that gas consumption grew by 1 percent in January and February from a year earlier.

In Europe, the implementation of

nationwide lockdowns in several countries from mid-March sharply reduced natural gas consumption in the industry and power generation sectors.

Distribution network consumption was less affected, as residential consumption was stable under confinement and benefited from colder temperatures at the end of March.

Industry

“Natural gas demand fell less in the European countries that imposed restrictions without implementing full lockdowns: between mid-March and mid-April, demand fell by 3 percent in Germany and 7 percent in the Netherlands, relative to 2019,” said the IEA.

Natural gas consumption appears to have been more resilient in the US since the implementation of state-wide lockdowns.

Demand from the industry sector fell by 6 percent between mid-March and mid-April, relative to 2019, but gas-fired power generation increased by 8 percent.

“In India, the infrastructure operator GAIL reported in mid-April a fall in sales of about 30 percent since the imposition of a national lockdown, yet anticipated a recovery in the near term as consumption recovers in the fertiliser industry,” added the report.

The energy sector itself would account for around 10 percent of the fall in global gas demand, dropping by 4 percent.

This reflects the overall fall in global supply that reduces gas needs for upstream operations, as well as for energy transformation (refining) and transportation (pipeline gas compression).

“Most of the impact on gas demand in the residential and commercial sectors is expected to come from the already observed drop in the first quarter 2020 caused by mild temperatures - with some additional loss in the commercial sector for non-heating uses during the lockdown periods,” said the IEA.

“Faster post-lockdown recovery in Europe and North America and shorter lockdowns in other regions would reduce the negative impacts,” it concluded. ■

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For the Record

ALASKA LNG has finally been approved by the US Federal Energy Regulatory Commission and the State-backed Alaska Gasline Development Corp. (AGDC) will now decide if the economics can attract investors and allow the long-awaited venture to go ahead. “FERC’s authorization validates that the Alaska LNG project can be safely built and operated, delivering numerous potential benefits with manageable environmental impacts,” said AGDC President Frank Richards. “This approval signifies the completion of a rigorous and comprehensive evaluation that has engaged environmental and energy experts at dozens of federal and state regulatory agencies,” added Richards. Analysts noted that obtaining FERC approval significantly de-risked the project execution with defined environmental stipulations. The project was launched almost 10 years ago and there is still some hope that LNG would be produced and exported by 2026 after engineering, construction and production costs were estimated at around \$43 billion.

However, the timing could not be worse for seeking investors amid the oil price slump and only a partially recovery at present above \$30 per barrel. Chinese energy companies and banks had previously expressed interest in taking part in the Alaska venture, though they disappeared from the picture when the US-China trade dispute broke out. The FERC permit grants building consent for a liquefaction facility on the Kenai Peninsula designed to produce up to 20 million tonnes per annum of LNG for export. It also include permission to construct and operate a pipeline of 807 miles in length and capable of transporting up to 3.9 billion cubic feet of gas per day to the liquefaction facility from a gas treatment plant located at Prudhoe Bay in the North Slope, as well as two additional natural gas pipelines connecting production units to the gas treatment plant.

The Department of Energy has also authorized export permits for 20 MTPA to be supplied to nations with or without a Free Trade Agreement with the US. “The

Alaska LNG project is the last remaining LNG project before FERC covered by the Fixing America’s Surface Transportation Act (FAST-41 Act),” said the regulator in reference to a fast-track measure required by Congress. “The Commission took action today ahead of the scheduled June 4, 2020, final decision set by the statute,” the FERC explained. “The federal authorization is a key step in determining if Alaska LNG is competitive and economically beneficial for Alaska,” said Alaska Governor Mike Dunleavy. “I commend the AGDC team for their diligence. The ongoing project economic review and discussions with potential partners will determine the next steps for this project,” added Dunleavy.

Alaska’s Congressional delegation, Senator Lisa Murkowski, Senator Dan Sullivan and Representative Don Young welcomed the FERC decision and issued a joint statement. “We commend the continued work by both FERC and AGDC to advance the Alaska LNG project to this key point,” they said. “The certificate issued by FERC is the culmination of years of work and will be a major asset for both investment in Alaska and our nation’s long-term energy security,” they added. “Development of our vast natural gas resources will further expand North Slope opportunities and could be a game-changer for our state economy,” the three politicians stated. The biggest commercial advantage of adding a major liquefaction facility in Alaska is the shorter shipping route to Asia than from the Gulf Coast, where four of the six US LNG export facilities currently in operation are located. The AGDC, along with energy companies such as ExxonMobil with North Slope assets and who will supply the feed-gas, has given a contract to engineering company Fluor Corp. to update the 2015 estimate that the project would still cost \$43Bln to complete.

CHART Industries, the US supplier of equipment for the industrial gas, energy and liquefied natural gas sectors, also supplies medical oxygen for critical care and had to increase production by over 50 percent to meet continued demand for COVID-19 patients. This was in addition to lining up LNG fuel products for Royal Dutch Shell and securing its biggest ever industrial gases sale in China. “All Chart manufacturing locations globally have been deemed essential business by each local and federal government and therefore continue to operate under this

status,” said the company in its first-quarter earnings report. “During March 2020, we increased production on specific medical oxygen related products by over 65 percent in the US and 50 percent in the Czech Republic,” added the Atlanta, Georgia-based Chart.

Additionally, Chart stated that orders for its cryobiological product line used for storage and transport of vaccinations, cell therapy and biological inventory increased by 14 percent to \$20.8 million in the first quarter of 2020 when compared to the first quarter of 2019. “Typically, my quote would be about the financials and decisive, agile responsiveness during this unprecedented time,” said Chart Chief Executive Jill Evanko. “The related facts in this release contain that information, but I would like to thank our team members who, as essential personnel, have worked tirelessly and safely to increase production on critical care products that are being used globally to save lives,” stated the CEO. In its core LNG and industrial gases business Chart’s order backlog of \$733M was flat compared with the first quarter of 2019, which included \$135M of equipment for US developer Venture Global’s Calcasieu Pass LNG project.

Excluding Calcasieu Pass, backlog increased 6.8 percent year on year. There was a first-quarter order backlog of \$151M for the Distribution & Storage Western Hemisphere division, up 18.7 percent and its highest ever. Overall, first-quarter orders amounted to \$304.3M and were 34 percent less than the prior-year quarter. The first quarter of 2019 had included the Venture Global Calcasieu Pass order (\$135M), Golar’s floating “LNG Gimi” tanker conversion project (\$20M) and Niche LNG’s small-scale LNG work (\$7M). In the second of its four divisions, Distribution & Storage Eastern Hemisphere, Chart booked 14 LNG fueling stations, which is the same level as the first quarter 2019. “Additionally, in April we received verbal commitment from Shell for the supply of seven LNG fueling stations,” said Chart.

“Our teams are currently working toward a multiyear long-term contract whereby Shell will place the order for up to four stations in the second quarter of 2020 and three more in 2021,” the company added. “The multiyear agreement will allow for expansion of these quantities with privileged support to Shell’s business plans and strategy for LNG in Europe,” stated Chart.

Chart said backlog in China was \$68M at the end of the first quarter and subsequently the company received its largest industrial gas order in its history from China in early April, though gave no details. Chart also received a letter of intent for process technology and associated equipment for Eagle LNG’s Jacksonville project in Florida. Industrial plant orders of \$4.7M were received by its Energy & Chemicals Cryogenics division for retrofitting a refinery with air cooled heat-exchangers. Chart’s fourth division, called E&C FinFans, recorded its highest orders in the first quarter compared with the previous three quarters, including \$23M in the month of March. “This is specific to air coolers, and we expect fans products to continue to grow year-over-year,” said Chart.

CHENIERE Energy, the leading US LNG export company through its Sabine Pass plant in Louisiana and the Corpus Christi facility in Texas, has ridden through the current storms and reported strong results. Cheniere’s total first-quarter revenues, mostly LNG sales, rose 20 percent to \$2.71 billion from \$2.26Bln in the same three months of 2019. Total operating costs and expenses fell 17.5 percent to \$1.36Bln from \$1.65Bln in the prior-year quarter as its Gulf Coast build-out continued. Net income attributable to common stockholders came to \$375 million versus \$121M in the same quarter of 2019. Cheniere’s profits from operating activities came to \$603M in the quarter compared with \$337 a year ago. The company said that as of April 27 more than 1,100 cumulative LNG cargoes totaling over 75 million tonnes of LNG had been produced, loaded and exported from February 2016 from its two plants in Louisiana and Texas.

“The first quarter of 2020 was defined by unprecedented circumstances, and our focus at Cheniere has been to protect the health and safety of our workforce, ensure continuity of construction and operations to deliver on our obligations to our customers, and to support the communities where we live and work with assistance needed to provide critical services,” said Jack Fusco, Cheniere’s President and Chief Executive. “I am immensely proud of the Cheniere team for their united response to these challenges. Those efforts contributed to our ability to deliver strong financial results for the first quarter,” stated the CEO. Fusco reconfirmed the company’s full year 2020 guidance of consolidated

adjusted EBITDA of \$3.8Bln to \$4.1Bln, and distributable cash flow of \$1.0Bln to \$1.3Bln.

Cheniere like other companies is trying to weather the Covid-19 crisis. The CEO said during a conference call with investors that there were more than two cargoes cancelled in 2020 so far, but he declined to say how many. The company, which receives a fixed fee when cargoes are cancelled, is reviewing different options for adjusting its LNG operations if current market conditions persist. Asked whether Cheniere was assuming there would be a portion of its cargoes that would not be shipped this year, Chief Financial Officer Michael Wortley said that was a possibility. Fusco said Cheniere would need more long-term contracts with buyers in Europe and Asia to support new Trains beyond the ones under construction, which is difficult because of the lockdown. “The first thing I would need to see is the airlines open back up, and that's to be able to travel,” said Fusco. “These are negotiations for long-term energy contracts that require face-to-face combat, for lack of a better word,” he added. “I mean, you have to get close to the customer and look each other in the eye. And for the foreseeable future now, or at least initially, that looks like it's a little ways away for us,” said the CEO.

Cheniere also revealed in its earnings that derivatives losses from hedging widened to \$459M from \$122M in the same quarter last year. Sabine Pass currently has five processing Trains on stream with nameplate capacity of 22.5 million tonnes per annum and the second Train at Corpus Christi also started up in 2019. Cheniere's plant developments are continuing with the construction of Train 3 at Corpus Christi and Train 6 at Sabine Pass. The Houston-based company has already received regulatory permission to proceed with developing what it calls its Stage 3 project comprising seven midscale liquefaction Trains adjacent to the Corpus Christi project, each with an expected nominal production capacity of around 1.4 MTPA of LNG. The total expected output of the seven midscale Trains is around 9.5 MTPA.

CLEAN ENERGY Fuels Corp., the LNG and compressed natural gas filling station company with a network of 550 stations across the US and Canada and partly owned by French major Total, has signed multiple station expansion and supply contracts to accommodate demand

for ultra-low carbon fuel for trucks and buses. In addition to LNG and CNG, Clean Energy sells methane fuel produced from organic waste under the brand name Redeem.

“All Clean Energy stations have remained fully operational during the Covid-19 crisis and continue to provide access to customers supplying essential services,” said the company. “With the largest technician base in North America, Clean Energy is committed to serving fleet operators while protecting the health and safety of both its employees and customers,” it added. The company which is 25-percent owned by Total and has a long-term supply agreement with the US unit of BP for its Redeem gas, owns fuel stations open to the public and others provided along with fuel to private transportation companies as well to city-owned buses and waste-truck fleets. “Despite this unprecedented challenging time that the country is experiencing with Covid-19, Clean Energy continues to expand the use of a clean, ultra-low carbon fuel to fleets,” said Chad Lindholm, Vice President of Clean Energy.

“Many of our customers including heavy-duty trucking, refuse and transit agencies are performing heroic duty by continuing to operate under extreme difficult circumstances,” added Lindholm. Clean Energy's fuel comes from its own natural gas liquefaction facilities in California and Texas, while it also transports bulk LNG and CNG to non-transportation customers around the US. In its expansion work, Clean Energy has completed an upgrade for the City of Chesapeake station in Virginia which recently obtained 12 new natural gas-powered refuse trucks, taking the total filled regularly to 60 vehicles. The contract calls for an about 2.5 million gallons over five years and includes operations and maintenance.

Clean Energy also completed construction of its fourth station for USA Hauling at their Waterbury yard in the state of Connecticut. The 30-truck private station will dispense an estimated 1.8 million gallons over the five-year contract, with operations and maintenance included. Clean Energy is also upgrading its operation in the City of Long Beach in California where it has a long-term contracts. The company will build, operate and maintain a natural gas station to fuel more public and City vehicles. In the first year of operation the site dispensed 180,000 gallons. By 2017,

station sales had reached over 700,000 gallons and the City looked to increase capacity with an updated and more robust station. The new station will provide three dispensers and two 400hp compressors. “These compressors will allow drivers to fuel nearly three times faster than the current station,” said Clean Energy. “The new station will be constructed while the existing station remains in operation, which will minimize downtime and ensure continuous and reliable fueling for existing fleet customers,” it added.

The company has additionally completed construction of its fifth station with South Jersey Gas at the Cape May County Municipal Utilities Authority Transfer Station. The public access fast-fill facility will initially fuel approximately 100,000 gallons per year for utility vehicles, transfer trucks and shuttle buses with volumes anticipated to increase annually as additional CNG vehicles are procured. Among the many other contracts, the company has signed up Republic Services waste collection in Las Vegas, Nevada, to upgrade station equipment and add 92 fueling spots which in total will provide about 3.7 million gallons of Redeem fuel per year. In Chula Vista, outside San Diego in California, Clean Energy signed an agreement with Republic Services for a station upgrade that will add 35 fueling spots and total an estimated 612,000 gallons per year. The County of Sacramento, it renewed its agreement with Clean Energy to provide maintenance services at the County's CNG and LNG station. The CNG station supports the fueling needs at the County's airport while the LNG station is heavily utilized by the County's refuse trucks. Combined, these stations should dispense over 750,000 gallons annually. Clean Energy received an extension with the Atlantic County Utilities Authority in New Jersey for operations, maintenance, retail, billing and marketing services for 40 trucks for an estimated 560,000 gallons per year.

ELBA ISLAND LNG, the small US export facility near Savannah in Georgia, has been given permission by regulators to begin commissioning the eighth processing Train of its Moveable Modular Liquefaction System pioneered by Royal Dutch Shell. The Federal Energy Regulatory Commission granted a request by US subsidiaries of US pipeline company Kinder Morgan to begin start-

up of Train 8 of the 10 small-scale Trains. “I grant your May 6, 2020, request for Elba Liquefaction Company and Southern LNG Company to introduce mixed refrigerant to Moveable Modular Liquefaction System No. 8,” said a notice sent by the FERC to the owners. “This approval is based on FERC staff inspections of the applicable facilities, review of the information filed on April 28 and May 6, 2020, and subsequent discussions,” it added. Elba Island has nameplate output of 2.5 million tonnes per annum and is the smallest of the six US export plants currently on stream.

The fifth export plant at Cove Point in Maryland, owned by Dominion Energy, and like the Georgia plant located on the Atlantic Coast, is the next smallest with 5.2 MTPA of output. The other four liquefaction facilities are on the Gulf Coast and are on a larger commercial scale of up to 27 MTPA. Two are owned by Cheniere Energy at Sabine Pass in Louisiana and Corpus Christi in Texas. There is also the Sempra Energy-owned Cameron plant in Louisiana and the Freeport plant at Quintana Island in Texas.

Kinder Morgan had initially expected the first Train at Elba Island to come on stream by the end of March 2019 and the remaining Trains following during the year. However, the project was hit by construction delays as well as a slow ramp-up process that has limited commercial cargo shipments, even given its small production capacity. Only four cargoes have been shipped since December 2019 and the last two were lifted in the final week of January 2020. Using Shell's Movable Modular Liquefaction System meant that the Trains were largely assembled off-site and delivered to Elba Island.

The Georgia project is supported by a 20-year supply contract with Shell, which was one of the original investors. Kinder Morgan is also building a second LNG export plant at an existing terminal in Mississippi called Gulf LNG in partnership with several equity funds. That project near Pascagoula has received all FERC approvals. The existing Gulf import terminal has storage and jetty infrastructure and is to be transformed into a liquefaction plant to produce an initial 11.5 MTPA of LNG for export. It is located next to the Bayou Casotte Navigation Channel and includes a five-mile send-out pipeline and two LNG storage tanks, each with a capacity of 160,000 cubic metres.

EXPORT-IMPORT Bank of the United States said its board voted unanimously to amend and increase a previously approved direct loan supporting US exports for the development and construction of the Mozambique LNG export project now led by French major Total. EXIM Bank said the action increased the original scope of the project financing from exclusively the onshore portion of the LNG plant and related facilities to also allocate an estimated \$1.8 billion of the estimated total of \$4.7Bln to support the project's offshore production. EXIM also said it was pleased to be supporting the Mozambique LNG project in preference to Russian and Chinese loans that had been cited as being in the pipeline for the southeast African nation. The lending program for Mozambique LNG will support US jobs and the companies supplying the venture across eight US states. "The number of US suppliers also has increased to 68, with 31 suppliers added to the 37 companies previously identified," said the US lending agency. "These suppliers are located in two more

states - Louisiana and Oklahoma - in addition to the previously announced states of Florida, Georgia, New York, Pennsylvania, Tennessee, and Texas, and the District of Columbia," said an EximBank statement.

Follow-on sales are expected to support thousands of additional jobs across the US in addition to the estimated 16,700 that will be supported over a period of five years. "EXIM's financing for the Mozambique LNG project continues to strongly support President Trump's 'Prosper Africa Initiative' to unlock opportunities for US businesses in Africa," said EXIM President and Chairman Kimberly A. Reed. "The amendment expands the scope of US involvement in the project to support even more American jobs - 16,700 - across additional states," she added. "As was previously underscored, private financing was not available for this project given its size, complexity, and risk, necessitating support from EXIM," Reed explained. She also stated that EXIM had been told that China and Russia were slated to finance this deal

before the EXIM board quorum was restored by the US Senate one year ago. "This is a great example of how a revitalized EXIM, thanks to President Trump's leadership and bipartisan support from Congress, can help ensure the use of 'Made in the USA' products and services, without ceding ground to countries like China and Russia," she said. "The lead sponsor and operator of the project is Total SA, a multinational oil-and-gas company that is one of the world's largest developers of LNG projects," she noted. The project includes the development of the Golfinho and Atum natural gas fields located within offshore Area 1 of the Rovuma Basin.

The plant site has already been cleared near the coastal town of Pemba in northeast Mozambique. The Rovuma Area 1 contains more than 60 trillion cubic feet of gas resources of which 36 Tcf could be developed for a four-Train plant. The Area 1 shareholder line-up is as follows: Total operates Mozambique LNG with a 26.5 percent participating interest alongside Mozambican state-owned energy company ENH (15

percent). Japan's Mitsui owns 20 percent, India's ONGC Videsh, Bharat PetroResources and Beas Rovuma Energy each hold 10 percent and Thailand's PTTEP 8.5 percent. The Total-led venture is Mozambique's first onshore LNG plant. Italian energy company Eni is leading a project for the Coral South floating LNG project from Area 4 resources in the Rovuma Basin. Eni is also planning an onshore venture with ExxonMobil and other stakeholders but a final investment decision has yet to be taken.

EXXONMOBIL Chairman and Chief Executive Darren W. Woods said the US major was still committed to its Mozambique liquefied natural gas project as well as to other ventures amid further delays, while cutting back immediately in US Permian Basin production. "LNG and gas continues to be a fast growing product and demand for LNG continues to grow," said Woods at a post-earnings briefing for analysts after the company had posted a first-quarter loss of \$600 million with one-time charges. Woods



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said that he believed that LNG would continue to play a key role for the company, which is developing the Area 4 reserves in the Rovuma Basin offshore Mozambique with Italian company Eni and PetroChina. The US major and its partners have already postponed a final investment decision on Mozambique LNG and Woods set no firm date for the venture to advance. "I think if you look at the capital projects that were sanctioned and moving forward, many of those have slowed down, some have been canceled," said Woods. "So I think as we go through this year, there's going to be some things changing around which projects get sanctioned and move forward, what the time frame of those projects are, and then of course the demand will pick back up and we'll see gas continue to grow," he added. "So my suspicion is, we'll see some shifting around in the schedules. But again, the fundamentals are going to require additional LNG. And so I would expect to see that continue to be represented to a fairly large extent in our portfolio," stated the CEO. "We're reducing small capital projects at most of our sites, slowing the pace of some Downstream and Chemical projects and pushing out the development of Mozambique LNG," stated Woods.

ExxonMobil is also transforming the Golden Pass import terminal in Texas into an export plant with majority project partner Qatar Petroleum. It will have 16 million tonnes per annum of output. "As you move around the world, there are different dynamics and challenges and risk associated with different LNG projects, and what we look to do is to make sure that the returns of the specific projects meet our criteria," explained Woods. "And so that's I think how we look at it and you got to kind of separate each one individually and look at it. We've got pretty high standards to make sure that we maintain the returns that we need to as a corporation," he said. In the overall business, Woods said he has noticed a resurgence of ExxonMobil's units in China. "I hope we're surprised with a quick recovery which we have not ruled out, particularly given our ongoing experience in China," said Woods. "While it's still early days, there are some reasons to be cautiously optimistic as signs of demand and economic activity are beginning to pick up in China, with April sales in three of our key businesses back in line with and slightly above the same period last year," he said.

The company had earlier announced a first-quarter net loss, including the include the impacts of two separate non-cash identified items. The first was an adjustment to inventory valuation because of the oil price crash and the charge for the lower market values amounted to \$2.1 billion. "The second item was related to impairments of about \$800M. Market conditions in the first quarter which included significant reductions in both commodity prices and equity markets required an assessment of carrying values for some assets," explained ExxonMobil. "It is important to note that we may see further adjustments during the year or potentially an unwinding of the first quarter impact, depending on changes in commodity prices going forward," the company added. The largest share of the reduction will be in its shale business, specifically, the Permian Basin, where the short-cycle investments are more readily adjusted. ExxonMobil said it had the flexibility to reduce spending in the Permian Basin of West Texas and southeast New Mexico. "Over the course of the year, we expect to ramp rigs down by about 75 percent in the Permian, ending the year at approximately 15 rigs," said Woods. "Our remaining development activity will be focused on Poker Lake in the Delaware Basin, where we are seeing high productivity wells and maintaining a scale advantage. This will include utilization of the recently completed line 1 at the Cowboy Central Delivery Point," he added. "Since most of 2020's production is locked in with the work already completed, the reduction in capital spend will primarily affect 2021 where we expect volumes will be down 100,000 to 150,000 oil equivalent barrels per day from our previous estimates," he explained.

Woods said that a much larger production impact will be associated with shut-ins. He said that with the high production rates of wells in the first two years of operation, it makes economic sense to shut these wells in during very low price environments. "For this reason, we expect to shut in roughly 100,000 oil equivalent barrels per day," he said.

GAZPROM said it was proceeding with the Ust-Luga LNG production plant on the Baltic Coast and was seeking finance for the facility located near Saint Petersburg and which would be the largest in northwest Europe. The Baltic LNG concept proposes the design,

construction and operation of a production plant on the coast about 110 kilometres from the Russian city. The Ust-Luga facility will have capacity of 13 million tonnes per annum of LNG and is going ahead without former partner Royal Dutch Shell. The Anglo-Dutch company formally pulled out of the venture in mid-2019 after Gazprom decided to switch part of the production to a chemical project in the same region. The Gazprom board has just issued a statement saying the construction of the gas and chemicals complex was going ahead and in addition to LNG would produce 4 MTPA of ethane for making chemicals and 2.2 MTPA of liquefied petroleum gas. “It is the anchor project of the major gas processing and chemical cluster that is being established in the region,” said Gazprom. “The basic design solutions for the project, as well as the specifications for feedstock and commercial products, have been agreed upon,” added the company. “Engineering surveys have been fully completed at the construction site, which is currently being cleared and prepared for construction works,” stated Gazprom. “Efforts are underway to attract project financing from Russian and international credit institutions,” Gazprom added.

Before the end of 2020 it is envisaged that orders would be placed for long-lead time equipment and an engineering, procurement and construction contractor for gas processing units and off-site facilities would be appointed as well as a project manager. Gazprom and RusGazDobycha, a special purposes company securing gas supplies for Russia’s chemicals industry, said they expected the various facilities to require the processing of 45 billion cubic metres of natural gas per annum. Gazprom said the two companies expected to put the first LNG Train of the complex into operation in the second half of 2023 and the second Train in late 2024. Gazprom decided in April 2019 that it had changed the configuration of the Ust-Luga plant and this led Shell to withdraw. The project operator will be RusKhimAlyans, another special-purpose company established on a parity basis by Gazprom and RusGazDobycha.

GRTGAZ, the French natural gas network operator and owner of LNG import terminals, has issued a report on gas flows and imports and exports during the Covid-19 crisis and the evolution of consumption and demand as gas-fired

power stations begin to restart. GRTgaz said it noted a gradual recovery in gas consumption by manufacturers and companies connected to its network in April. “Indeed, the impact of the health crisis on industrial consumption, in the order of minus-20 percent in early April gradually diminished throughout the month to reach around minus-10 percent at the end of April,” said GRTgaz. “The average impact for the month of April is around minus-15 percent,” said the company. “Many industrial sites having informed GRTgaz of their shutdown are now in the vast majority resuming activity, total or partial,” explained GRTgaz, which oversees a network comprising 32,548 kilometres of pipelines. “Almost all of France’s combined-cycle gas power stations were shut down in the past couple of months. This situation correlated with demand for electricity, which was declining during the health crisis,” it added.

The nation has 15 CCGTs in various units and GRTgaz said that large amounts of gas were put in storage because of shut-downs and a lack of demand. “We have observed very large injections into storage since the beginning of April. This is a historic monthly record level observed throughout France with more than 26.5 terawatt hours of injections logged,” stated GRTgaz. “The level of send-outs from LNG terminals to the GRTgaz network is also very high, around 900 gigawatt hours per day on average over the second half of April,” said the network operator.

Three of France’s LNG terminals, Fos Tonkin, Fos Cavaou and Montoir-de-Bretagne, are operated by Elengy within the Engie Group and as subsidiaries of GRTgaz. France’s natural gas market, formerly divided into the PEG Nord and PEG Sud, are now unified under the French single trading zone, Trading Region France. GRTgaz added that pipeline natural gas exports are close to the maximum at the Oltingue north-south axis point (to Switzerland and Italy), though are at a more moderate level heading for Spain. The Oltingue axis is in the Haut-Rhin department in Eastern France and now has an additional Val de Saone pipeline that in late 2018 joined up the French gas markets in the North and the South. The French gas network operations are under the auspices of two separate companies, GRTgaz for most of the country and Terega for a portion of southern France. The original GRTgaz analysis was

compiled by Christophe Bouvier, Deputy Director Gas System, Jean-Damien Lenoir and Arnaud Chevillon, Sales Marketing executives and Frédéric Folscheid, a company strategist.

GULF ENERGY Development, a leading Thai power supplier to the Electricity Generating Authority of Thailand (EGAT) and private customers in the country’s main industrial zones, has been awarded government licences along with a partner company to import 1.7 million tonnes per annum of LNG. Gulf Energy said in a statement to the Thailand Stock Exchange in Bangkok that the Energy Regulatory Commission had approved Gulf’s request for an LNG import permit for an initial 300,000 tonnes per annum. Gulf said its licence would be used to supply LNG to 19 of its small-scale power plants. The company said in a separate statement that Hin Kong Power Holding Ltd. also won a licence to import 1.4 million tonnes per annum. The licence awards come as Thailand plans to boost LNG imports with a new terminal near the single operating facility at Map Ta Phut, which last year imported 5 MTPA of LNG, mostly from Qatar and Malaysia.

The 5 MTPA of imports was still 14 percent more than the previous year when 4.4 MTPA was delivered. Analysts noted that such a meagre total, given the country’s economic development and power needs, still makes Thailand the seventh-largest LNG importer in Asia, just behind Pakistan and Taiwan. For the 1.4 MTPA licence Gulf Energy is part of, its stake is 49 percent in Hin Kong Holding, while the Ratch Group holds 51 percent. “ERC has approved a licence in the amount of 1.4 million tons per year, to be used as a fuel for electricity production for Hin Kong Power Project with capacity of 1,400 megawatts, located in the Hin Kong subdistrict in Ratchaburi province and is expected to commence commercial operation in 2024 and 2025,” said the statement signed by Gulf Energy Chief Financial Officer Yupapin Wangviwat. Gulf Energy also has a stake in a new import terminal Thailand is building near the current Map Ta Phut facility in eastern Rayong province. It is a joint venture between Gulf Energy and state-owned Thai oil and gas company PTT.

However, the Thai government has said that the driving force behind the venture would be the state’s Industrial Estate Authority of Thailand (IEAT) and

the new onshore terminal project would be called the Map Ta Phut Phase 3 Project. It is listed as a Public Private Partnership (PPP) joint venture established by the Gulf PTT Tank Consortium and PTT. Gulf Energy would own 70 percent of the terminal project and PTT would hold 30 percent. The Gulf group manages a portfolio of gas-fired and renewable power projects numbering 25 power plants in Thailand. The Map Ta Phut project including a port and the LNG terminal would be built on reclaimed land to facilitate shipments of not less than 5 million tonnes per annum (for LNG terminal phase 1) and up to 10.8 MTPA at a later stage.

ICE, The Intercontinental Exchange and US-based operator of trading in commodity and financial markets, said its North American gas complex and natural gas futures hit an open-interest record of 18.5 million contracts during this current second quarter of 2020 as trading in European and Asian LNG derivatives also jumped. “In ICE’s North American gas complex, dynamic US shale production has stimulated activity,” said the Atlanta, Georgia-based company. “With futures open interest at record levels, up 30 percent year-over-year, market share has increased as commercial traders return to Henry Hub-related hedging in response to increased volatility in the North American market,” ICE explained. These derivatives are purchased and sold by parties such as traders, oil and gas companies and utilities as hedges against rises and falls in physical resource prices.

At the same time as new highs are recorded in North America, ICE said the globalization of natural gas is propelling the growth of the ICE Dutch Title Transfer Facility (TTF) indicators for LNG shipped to Europe and the Japan-Korea Marker (Platts) for Asian spot LNG cargo futures. ICE owns 12 regulated exchanges and platforms and its best-known subsidiary is the New York Stock Exchange. The platform operator stated that the Continental European TTF and the Asian JKM are now “benchmarks relied on by commercial participants” around the world. “As uncertainty has been rising in both supply and demand dynamics across the world, these traders are increasingly utilizing the breadth and depth of liquidity in ICE’s natural gas and oil benchmarks to help manage risk and optimize their natural gas portfolios,” ICE stated.

As a result, ICE said that open interest in TTF futures and options has increased by more than 70 percent year-over-year, while JKM futures and options open interest has more than doubled year-on-year. In May 2020, the JKM hit record open interest of more than 100,000 contracts. “The momentum behind the ICE TTF contract is driven by Europe’s unique role as the global balancing market for LNG which is cementing its utility as a risk management tool for customers to hedge

their natural gas price risk,” ICE explained. “This is leading TTF to become increasingly internationalized, while at the same time, the record growth in the use of JKM futures reflects its increasing prominence as Asia’s natural gas benchmark,” added the markets operator. “We are witnessing TTF evolve into the global benchmark for natural gas, similar to the critical role Brent plays in pricing global oil markets,” said Ben Jackson, President of ICE. “The momentum behind ICE’s gas benchmarks is

attracting more and more participants who are using these benchmarks to manage their exposure to risk at this volatile time,” added Jackson. ICE’s global natural gas complex spans trading hubs from the US and Canada to Europe and Asia, underpinned by an offering of more than 600 financially and physically-delivered contracts. “Open interest in ICE’s US Basis contracts, which are used to manage exposure to natural gas at different delivery points throughout North America, set a series of records

during April and May, and hit a new high of more than 10.1 million contracts on May 1, 2020,” said the company. “ICE offers 60 different basis locations to trade, enabling customers to mitigate their risk at locations across North America,” it added.

JGC HOLDINGS Corp., the leading Japanese LNG and energy engineering firm, has appointed the former executive at KBR of the US, Farhan Mujib, as the company’s new Senior Executive Vice President for JGC’s overseas engineering, procurement and construction business. “Previously, Mujib was President of Hydrocarbons Delivery Solutions for KBR,” said JGC. He joined Brown & Root (currently KBR, Inc.), in 1989, and has held a series of roles with increasing responsibilities in the field of project management. In 2016, he became President of Engineering & Construction (E&C) Americas. Prior to that, he was KBR’s Executive Vice President of Commercial from 2015 to 2016, and also acted as Executive Sponsor for major projects. “Mujib has outstanding experience and knowledge in EPC projects in both the Oil & Gas and Infrastructure fields, as well a strong network of connection with clients and contractors in the engineering business,” said JGC. “As the first non-Japanese top management executive at JGC Corp. he is expected to contribute to the company’s further business expansion,” stated the company, based in Yokohama.

In his formative years, Mujib first gained a B.S. (Civil Engineering) at the University of Engineering and Technology in Lahore, Pakistan, and then gained a masters degree in engineering from the Asian Institute of Technology in Bangkok, Thailand. He subsequently pursued his education in Australia, gaining an MBA from Macquarie University in Sydney and he is also a Fellow of the Institution of Engineers in Australia. In announcing Mujib’s appointment, JGC said it was targeting 670 billion yen (\$6.73Bln) in new orders for fiscal 2020, including 400Bln yen (\$3.7Bln) in overseas oil and gas project work. The Japanese company said it was hopeful of contracts including in Mozambique LNG, the Qatar LNG expansion, Oman’s LNG bunkering project and gas processing work in Saudi Arabia. JGC noted that the slowdown in the industry caused by Covid-19 and the oil prices slump had led to delays in final investment decisions. “Delayed project FIDs have affected overseas oil and gas

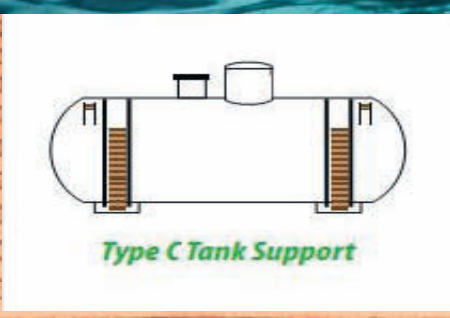


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(Mozambique LNG and Iraq Refinery) and overseas infrastructure (Philippines LNG Receiving Terminal),” said JGC. “Progress in domestic EPC projects is proceeding essentially as planned,” it added.

NATIONAL GRID, owner of the largest European LNG import terminal, the UK Isle of Grain facility located southeast of London, has launched the second phase of an on-going open season during which the market is invited to make bids with less than a month before the deadline. Grain LNG is offering up to 300 gigawatt hours per day (7.2 million tonnes per annum of LNG) of redelivery capacity and 380,000 cubic metres of associated storage, to be made available from mid-2025. “The capacity on offer is a combination of new build and existing capacity which comes out of contract in 2025,” said the company. “UK terminals have seen a considerable increase in utilisation recently as new global supplies have come online and the economics of moving LNG from the Atlantic to the Pacific basin have failed to stack up,” it explained.

The expansion will increase the size of the terminal, located on the Isle of Grain in Kent on the Thames-Medway estuary, to about 1.2 million cubic metres.

“During these unprecedented times, we believe the demand for LNG importation capacity remains strong,” said Nicola Duffin, Commercial Manager for Grain LNG. “The flexibility offered by Grain LNG’s large storage tanks, and the benefit of our location in South East England, means our facility continues to be of interest to market participants,” she added. “We are delighted therefore that we have received the required regulatory approvals to proceed to the next phase. Final and binding bids are required by 15th of June 2020,” stated Duffin. Grain LNG also offers reloads, trans-shipments and a multi-bay facility for reloading road tankers and ISO containers. The National Grid subsidiary also has plans for a marine breakbulk facility. “The Grain LNG terminal is the only terminal in the UK offering small-scale solutions to the market,” it noted.

NAUTICOR, a subsidiary of the Nordic energy company Gasum, has conducted the first ship-to-ship LNG bunkering operation for an LNG-powered product tanker in Germany near the proposed site of the nation’s first LNG import terminal project. The bunkering

operation for the product tanker “Ramelia” was conducted in the port of Brunsbuettel at the river Elbe, where on onshore regasification facility is being developed. The fuelling of the tanker was the first conducted by Hamburg-based Nauticor since Finland’s Gasum acquired it from Germany Linde AG. The receiving vessel “Ramelia” is owned by Sweden-based shipowner Alvtank and is managed by the tanker pool of the Nordic Gothia Tanker Alliance. “Like several LNG bunkering operations before, the operation was conducted under the LNG supply agreement, which was signed by Furetank Rederi, a member of the Gothia Tanker Alliance, and Nauticor in 2018,” Gasum explained.

Christian Nilsson, Managing Director of Alvtank, said that by using LNG as fuel his company was working on reducing the environmental impact through lower emissions and less noise. “Having access to a comprehensive LNG supply network is a prerequisite to do so and we are glad that thanks to the efforts of Nauticor and Gasum the availability of LNG is secured in a growing number of place in Northwest Europe,” added Nilsson. Together with the purchase of Linde’s LNG and biogas business in Scandinavia, the deal to acquire the marine bunkering business of Nauticor was completed by Gasum and the German firm on April 30. “The acquisition of Nauticor is an important step in Gasum’s growth strategy and the successful bunkering of ‘Ramelia’ underlines our commitment to develop the clean marine bunkering business in Northwest Europe, adding Germany to the list of countries we are active in to ensure the availability of environmentally-friendly LNG for our customers,” said Jacob Granqvist, a director for maritime activities at Gasum. The bunkering operation at Brunsbuettel was the second at the Elbe river port after a previous one carried out by Nauticor’s bunkering vessel “Kairos in 2019.

Frank Schnabel, Managing Director at Brunsbuettel Port, said the operation was a further step in making Brunsbuettel a leading LNG hub for German North Sea coastal shipping. “We are pleased to have found a competent partner in Nauticor and we are looking forward to conducting more bunkering operations together,” added Schnabel. The Brunsbuettel LNG import project is a joint venture involving two Dutch companies, natural gas operator Gasunie, global storage company Vopak as well as German energy firm Oiltanking GmbH, a subsidiary of the

Marquard & Bahls AG of Hamburg. Germany is the only major European Union nation without LNG import facilities and has come under political pressure from partners in Brussels and other allies to accept North American LNG in competition to Russian pipeline gas as part of the EU bloc’s energy security policy. The terminal’s business model is characterised by the provision of multi-purpose services as well as open access to terminal capacity. Brunsbuettel has huge LNG bunkering potential with several overlapping shipping markets on the Elbe River, the Kiel Canal and the port of Hamburg.

NEXTDECADE, developer of the US Rio Grande LNG project, issued a corporate update saying it has resources to maintain operations through 2021 and has delayed its final investment decision until next year on the venture proposed for the Port of Brownsville in Texas. NextDecade, listed on the Nasdaq global exchange, said the Covid-19 pandemic was affecting current LNG market conditions. “Considering this change in the expected timing of FID, NextDecade has implemented measures to manage costs which the company believes will ensure that it has sufficient pre-FID liquidity to operate through year-end 2021,” said the Houston-based company. “The long-term fundamentals of the global LNG market and the Permian and Eagle Ford producing basins that will supply RGLNG have not changed,” said the company. “NextDecade continues to progress LNG opportunities with a significant number of prospective customers that reflect the global nature of the LNG business and with US producers interested in supplying natural gas,” it added. The company noted that RGLNG has 20-year sale and purchase agreement with Royal Dutch Shell for 2 million tonnes per annum.

NextDecade believes it can achieve FID with an additional 9 MTPA of RGLNG capacity sold under long-term contracts. “Our balance sheet is strong, we have no debt outstanding, and the long-term fundamentals for our Rio Grande LNG project remain firmly intact,” said Matt Schatzman, NextDecade’s Chairman and Chief Executive. “This solid foundation, together with our sustained regulatory, engineering and commercial progress, positions the company and our Rio Grande LNG project extremely well for when global market conditions improve,” added

Schatzman. NextDecade said the project was “shovel ready” and has extended the engineering, procurement, and construction contract price validity with Bechtel of the US. The delays come amid progress main on other fronts such as regulatory issues and selling the associated Rio Bravo Pipeline to Canadian company Enbridge Inc.

NextDecade entered into an agreement to sell 100 percent of the equity interests in the Rio Bravo Pipeline for a purchase price not to exceed \$25million. The company has entered into precedent agreements with Enbridge that provide NextDecade with rate, volume and schedule certainty consistent with its plans. “Pursuant to the agreements, Enbridge will provide natural gas pipeline transportation services on Rio Bravo Pipeline and Valley Crossing Pipeline to supply natural gas to the RGLNG facility for a term of at least 20 years,” said NextDecade. The Brownsville Navigation District of Cameron County in Texas has also amended the site lease agreement for the project. “The lease amendment extends the effective date for commencing the lease to May 6, 2021, and further provides that RGLNG has the right to extend the effective date to May 6, 2022,” said NextDecade. It said it would pursue cost-cutting and at the end of March it had \$58 million in cash. Current assets less accounts payable and accrued liabilities totaled around \$47M and there was no debt outstanding.

PETROCHINA, the Hong Kong-listed arm of China National Petroleum Corp. and with LNG project stakes in Mozambique and Canada, has swung to a first-quarter loss because of the effects of the coronavirus and as its own oil and natural gas output increased in a low-demand period. The state-controlled Chinese major reported a net loss for the first three months of 2020 of 16.23 billion yuan (\$2.29 billion) versus a profit of 10.24Bln yuan (\$1.44Bln) in the prior-year quarter. PetroChina’s revenues fell by 14.4 percent to 509 billion Chinese yuan (\$79.9Bln), according to its earnings statement filed with the Hong Kong Stock Exchange. Crude oil production rose 4.2 percent to 232.7 million barrels and natural gas output increased 8.7 percent to 1,086.9 billion cubic feet. “The increase in output was driven by new oil and gas capacity built in 2019,” said PetroChina. “Facing a severe and complicated economy and operational situation both abroad and domestically, the group

faithfully acted out the new concept of development, pushed ahead with quality-based development, paid more attention to green and low-carbon development and digital transformation as well as the value creation,” it added.

PetroChina’s managing company CNPC imports pipeline natural gas from Central Asian countries and Russia as well as LNG from projects such as the Yamal plant in Siberia and from PetroChina LNG agreements. The Chinese major is additionally part of Royal Dutch Shell’s LNG Canada project under its own name PetroChina and has a stake in the Area 4 reserves in the Rovuma Basin offshore Mozambique with Italian company Eni and ExxonMobil. PetroChina also operates three important Chinese LNG import terminals at Dalian and Tangshan in the northeast of the country and at Rudong in the central Jiangsu province in the coastal area near Shanghai. PetroChina also receives natural gas pipeline supplies from Turkmenistan, Kazakhstan and Uzbekistan. “The production and sales plans for the first quarter were set in advance and lagged behind in terms of adjustment,” stated the company.

In response to the coronavirus pandemic and record-low oil prices, PetroChina said it would aim to “dynamically optimise” and adjust spending this year from a previously planned 295Bln yuan (\$41Bln). Its exploration and production business recorded a 14.88Bln yuan operating profit in the first quarter, up 3.9 percent and was helped by an 8.9 percent cut in operational costs. PetroChina's crude oil throughput at refineries fell by 9.6 percent to 276.5 million barrels, or 3.04 million barrels per day, due to the coronavirus pandemic. Sales of refined oil products, including gasoline, diesel and kerosene, fell 15.9 percent to 3,547.8 tonnes, reducing profits by around 20.11 billion yuan (\$2.84Bln).

PETRONAS, Malaysia’s national energy company, has signed a sales and purchase agreement for an LNG tank filling facility at Sarawak, the Malaysian state on the island of Borneo, for onward shipment to China in ISO containers. The Malaysians signed the SPA with Tiger Clean Energy Ltd via a video teleconference because of the Covid-19 travel restrictions. Petronas will supply Tiger Clean Energy at Bintulu in Sarawak, the location of the Malaysian LNG export plant. LNG supplied in the

ISO containers would subsequently be distributed to remote locations in China out with the pipeline grid, which is a widespread service for Chinese gas users supplied by truck. Petronas said the latest contract underpinned its reliability in supplying many Asian countries with LNG and since the Bintulu plant began operations in 1983, the company has delivered 11,000 LNG cargoes.

Malaysia is also a pioneer of floating LNG production from hulls deployed offshore over stranded gas fields. The Petronas LNG hull, “PFLNG Satu”, became the world’s first FLNG vessel to start commercial operations in 2017 over the Kanowit gas field offshore Sarawak. It has now been moved to a location 90 kilometres offshore Sabah, the Malaysian state on the northern part of the island of Borneo, for production at the Kebabangan cluster field. The “PFLNG Satu”, which operates with a crew of 155 onboard, started its new production from the Kebabangan field with feed-gas being transported to the “PFLNG Satu” turret system via a five-kilometres-long flexible pipeline. The next Petronas FLNG venture involving the “PFLNG Dua” will be at the deepwater Rotan gas field, also offshore Sabah. A naming ceremony for the “PFLNG Dua” was held in November 2019 at the Samsung Heavy Industries shipyard near the port of Busan in South Korea. The event was attended by the then Malaysian Prime Minister Mahathir Mohamad and his wife.

SAMSUNG Heavy Industries, the third-largest South Korean shipbuilder, posted a widening of net losses in the first quarter of 2020, while reporting that the floating LNG production vessel for the Coral project offshore Mozambique was now half completed. The company also report steady order book progress with three received in the quarter and two more in April. The “ENI Coral FLNG” vessel for the project led by Italian energy company Eni is scheduled to be delivered in 2022 and was said by SHI to be already 47 percent completed. When deployed offshore Mozambique over the Coral South gas field, the FLNG unit will produce 3.3 million tonnes per annum. Coral FLNG is the African nation’s most advanced project with the other two being onshore joint ventures, one led by French major Total and the other by ExxonMobil, with Eni and PetroChina as principal partners.

SHI said that from January to March, its losses amounted to 227 billion won

(\$185 million), more than double the losses of 102.6 billion won (\$83.7M) recorded in the same three months a year ago. The shipbuilder said the South Korean currency’s weakness against the US dollar drove up the evaluation losses from its forward exchange contracts taken out for reselling five drilling ships. Operating losses widened to 47.8Bln won (\$39.0M) from a loss of 33.3Bln won (\$27.2M) a year ago. SHI noted that in April 2020, after the first quarter, it received a 253.6 billion-won (\$208M) order to build two very large crude oil carriers for an unnamed Bermuda-based shipping company. It had received orders for three shuttle tankers during the first quarter. SHI had a new orders backlog of US\$21Bln as of March 2020, including 98 commercial vessels.

As well as being Korea's third-biggest shipbuilder, behind Hyundai Heavy Industries and Daewoo Shipbuilding and Marine Engineering, who are in the midst of a merger process, SHI is the seventh largest in the world. The SHI orderbook list comprises 21 LNG carriers (\$7.7Bln), 19 container ships (\$2.4Bln) and 37 tankers, (\$2.7Bln) as well other ships. The full total was \$13.3Bln in orders. In the offshore division the orders for drilling rigs and offshore platforms amounted to \$7.7Bln.

SAUDI ARABIAN Oil Co (Saudi Aramco), the biggest crude oil production company and partly responsible for swamping the globe with oil supplies amid a demand plunge, reported a 25 percent drop in first-quarter net income to \$16.7 billion from \$22.21Bln in the prior-year quarter. The Saudi price war with Russia in March 2020 sparked the worldwide drop in oil prices and along with the Covid-19 pandemic caused the energy sector to suffer from earnings erosion across all sectors, including LNG. “The Covid-19 crisis is unlike anything the world has experienced in recent history and we are adapting to a highly complex and rapidly changing business environment,” said Saudi Aramco President and Chief Executive Amin H. Nasser. “Aramco has demonstrated resilience during economic cycles and has an unparalleled position due to a strong balance sheet and low-cost structure,” he added. “We have delivered solid earnings with robust free cash flow, despite weak energy demand and low oil prices. We remain committed to the safety of our people while delivering on our long-term value creation strategy for all of our

shareholders,” stated Nasser. “During the first quarter, we took steps to further optimize our planned 2020 capital spending and identified opportunities to improve operational productivity,” he explained. “We retain significant flexibility to adjust expenditures and have considerable experience in managing the business through times of adversity,” he added. “Looking ahead to the remainder of 2020, we expect the impact of the Covid-19 pandemic on global energy demand and oil prices to weigh on our earnings,” the CEO continued. “Longer term we remain confident that demand for energy will rebound as global economies recover,” stated Nasser.

Saudi Aramco had previously said it was aiming to enter the natural gas and LNG markets in the next couple of years and one of its subsidiaries has an accord to invest in Semptra Energy Port Arthur LNG export plant and to buy offtake. While most global companies are cutting spending, Saudi Aramco is maintaining its Capex levels for now. “First-quarter capital expenditures were \$7.4 billion, compared to \$7.2Bln for the same period in 2019,” said the company. “In light of market conditions and recent commodity price volatility, the company continues to expect capital spending for 2020 to be between \$25 billion and \$30 billion. Capital expenditures for 2021 and beyond remain under review,” stated Saudi Aramco. “Under challenging market conditions, Aramco maintained its pre-eminence in oil and gas production,” it added. Aramco, through its wholly owned subsidiary Aramco Gulf Operations Co. (AGOC), resumed operations at Al-Khafji Joint Operations. AGOC operates in the offshore partitioned territory between the Kingdom of Saudi Arabia and the State of Kuwait, with the Saudis owning 50 percent of the venture. During the quarter, the Fadhili Gas Plant increased its processing capacity from 1.5 billion standard cubic feet per day (bscf/d) at year-end 2019 to reach 2.0 bscf per day during the first quarter of 2020. “Progress remains on track and the plant is expected to reach full capacity of 2.5 bscf/d this year,” said Saudi Aramco.

SHELL has sold its shale-gas assets in the Appalachian Basin of Pennsylvania for \$541 million as it moved to reorganize its global business as it prepares for the recovery from the oil price slump. Shell said it reached an agreement with the New York Stock Exchange-listed US

energy company National Fuel Gas Company and its subsidiaries, Seneca Resources, National Fuel Gas Midstream and NFG Midstream Covington, to sell its acreage. The transaction includes the transfer of 450,000 net leasehold acres across Pennsylvania, with around 350 producing Marcellus and Utica wells in Tioga County and associated facilities. The current net production is 250 million standard cubic feet of natural gas per day. The transaction also includes the transfer of the Shell-owned and operated midstream infrastructure. The sale is subject to regulatory approvals and expected to close by end of July 2020.

Shell said it was still interested in shale resource investment, though was seeking more profitable assets. The Anglo-Dutch company explained that the NFG Marcellus and Utica shale transaction was part of divesting non-core assets and in line with Shell's Shales strategy which focusses on development of higher margin, light tight oil assets. "Divesting our Appalachia position is consistent with our desire to focus our Shales portfolio," said Wael Sawan, Upstream Director at Shell. "While we maximize cash in the current environment, our drive for a competitive position in Shales continues," added Sawan. "It is a core part of our Upstream portfolio along with the Deep Water and Conventional oil and gas businesses," he said.

Shell's latest results show that first-quarter profits had almost halved from a year ago, but the natural gas and LNG division still managed to maintain stable

earnings as sales increased. The company's quarterly LNG sales rose 9 percent to 19 million tonnes from 17.51MT in the same three months of 2019. However, Shell's overall quarterly earnings dropped by 48 percent to \$2.75 billion from \$5.29Bln in the same three months of 2019, reflecting the lower prices.

SINOPEC, the largest Chinese owner of oil refiners and which has been seeking to increase US LNG volumes to match its Australian supplies, reported a heavy first-quarter loss. Sinopec, formally called China Petroleum and Chemical Corp., reported a quarterly loss of 19.15 billion yuan (\$2.70Bln) compared with a profit of 14.76Bln yuan (\$2.08Bln) in the same quarter in 2019 as the coronavirus that started in China in January led to much reduced sales and prices. Sinopec said its refinery throughput dropped by 13 percent year-on-year to 53.74 million tonnes, or about 4.31 million barrels per day as the coronavirus wiped out demand in China for refined oil products.

Sinopec said its oil refining division alone lost 25.8 billion yuan (\$3.64Bln) in the first three months of 2020.

The company said its realised natural gas prices averaged \$6.43 per thousand cubic feet, down 9.2 percent from the same three months of 2019. Before the US-China trade dispute worsened last year and led to a halt in US LNG exports to China, Sinopec was said to have been considering signing a long-term supply agreement with Cheniere Energy, the largest US exporter. Sinopec, which plans to more than double its LNG receiving capacities to 41 million tonnes by 2025, currently operates three import terminals and is a partner of US major ConocoPhillips in the Australia-Pacific LNG production plant in Queensland.

The Chinese company operates three terminal at Qingdao in Shandong province, the Tianjin North terminal east of Beijing and the Beihai LNG facility in the Guangxi autonomous region bordering Vietnam. Sinopec's plans include expanding the Tianjin terminal, which supplies Beijing, to have a capacity to handle 12 million tonnes per annum of imports. Sinopec said utilisation rates at its refineries have been resuming after touching a low of 65 percent in February. Its crude oil production in the first quarter was little changed from a year ago at 70.65 million barrels, while natural gas output dropped by 2.4 percent to 249.68 billion cubic feet.

SOUTH KOREAN shipyards, the leading builders of LNG carriers, have received only half the orders they brought in a year ago because of the worldwide lockdowns as China moved ahead in terms of shipbuilding orders for a second straight month. The country's three largest shipbuilders, Korea Shipbuilding & Offshore Engineering (formerly Hyundai Heavy Industries), Samsung Heavy Industries and Daewoo Shipbuilding & Marine Engineering, received a combined \$2.1 billion of new vessel orders in the January-March quarter of 2020. In cash terms, KSOE landed contracts worth \$1.2 billion, Samsung Heavy \$500 million and DSME \$400 million. The amount is about 6 percent of the annual target, more than halved from 13 percent achieved a year ago. The thinning in the order book has been caused by the coronavirus that has made demand crash, particularly from buyers of LNG carriers in Europe and for new liquefaction projects where final investment decisions have stalled.

Korean shipyards have been preparing to compete for large LNG vessel orders in the second quarter, including 40 to 80 LNG carriers from Qatar, 16 LNG carriers in Mozambique, and 10 LNG vessels from Russia. Qatar Petroleum has already directed a huge order to the Chinese Hudong-Zhonghua yard in April, reserving LNG ship construction capacity to support expansion projects and to replace older vessels. The Qataris say the China LNG reservations will be worth around \$3 billion for 16 LNG carriers. The combined value of the 106 LNG carriers from the three projects is estimated to be worth \$21.2Bln. The Korean yards, KSOE, Samsung Heavy and DSME won orders in April 2020 totaling 230,000 compensated gross tons (CGTs) to build eight ships, trailing far behind Chinese shipbuilders who were awarded 730,000 CGTs in orders to build 38 vessels, according to London-based Clarkson Research Services Ltd..

Russia was the No. 3 shipbuilding nation after its shipbuilders secured 65,000 CGTs in orders in April to build seven vessels, followed by Japan with 55,000 CGTs in orders for two vessels. China has been the dominant force for newbuilds this year, taking up 61 percent of shipbuilding orders placed around the globe in the first four months of 2020 and South Korea was second with 17 percent. Even amid the Covid-19 virus and economic shutdowns, global shipbuilding orders increased worldwide for a second

straight month to 1.14 million CGTs in April, up from 890,000 CGTs in March. In terms of order backlog, China is leading the list with 26.3 million CGTs, or 36 percent of the market, followed by South Korea with 20.77 million CGTs and Japan with 10.48 million CGTs.

TC ENERGY was closing the sale by June of a majority stake in the Coastal GasLink Pipeline to two equity funds is offering 20 Canadian First Nations a 10 percent share of the project to bring feed-gas for LNG processing on the Pacific Coast of British Columbia. TC Energy, one of the leading North American pipeline companies, signed an equity purchase agreement to sell a 65 percent interest in Coastal GasLink to KKR-Keats Pipeline Investors II (Canada) Ltd. (KKR) and a subsidiary of Alberta Investment Management Corp. (AIMCo). "The sale is expected to close in the second quarter of 2020 subject to customary regulatory approvals and consents," said TC Energy in its latest earnings. "As part of the transaction, we will be contracted by the Coastal GasLink Pipeline Limited Partnership to construct and operate the pipeline," explained TC Energy.

TC Energy explained that it was also committed to working with the 20 First Nations that have executed agreements with the Coastal GasLink to provide them with an opportunity to invest in the project. "As a result, in conjunction with the equity purchase agreement, we will provide an option to the 20 First Nations to acquire a 10 percent equity interest in Coastal GasLink on similar terms to what has been agreed with KKR and AIMCo," said the Calgary, Alberta-based company. TC Energy said construction activities continue along the Coastal GasLink pipeline route with about 75 percent of clearing completed and approximately 35 percent of pipe stockpiled. "Major work is now complete for the winter season with crews waiting to remobilize following spring breakup," said the company. TC Energy is developing the 670-kilometre (416-mile) Coastal GasLink pipeline to deliver natural gas across northern British Columbia. The pipeline will supply feed-gas from the Dawson Creek area to a facility near Kitimat, where the Royal Dutch Shell-led LNG Canada venture currently under construction will prepare it for export to global markets.

Other future LNG projects could also benefit from the pipeline supplies. TC Energy additionally disclosed that on

Diary of events

July

FLAME natural gas and LNG conference

6 - 7 July 2020

Hotel Okura, Ferdinand Bolstraat
333, Amsterdam, The Netherlands
<https://informaconnect.com/flare-conference/>

September

Gastech Exhibition & Conference 2020

8 - 10 September 2020

Singapore EXPO, 1 Expo Drive,
Singapore
<https://www.gastechevent.com/>

December

23rd World Petroleum Congress

6 - 10 December 2020

George R. Brown Convention Center
1001 Avenida De Las Americas,
Houston, Texas, USA
<https://www.wpc2020.com/>

April 28, 2020, Coastal GasLink Pipeline Limited Partnership (including KKR and AIMCo) executed a credit agreement with a syndicate of banks extending non-recourse project-level financing to fund the majority of the construction costs of the Coastal GasLink. “The credit facilities under this agreement will be available to be drawn once conditions precedent have been met, including the closing of the equity purchase agreement with KKR and AIMCo,” said TC Energy. “Draws on these facilities will reduce partner contributions required to fund the project,” it added. “Under the terms of the equity purchase agreement, we will receive upfront proceeds that include reimbursement of a 65 percent proportionate share of project costs incurred to the date of closing as well as additional payment streams through construction and operation of the pipeline,” explained TC Energy. “We expect to record an after-tax gain of approximately C\$600 million (US\$423M) upon closing of the transaction which includes the gain on sale, recognition of previously unrecorded tax benefits and the required revaluation of our 35 percent retained ownership to fair value, before considering derivatives,” it added.

The company said that while the project has been designated an essential service by the BC provincial government, it anticipates that changes in work practices and other restrictions put in place by government and health authorities in response to Covid-19 may have an impact on its progress, though the extent of the effects are uncertain at this time. In the earnings statement, TC Energy posted increased first-quarter net income to C\$1.15 billion (US\$810 million) compared with C\$1.0Bln for the same period in 2019. Revenues for the first three months of 2020 were C\$3.41Bln, little changed from the C\$3.48Bln reported in the prior-year period. “We are living in unprecedented times with the Covid-19 pandemic having a significant impact on millions of people around the world,” said Russ Girling, TC Energy’s President and Chief Executive. “Business continuity plans were implemented across all of our operations in early March and we continue to effectively operate our assets and execute on our capital programs which are essential to meeting the energy needs of people across North America,” he added. “The availability of our infrastructure has remained largely unimpacted by recent events with utilization levels robust and in line with

historical norms,” stated the CEO. “With approximately 95 percent of our comparable EBITDA generated from regulated assets and/or long-term contracts, we are largely insulated from short-term volatility associated with volume throughput and commodity prices,” said Girling.

TELLURIAN Inc., the developer of the US Driftwood project near Lake Charles, has raised some additional institutional investor funds to give it more time to secure offtake deals such as one proposed with Indian company Petronet LNG. Tellurian, founded by former Cheniere Energy Chief executive Charif Souki, said it executed an agreement to sell \$56 million of zero-coupon, unsecured notes for gross proceeds of \$50 million. The deal secures the unnamed lender with warrants to purchase up to 20 million shares of Tellurian common stock, subject to customary closing conditions.

In conjunction with this financing, Tellurian has also entered into an agreement to amend its 2019 term loan, including a reduction of the principal amount by \$17.1M. “The agreement provides for a paydown of \$2.1M in cash, converts \$15M of principal value into equity through the issuance of approximately 9.3 million shares to the lender, and provides the lender with warrants to purchase up to approximately 4.7M shares,” explained the company. Tellurian said its unaudited cash and cash equivalents balance for the financing transaction would have been approximately \$100.7M as of March 31, 2020. The Driftwood plant is proposed for the west bank of the Calcasieu River, south of Lake Charles in Louisiana, and with output of just over 26 million tonnes per annum. Tellurian has also been negotiating with Petronet on an equity investment in the project of to \$2.5 billion as well as 5 MTPA of supplies.

The plant construction has been contracted to Bechtel Inc. and the economics are for LNG to cost \$560 per tonne, making it possible for Tellurian to load a cargo at the cost of \$3-\$4 per million British thermal units. Tellurian President and Chief Executive Meg Gentle explained the purpose of the latest financing transactions. “Tellurian is building cash reserves during this challenging time in global markets, positioning for a strong emergence from Covid-19 restrictions,” said Gentle. “We remain bullish on long-term natural gas

demand growth, underscoring the acute need for Driftwood LNG,” she added. Tellurian announced spending cuts in March 2020 said it was still confident that when travel restrictions were eased it would be able to finalize several negotiations to complement the Petronet accord and allow for a final investment decision.

The Houston-based company has said that the fundamental business opportunity of Tellurian continues to rely on low-cost US natural gas and a premier location on the Gulf Coast. French major Total has also agreed to the purchase of 1 million tonnes of LNG and the purchase of an additional 1.5 MTPA of LNG from Tellurian’s offtake volumes from Driftwood. Total additionally agreed to purchase about \$200M of Tellurian common stock, bringing its aggregate investment in the Tellurian portfolio to approximately \$907M upon a final investment decision for Driftwood. The Federal Energy Regulatory Commission has also started the pre-filing process for one of its affiliated pipeline projects, the Permian Global Access Pipeline (PGAP), a 625-mile, 42-inch interstate natural gas pipeline proposed from the Waha Hub in West Texas to near Lake Charles.

TEXAS LNG Brownsville, the mid-scale export plant proposed by industry veterans Vivek Chandra and Langtry Meyer, has been handed a ruling by the Texas Commission on Environmental Quality that it would issue an air permit allowing the construction and operation of the liquefaction facility. The project is one of three being developed around the South Texas port and will be built on a 625-acre site located on the Port of Brownsville’s deepwater ship channel near plentiful natural gas supplies and pipelines. Texas LNG plans to ship 4 million tonnes per annum of cargoes to established and emerging markets. “We appreciate the hard work and effort from TCEQ and are pleased to have reached this important achievement that paves the way for a 2021 final investment decision and construction of an LNG facility consistent with all air emission regulations,” said the project’s joint founder Chandra who is Chief Executive. “Though current LNG markets are unusual in terms of pricing and supply dynamics, Texas LNG is confident that its low-cost, flexible commercial model, and realistically-sized production volumes will be key differentiators, ideally suited for global customers when operations

begin in 2025,” explained the CEO.

The other two projects planned for the Brownsville Ship Channel area are Rio Grande LNG run by Houston-based NextDecade Corp. and Annova LNG whose backers include Chicago-based power company Exelon Corp. The Rio Grande venture plans to produce 27 MTPA while Annova is aiming for 6.95 MTPA. Langtry Meyer, the other co-founder of Texas LNG Brownsville and who is Chief Operating Officer said his company was committed to operating in an environmentally responsible manner. “This includes the use of electric motors instead of conventional gas turbine compressors to minimize air emissions, making the facility one of the world’s cleanest LNG liquefaction plants,” Meyer explained. “By delivering clean, safe, low-cost Texas natural gas energy to our customers around the world, Texas LNG can contribute to a cleaner global environment,” he stated. The TCEQ air permit adds to the November 2019 authorization from the Federal Energy Regulatory Commission to proceed with the project. Other permits received include one from Department of Energy to export US-sourced LNG to any country with which trade is not prohibited by federal law or policy. Texas LNG will aim to source low cost and abundant Permian Basin feed gas using third-party pipeline infrastructure and an efficient modular construction design for the plant.

THE LNG MARINE Fuel Institute formed in Australia to help improve access to bunkering has praised the first move by the Pilbara Port Authority in Western Australia. MFI Chief Executive Margot Matthews said Pilbara Port and Woodside had executed non-exclusive licences to provide ship-to-ship LNG bunkering services at the ports of Port Hedland and Dampier, the first licences of their type issued in Australia. “Since 2017 LNG MFI has worked to bring together key players to develop a cleaner marine fuel industry in Australia as we lower emissions for a better future and it’s exciting to see this now moving full steam ahead,” Matthews explained. LNG MFI is an independent not for profit organisation established to enable LNG, the cleanest alternative available, to be a primary fuel for marine transportation. The body is also supporting the plans by commodities giant BHP to use LNG as fuel for future iron ore carriers on the Australia-Asia trade route. LNG MFI’s position is that Australia can meet and

exceed the new International Maritime Organization 2020 regulations by establishing early adoption of LNG as a transition marine fuel and providing the Australasian maritime industry with a superior and cost effective fuel source

Pilbara Ports Authority's General Manager Development & Trade, Lyle Banks, said the Authority has issued three licences for LNG bunkering operations in the Pilbara. "In addition to Woodside's ship-to-ship licences, a truck-to-ship LNG bunkering licence was issued to Evol LNG in early 2017," added Banks.

"Western Australia is well-placed to become an LNG bunkering hub, with LNG production facilities close to large iron ore mining operations and the many hundreds of ocean-going vessels that use ports in the Pilbara region," stated banks.

Woodside Executive Vice President Marketing for Trading and Shipping, Reinhardt Matisons, described working with Pilbara Ports Authority to finalise LNG bunkering licences "as a key step in developing an LNG fuels industry" in Western Australia. "Woodside is finalising plans for an LNG bunkering operation in the Pilbara to capture the significant environmental and economic benefits of using LNG, instead of fuel oil, for the busy iron ore shipping trade," added Matisons. "We continue to work with potential customers on this opportunity," he said. LNG MFT's CEO Matthews expects Australia to play a leading regional role in LNG fuel. "While there's no single pathway to a low emissions future, expanding the use of LNG as a transition marine fuel is one way to help reduce greenhouse gases from shipping and help reduce this country's environmental footprint," said Matthews.

TOTAL, the French energy major, said it would not complete the purchase of the African assets in Algeria and Ghana of Occidental Petroleum of the US, while it has finalized the acquisition of Mozambique LNG and a South African offshore licence under the same original deal. Total had entered into a Purchase and Sale Agreement (PSA) to acquire Anadarko Petroleum's assets in Africa in May 2019 during the takeover of Anadarko by Occidental. "Under this agreement, Total and Occidental have since completed the sale and purchase of the Mozambique and South Africa assets," explained Total. "The PSA provided that the sale of the Ghana assets was conditional upon the completion of the Algeria assets' sale," added the French

company. "Occidental has informed Total that, as part of an understanding with the Algerian authorities on the transfer of Anadarko's interests to Occidental, Occidental would not be in a position to sell its interests in Algeria," said Total.

Total stated that given the "extraordinary market environment" and the lack of visibility that the group faces, and in light of the non-operated nature of the interests of Anadarko in Ghana, Total has decided not to pursue the completion of the purchase of the Ghana assets. "This decision not to pursue the completion of the purchase of the Ghana assets consolidates the group's efforts in the control of its net investments this year and provides financial flexibility to face the uncertainties and opportunities linked to the current environment," said Patrick Pouyanné, Total Chairman and Chief Executive. The Total Occidental-Total side deal during the Anadarko takeover was valued at \$8.8 billion in the event of all the assets being transferred. The new value has not been disclosed.

Total completed the Mozambique deal giving it a 26.5 percent participating interest and operatorship in Area 1 of the Rovuma Basin where a 12.8 million tonne per annum LNG project has been sanctioned. Area 1 contains more than 60 trillion cubic feet of natural gas resources, of which 18 Tcf will be developed with the first two-Train LNG project which, according to analysts, is now expected to come into production by around 2025 or 2026 at the earliest. In South Africa, Total took over Anadarko's exploration licences, close to Total's recent offshore Brulpadda discovery. However, the assets now remaining on the sales block are the 24.5 percent participating interest and operatorship of blocks 404a and 208 of the Hassi Berkine, Ourhoud and El Merk fields in the Berkine Basin of Algeria in which Total already holds 12.25 percent. Total is also canceling its acquisition of a 27 percent participating interest in Ghana's Jubilee oil field and a 19 percent share of the Tweneboia Enyenra Ntomme (TEN) oil field.

US Government forecasts show that the nation's liquefied natural gas exports will decline by around 17 percent as 2020 progresses, while overall natural gas output will also drop and nationwide storage will be at record levels by November. LNG exports are expected to decline from an average 5.8 billion cubic feet per day in the second quarter to 4.8 Bcf per day in the third quarter as a

result of lower expected global demand for cargoes, according to the short-term outlook of the US Energy Information Administration. In cargo terms this would amount to a second-quarter total of about 12 cargoes per week declining to around nine shipments per week in the third quarter, on an average cargo containing 3.6 Bcf of weekly gas production.

In the latest weekly LNG export figures for April 30 to May 6, the EIA had reported 15 cargoes departing from five of the six LNG plants (Sabine Pass, Corpus Christi, Freeport, Cameron and Cove Point) with a combined LNG-carrying capacity of 54 Bcf, or 3.6 Bcf per vessel. The EIA also expects natural gas production to decline, led by the associated-gas output from the Permian Basin of West Texas and southeast New Mexico and the Marcellus and Utica Shales of the northeast US. "US dry natural gas production set a record in 2019, averaging 92.2 Bcf per day," said the EIA. "The EIA forecasts dry natural gas production will average 89.8 Bcf/d in 2020, with monthly production falling from an estimated 93.1 Bcf/d in April to 85.4 Bcf/d in December," said the agency.

Natural gas production declines the most in the Appalachian region and the Permian Basin. "In the Appalachian region, low natural gas prices are discouraging producers from engaging in natural gas-directed drilling, and in the Permian region, low oil prices reduce associated gas output from oil-directed wells," explained the EIA. "In 2021, forecast dry natural gas production averages 84.9 Bcf/d, rising in the second half of 2021 in response to higher prices," it added. The EIA additionally forecasts that total US working natural gas in storage ended April 2020 at 2.3 trillion cubic feet (Tcf), 20 percent more than the five-year (2015-2019) average.

In the forecast, inventories rise by 2.1 Tcf during the April through October injection season to reach almost 4.2 Tcf on October 31, which would be a record level. In April, the Henry Hub natural gas spot price averaged \$1.73 per million British thermal units and the EIA forecasts that prices will generally rise through the rest of 2020 as production declines. "Henry Hub natural gas spot prices will average \$2.14/MMBtu in 2020 and then increase in 2021, reaching an annual average of \$2.89/MMBtu," said the report. The EIA expects total consumption of natural gas to average 81.7 billion cubic feet per day (Bcf/d) in 2020, down 3.9 percent from the 2019

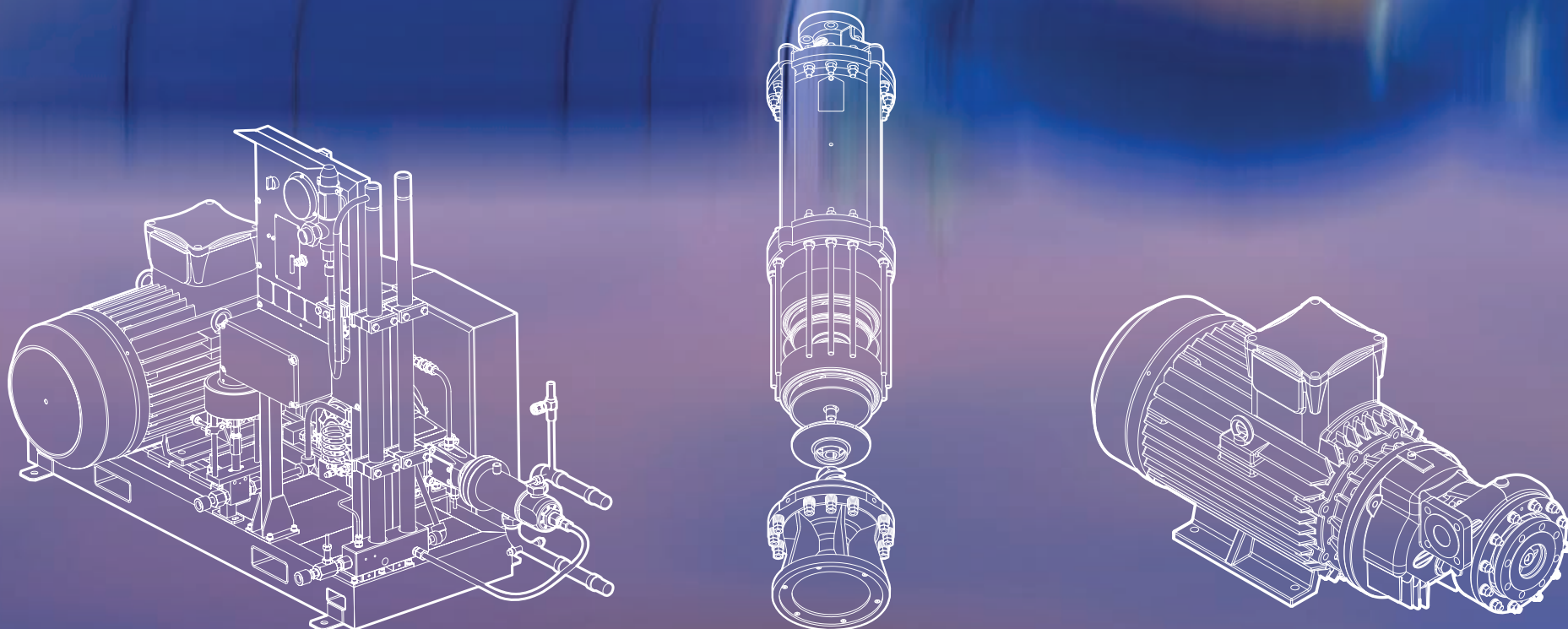
average, primarily because of lower industrial sector consumption of natural gas. "EIA forecasts industrial natural gas consumption to average 21.3 Bcf/d in 2020, down 7.1 percent from 2019 as a result of lower expected manufacturing activity," said the report.

"This expected decline is lower than the 0.3 percent decline forecast in the April Outlook because of large downward revisions to the macroeconomic forecast in the May Outlook," it added. In its crude oil report, the EIA forecasts Brent North Sea oil prices will average \$34 per barrel in 2020, down from an average of \$64 per barrel in 2019. EIA expects prices will average \$23 per barrel during the second quarter of 2020 before increasing to \$32 per barrel during the second half of the year. It then expects that Brent prices will rise to an average of \$48 per barrel in 2021, \$2 per barrel higher than forecast last month, as the EIA expects that declining global oil inventories next year will put upward pressure on oil prices. EIA estimates global petroleum and liquid fuels consumption averaged 94.1 million barrels per day in the first quarter of 2020, a decline of 5.8 million b/d from the same period in 2019.

"It expects global petroleum and liquid fuels demand will average 92.6 million b/d in 2020, a decrease of 8.1 million b/d from last year, before increasing by 7.0 million b/d in 2021," said the report. "Lower global oil demand growth for 2020 in the May STEO reflects growing evidence of significant disruptions to global economic activity along with reduced expected travel globally as a result of restrictions related to Covid-19," it added. The EIA has revised its current forecast of domestic crude oil production down from the April Outlook as a result of lower crude oil prices. It forecasts US crude oil production will average 11.7 million b/d in 2020, down 0.5 million b/d from 2019. "In 2021, the EIA expects US crude oil production to decline further by 0.8 million b/d. If realized, the 2020 production decline would mark the first annual decline since 2016," stated the report. "US crude oil production has not declined for two years in a row since the 17-year period of declines beginning in 1992 and running through 2008," it noted. "Typically, price changes affect production after about a six-month lag. However, current market conditions will likely reduce this lag as many producers have already announced plans to reduce capital spending and drilling levels," it explained. ■

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European regasification is at crossroads but plans point five years ahead after regional cargo upsurge

Long-term and short-term players face capacity and storage limitations over time

The largest European LNG import terminal, the UK Isle of Grain facility located southeast of London, has launched the second phase of an on-going open season during which the market is invited to make bids with less than a month before the deadline.

This action is proof of one defining fact of the sector – LNG is still a long-term business in regard to imports and exports and companies have to plan ahead by five years or more.

Regas offer

Grain LNG is offering up to 300 gigawatt hours per day (7.2 million tonnes per annum of LNG) of redelivery capacity and 380,000 cubic metres of associated storage, to be made available from mid-2025.

“The capacity on offer is a combination of new build and existing capacity which comes out of contract in 2025,” said the National Grid, owner of the terminal.

“UK terminals have seen a considerable increase in utilisation recently as new global supplies have come online and the economics of moving LNG from the Atlantic to the Pacific basin have failed to stack up,” it explained.

The expansion will increase the size of the UK terminal, located on the Isle of Grain in Kent on the Thames-Medway estuary, to about 1.2 million cubic metres.

“During these unprecedented times, we believe the demand for LNG importation capacity remains strong,” said Nicola Duffin, Commercial Manager for Grain LNG.

LNG sellers have also had challenges operating in recent months in an increasingly oversupplied market, with their main problem being whether and where they will be able to find destinations for their cargoes.

EU and UK

Given that the European Union and the UK are the only liquid gas market with regulated third-party access (TPA), the sellers will always be able to place a cargo in Europe for which no other market can be accessed unless the owner-buyer agrees.

European demand has been rather resilient to the Covid-19 pandemic as buyers stock up on cheap supplies: The continent realized a monthly record-high LNG imports of 8.9 million tonnes in

March, a 20 percent year-on-year increase.

Gas storage space is a key factor for Europe’s ability to absorb excess LNG volumes.

At the end of March 2020, about 62 billion cubic meters (Bcm) of gas was in European storage, 16 Bcm higher than in March 2019.

If gas storage approaches capacity at the end of the filling season, as was the case at the end of October 2019 (98 percent full), European gas inventories now only have space for about 44 Bcm of gas before winter 2020.

Dutch Title Transfer Facility prices were as low as the equivalent of \$1.25 per million British thermal units on May 22, 2020, while the UK National Balancing Point price was even lower at \$1.20 per MMBtu on that date.

Storage

As a result, European storage could reach its limit and LNG cargoes with deliveries in the third quarter are at risk of being cancelled.

That said the continent’s demand is not growing much either.

Europe consumed 554 Bcm of natural gas in 2019, 13 Bcm more than in 2018, primarily driven by coal-to-gas switching in the power sector.

Forecasters believe European gas consumption will remain at the 2019 level, with a possible small increase in the power sector.

This will not amount to a lot, though, as coal-to-gas switching seems to have gone as far as it can for now.

However, regasification capacity additions have been relatively slow in European markets, with the exception of Turkey on the southeast fringe, which has shown regasification capacity growth in recent years.

Following the commissioning of a new 5.4 MTPA regasification terminal (Dortyol FSRU) in 2018, Turkey completed the replacement of an existing vessel with a larger-capacity of 5.7 MTPA FSRU at the Etki terminal in July 2019, expanding the terminal’s total send-out capacity by 2 MTPA.

Several other European markets have regasification projects currently under construction or planned.

Due for commissioning in 2021, the Krk project, a 1.9 MTPA FSRU-based terminal which began construction in April 2019,



The Barcelona LNG import terminal in northeast Spain is one of several facilities operated by Spanish natural gas grid company Enagas

will allow Croatia to access the global LNG market as a new importer.

On the other hand, progress on the construction of the Gothenburg terminal in Sweden has been halted following the government’s denial of a final permit based on climate concerns in October 2019.

Thirdly, there is Cyprus with proposals approved for deploying an FSRU for imports.

Following a significant increase in LNG import levels, 2019 saw a surge in Europe’s regasification utilisation rates to an average of 60 percent from 35 percent in 2018.

Growth

While Europe’s LNG import terminals have seen low utilisation rates in the previous five years, LNG imports to the region grew steadily in 2018 and rose sharply in 2019.

In total, European markets imported 85.911 MT of LNG in 2019 (net of re-export), which is a 75.6 percent increase compared to Europe’s LNG import levels in 2018.

Some of the highest utilisation rates were observed in terminals located in Belgium, Portugal and Italy.

Over the past year, European markets absorbed most of the new LNG supplies from US and Russia, largely due to insufficient growth in Asian LNG demand through the summer months and low prices in Asia.

The interest of LNG sellers in the European market has been confirmed by their booking of EU terminal capacities on a long term basis at Zeebrugge in Belgium and Montoir-de-Bretagne in Western France, with primary capacity being sold through 2044 and 2035 respectively.

With only a handful of other European terminals offering primary capacity on a

long-term basis and with the majority of their capacity already booked, the next capacity bookings at European terminals expire in the 2030s.

EU framework

Analysts say that in the next couple of years, long-term capacity bookings in Western Europe could lead to a spike in demand for remaining capacity.

All sellers, both long-term and short-term, need to know and understand the TPA rules for the region’s terminals.

Under the existing framework, Third Gas Directive and Gas Regulation 715, no dedicated LNG-specific regulation exists and various LNG-related provisions can only be found in and distilled from the Third Gas Directive and Gas Regulation 715.

The Third Gas Directive has mandated regulated TPA to LNG import terminals based on published tariffs whereas tariffs must be approved by the national regulatory authority (NRA) prior to their entry into force.

EU Gas Regulation 715 has introduced more specific provisions in respect of TPA, capacity allocation mechanisms, congestion management procedures, trading of capacity rights and transparency requirements.

Although regulatory treatment awarded by the Third Gas Directive and Regulation 715 to LNG import terminals is more specific than that awarded by the Second Gas Directive, it has left a significant degree of discretion.

This means that the regulated terminal operators are able, in respect of capacity allocation mechanisms and tariffs, to choose different ways of complying. ■

Sembcorp Marine of Singapore explains latest strategy and fends off rumours of merger with local rival Keppel

Shipyards are building reputations on LNG-powered vessels, bunkering ships and floating LNG storage

Sembcorp Marine President and Chief Executive Wong Weng Sun addressed the annual general meeting teleconference to explain how the shipyard and repair business would be turned around from successive earnings losses.

The CEO provided an overview on the company's business, strategies and outlook, management of the Covid-19 impact and sustainability initiatives during his presentation at the AGM.

Merger?

His speech was also in response to questions from shareholders, including the perennial: "Can you address the rumour that there might be a potential merger between Keppel and Sembcorp Marine?"

"We do not comment on market speculations and rumours," said the CEO who has been in place since 2009.

Wong's other offices include Chairman of the Singapore Maritime Institute's Board & Governing Council.

The CEO had joined Sembcorp in 1988 as an engineer and was the Group's President and Chief Operating Officer prior to being promoted to being at the helm.

He holds a Bachelor of Mechanical Engineering (Marine) from Universiti Teknologi Malaysia and a master's in business administration from Oklahoma City University in the US.

In his speech on a Webcast to shareholders on May 20, Wong tackled the basic issues.

Priority

"Our current priority is to ensure that we have adequate liquidity to sustain operations and ride through this severe downturn," said Wong.

"We will focus our efforts to progress with the safe and timely execution of our existing order book of over \$2.1 billion," he stated.

"We will use this downturn to right-size our resources in response to the activities outlook, and to better position ourselves when the industry recovers," added Wong.

While all Sembcorp business segments had been affected by the current challenging business conditions, its Repairs & Upgrades segment, which generated revenue of over \$600M in 2019, has remained profitable.

Wong said the company would focus on diversifying into non-drilling products

and solutions and would also concentrate more on projects related to the gas value chain, including LNG-powered vessels.

"We will work to build our order book to contribute positively to our profitability over the longer term," he said.

He was asked what was the long-term strategy for oil rig builders amid competition from fracking and shallow water drilling.

"Our strategy is to expand into new product segments and provide innovative solutions across the offshore, marine and energy value chains, both within and outside the oil and gas sector," said the CEO.

"We have diversified into non-drilling solutions and ventured into new business segments, including gas value chain as well as renewable and clean energy solutions, such as offshore wind, battery and hydrogen fuel cells," he explained.

Order book

"While a large part of the Group's order book used to be in building offshore oil rigs, that is no longer the case," he said.

"Our current order book comprises a fairly broad spectrum of product types, including several new-build floating production, storage and offloading vessels, offshore production platforms, offshore wind farm topsides and jackets as well as battery-operated roll-on, roll-off passenger (ROPAX) vessels and an LNG bunker vessel," added Wong.

"Sembcorp Marine is consistently ranked among the leading facilities in the world for cruise ship and LNG vessel repairs and upgrades," he noted.

There is no doubt that Sembcorp has been substantially affected by Covid-19 slowing work on ships and platforms, including at yards building LNG vessels for bunkering, imports and floating power projects, while the oil price slump has hit orders.

The Sembcorp construction and conversion work for LNG mainly affects projects involving joint ventures of Japanese shipping company, Mitsui OSK Lines (MOL).

Earnings

Sembcorp noted in its most recent earnings that on April 21 the Ministry of Manpower in the city state announced movement restriction measures that prevented migrant workers from leaving



Shipyards will aim for more work along the natural gas and LNG value chain

their dormitories for work. "Our operating yard workforce of about 20,000 persons was substantially reduced to 850 persons," said Sembcorp.

"The reduced workforce was deployed to manage critical works and support yard essential services such as emergency response teams, facilities and utilities management, medical centres and yard security. This was applied to our yards in Singapore," the company explained.

"The movement restriction measures and other circuit-breaker measures have been extended to June 1, 2020," it added.

"Our yard activities have been severely constrained by the reduced workforce. We will continue to assess the impact on our project schedules and are working closely with our customers to manage the ongoing projects during this challenging period," stated Sembcorp.

GTT tanks

One of the ships affected is the 12,000 cubic metres capacity LNG bunkering vessel ordered from Sembcorp's Tuas Boulevard Yard.

The GTT Mark III Flex tanks for the MOL bunkering vessel are also being fabricated for the first time by Sembcorp under a licensing agreement with French LNG containment tank designer GTT.

On completion, currently scheduled for early 2021, the dual-fuel bunkering vessel will be chartered to Singapore's Pavilion Gas for deployment for fueling ships with LNG in the Port of Singapore.

The vessel is the largest of its kind being built locally, in terms of size and LNG tank capacity and is Sembcorp's first LNG bunker vessel construction project.

Other ongoing upgrades and conversion projects in LNG at Sembcorp

include the floating storage and regasification unit (FSRU) "Karmol LNGT Powership Africa" as well as the FSRU "Karmol LNGT Powership Asia".

Karmol "LNGT Powership Africa" is part of a joint venture involving MOL and the Turkish floating power plant company Karpower International and the vessel is destined for Mozambique.

When the vessel is eventually completed MOL and Karpower will jointly own and operate the FSRU and a floating power plant for Electricidade de Mozambique (EDM), the Mozambican national power utility.

Powerships

The Turkish "Powership" is currently operating with heavy fuel oil in Mozambique's port of Nacala but will be switched to operate with LNG after the FSRU is delivered.

Sembcorp also mentioned work delays on the floating storage unit (FSU) project "LNG Flora". This is a regasification barge conversion, also involving MOL and this time with Gasfin Development.

"As we make every effort to progress the above projects to completion, the group will continue to right-size our resources in response to the activities outlook," said Sembcorp.

Sembcorp added that it had generated positive cash flow from operations in the first quarter of 2020.

However, the group remained in a net current liabilities position arising mainly from loans maturing this year.

"We are finalising with our lenders a refinancing and re-profiling of these loans with longer term maturities. We have adequate existing loan facilities to refinance current borrowings as they fall due," said Sembcorp. ■

Carrier charter market levels for LNG remain steady as more Russian cargoes to head for Asia

Broker reports witness effects of demand destruction and slight comeback from dual shock to sector

The liquefied natural gas shipping market is slowly emerging from the dual shocks of Covid-19 and the oil price slump as spot prices edged higher while more Russian LNG cargoes will be heading for North Asia in June.

The various shipping brokers who issue monthly and weekly reports said that one-year time charters were steady for the most modern vessels and were seen at rates of around \$43,000 per day.

Spot demand

Shipping charter rates for LNG carriers in the spot market in mid-May 2020 were quoted at an average of between \$35,000 per day and \$31,000 per day West of Suez and at rates of between \$32,000 per day and \$28,000 per day East of Suez for vessels of between 155,000-165,000 cubic metres capacity.

The spot LNG price in Asia was languishing near record lows in May after it dropped below \$2 per million British thermal units (lowest at \$1.85/MMBtu on 28th April) amid an oversupplied spot LNG market due to a milder than usual winter and increased production from Australia, Russia and the US caused by the postponement of scheduled maintenance at export facilities.

"This was exacerbated as the supply glut deteriorated further with wide-scale demand destruction in view of the limited buying appetite from importers such as Japan, South Korea, Taiwan, China and India, all major importing countries, due to the COVID-19 pandemic," London-based shipping brokers, consultancy and researchers Simpson Spence Young explained in their monthly report.

"Looking closer at the developments on the demand side, we witnessed Japan declare a state of emergency in seven large prefectures and extend it nationwide to contain the spread of the virus," it added.

China cargoes

At the same time China began receiving the first US LNG shipment since March 2019 and more than half a dozen were discharged at Chinese regas terminals.

"The first country hit by the coronavirus had gone under lockdown long before others and thus its imports have started seeing an uptick," said the SSY report.

"Even though the market remains

cautious about the demand recovery in China, it could take a hit due to a reduction of export orders from the Western countries," it added.

In South Korea, state-run Korea Gas Corp. was heard to have deferred 10-20 cargoes during April. Last but not least India extended its countrywide lockdown into May, posing a challenge for several LNG importers as they grappled with tank top concerns.

"However, it was heard that 20-25 US cargoes had been cancelled for June loading and the market looked quite gloomy given how Brent also behaved," said the SSY report.

"Weak netbacks from Asia and a depressed TTF market has caused a headache for sellers, with continued reports of off-takers of US cargoes cancelling summer loading cargoes," it said.

Cancellations

"The US cargoes cancelled in June may be kicking off a wave of cancellations that will last through until October as the combined global health and economic crisis of the coronavirus pandemic hammers world natural gas demand," stated the report.

The report explained that unless an off-taker has shipping costs sunk into their portfolio, the economics of sending to Europe currently are not feasible from the US.

"US LNG supplies will be most vulnerable to cancellations because they have greater offtake flexibility by design than other world supplies and because prices are at historic lows," added the report.

Newbuilds

On the newbuilding front, a joint venture consisting of Cosco and China National Petroleum Corp. ordered three LNG carriers at Hudong-Zhonghua Shipbuilding. The price for each of the 174,000-cbm vessels is \$185 million a piece.

"As we understand the vessels will be used by CNPC's Hong Kong-listed unit PetroChina," said the report.

"State-run Qatar Petroleum has entered into a deal to reserve LNG ship construction capacity in China as part of ongoing North Field expansion projects," it added.

"The deal potentially worth more than \$2.85bn and involves up to 16 174,000-cbm LNG carriers. On the demolition side, a pair of 39-year-old LNG carriers



'Christophe de Margerie' was scheduled to arrive at the Chinese Tangshan terminal on June 11 and more shipments for China will follow on NSR

have been sold for demolition, the 130,000-cbm sisterships "Fortune FSU" and "Lucky FSU" have been sold en-bloc for around \$17.6M," said the report.

On new LNG contracts, BP has signed an LNG supply deal with Chinese city gas supplier Foran Energy.

Under the agreement, BP will be supplying up to 0.6 MTPA of LNG to China's Guangdong province.

"Furthermore, Freeport LNG export project announced that it has launched commercial operations for the third liquefaction train at its facility in Texas and Sempra Energy-led Cameron LNG project has started commissioning the third liquefaction train at its export plant in Louisiana," it stated.

Other shipping developments came from Russia with news in late May that the Northern Sea Route (NSR) from the Arctic to North Asia has reopened earlier than in recent years, providing scope for LNG shipments to be re-directed from the Atlantic Basin to Pacific Basin as prices remain low, though are rising faster in Asia.

The NSR is officially defined by Russian legislation as lying east of Novaya Zemlya archipelago and specifically running along the Russian Arctic coast from the Kara Sea to the Bering Strait to enter the Northern Pacific Ocean.

Yamal shipments

The 172,600 cubic metres capacity Arctic-class LNG carrier "Christophe de Margerie" left the Yamal LNG export plant in Northern Siberia, operated by Novatek, on May 18 and is scheduled to arrive at the Chinese Tangshan import terminal on June 11 after a transit of 23 days.

The Tangshan terminal is in the northern Chinese Hebei province and is

operated by PetroChina. Shipping data shows that the "Christophe de Margerie" is accompanied by another tanker and two nuclear-powered ice-breakers, the "Yamal" and the "Vaygach".

It is only in recent years that the NSR has started to be used earlier by LNG carriers pushing ahead to deliver cargoes to North Asia.

The 172,600 cubic metres capacity LNG carrier "Vladimir Rusanov" was the first vessel to use the NSR in 2019, having lifted a cargo at the Yamal plant in mid-June.

However, the "Vladimir Rusanov" is in Western European waters and scheduled to discharge a cargo on May 24 at the Montoir-de-Bretagne terminal in Western France.

According to analysts, the early availability of the NSR, coupled with a slowly opening Europe-Asia LNG arbitrage window - at historically low values - will result in a redirection of many Yamal cargoes away from Europe and to be pointed at North Asia.

Lining up

Three other carriers are currently heading back to the Yamal plant's port at Sabetta from Europe and at least one could lift an Asia cargo.

They are the two 172,000 cubic metres capacity vessels, the "Georgiy Brusilov" and the "Vladimir Vize", and the 172,600 cubic metres capacity carrier "Vladimir Voronin", with arrivals scheduled before the end of May, according to shipping data.

The re-opening of the NSR comes as the Platts Japan-Korea Marker spot cargo price for North Asia cargoes for July is at \$2.280 per million British thermal units and at \$2.425 per MMBtu for August, higher than several weeks ago.

That's as the European LNG price indicators, the UK National Balancing

Point and the Dutch Title Transfer Facility, were lower at the equivalents on May 20 of \$1.40 per MMBtu and \$1.55 per MMBtu respectively.

There is currently a wider debate in Russia about accommodating much more energy shipping traffic on the NSR as usage increases.

Russian oil company Rosneft is progressing with the development of its Vostok Oil Project, a venture that is projected to deliver 25 million tons of shipments from a special seaport via the NSR by 2024.

Busier route

The oil project is based on the development of several fields, including at least three in the Vankor area.

Vostok Oil will also include the development of 15 new industry towns, two airports and about 800 kilometres of new pipelines.

The traditional NSR that has been the main reference point in Russian Arctic shipping is now being debated by the government.

Growth in shipments on a wider route

have been rising. Russian government data shows that in 2019, a total of 31.5 million tons of shipments were transported on the NSR, an increase of over 55 percent from 2018.

Most of the extra shipments were LNG from the Yamal plant.

Now the Russian government is referring to the Northern Sea Transport Corridor and has drawn up a report on increasing traffic volumes.

According to the Association of Sea Trade Ports, the transport corridor will be clearly referred to in the new Russian Arctic Strategy, a document that now awaits approval by the government.

The document has been written by the Russian Ministry of the Far East and Arctic and was submitted to the government on 7th of May 2020. The strategy covers the period until 2035.

Expenses

The UK shipping forum and trading platform, the Baltic Exchange, there was a quiet launch of a new ship operating expenses assessment for LNG and LPG tankers.

The London-based Baltic Exchange has added quarterly assessments (GOPEX) on the cost of operating liquefied natural gas carriers and liquefied petroleum gas tankers to its growing suite of shipping investor tools.

Offering

Data will be provided by leading independent third-party ship management companies Anglo-Eastern and AEX LNG Management, Fleet Management and V-Group.

The Baltic Exchange, owned by the Singapore Exchange, makes its latest offering following benchmarking that also covers vessel earnings.

“Adding OPEX indices for gas carriers brings transparency to the marketplace about how much it costs to run an LNG or LPG carrier and complements our data for the spot earnings of these vessels,” said Baltic Exchange Chief Executive Mark Jackson.

“They assist investors assess health of earnings using independent and reliable information from a credible provider of benchmarks for the shipping industry,” Jackson explained.

All values are expressed in US dollars per

day and the published OPEX value is the sum of crew, technical, insurance and fees.

Drydock costs do not contribute to the OPEX, but are published for both LNG and LPG vessels.

In LNG, the Exchange also collects data from shipping brokers to provide assessment of three routes on the CME Group trading platform.

These form the basis for a suite of assessments for gas shipping and freight contracts.

The first LNG derivative swap took place in July 2019, with cleared trades following since then as company built open-interest positions.

The LNG swaps are based on shipments from Australia’s Gladstone port in Queensland to Tokyo, from the US Sabine Pass LNG plant in Louisiana, owned by Cheniere Energy, to the UK. A third freight contract is from Sabine Pass to Tokyo.

The Exchange had previously added quarterly assessments of the cost of operating crude oil carrying Aframax tankers and clean product carrying Medium Range (MR) tankers to its growing suite of shipping investor tools. ■

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World LNG Carrier Fleet

LNG carrier	Capacity m ³	Owned or Ordered by	Builder	Delivery Date	Flag	Power Plant	Cargo System	No. of tanks	Ship built for Export plant
Aamira	266,000	QGTC	Samsung	Dec-10	Liberia	DRL	GTT	5	Qatargas IV
Abadi	135,000	Brunei Gas Carriers	Mitsubishi Nagasaki	Jun-02	Brunei	S	Moss	5	Brunei LNG
Abalamabie	174,900	Bonny Gas	Samsung	June-16	Bermuda	DFDE	GTT	4	Nigeria LNG
Adam LNG	162,000	Oman LNG	Hyundai	Dec-14	Marshall Is.	DFDE	GTT	4	Oman LNG
Adriano Knutsen	180,000	Knutsen	Hyundai	Jul-19	Spain	MEGI-DF	GTT	4	charter
Al Aamriya	210,100	J5 Consortium	Daewoo	Feb-08	Marshall Is.	DRL	GTT	4	Qatargas
Al Areesh	151,700	Teekay LNG	Daewoo	Jan-07	Qatar	S	GTT	4	Ras Gas II
Al Bahiya	210,185	QGTC	Samsung	Oct-09	Liberia	DRL	GTT	5	Qatar-Atlantic
Al Biddah	135,275	J4 Consortium	Kawasaki Sakaide	Nov-99	Japan	S	Moss	5	Qatargas
Al Daayen	151,700	Teekay LNG	Daewoo	Apr-07	Qatar	S	GTT	4	RasGas II
Al Dafna	266,000	QGTC	Samsung	Oct-09	Marshall Is.	LR DRL	GTT	4	Qatar-Atlantic
Al Deebel	145,000	Peninsular LNG	Samsung	Dec-05	Bahamas	S	GTT	4	Qatargas
Al Gattara	216,200	OSG/Nakilat	Hyundai	Oct-07	Marshall Is.	DRL	GTT	4	Qatargas II
Al Ghariya	210,100	ProNav	Daewoo	Feb-08	Bahamas	DRL	GTT	4	Qatargas
Al Gharaffa	216,200	OSG/Nakilat	Hyundai	Jan-08	Marshall Is.	DRL	GTT	4	Various
Al Ghashamiya	216,000	QGTC	Samsung	Mar-09	Liberia	DRL	GTT	4	Qatar-Atlantic Basin
Al Ghuwairiya	261,700	QGTC	Daewoo	Aug-08	Marshall Is.	DRL	GTT	5	Qatar-Atl'c Basin
Al Hamla	216,000	OSG	Samsung	Feb-08	Marshall Is.	DRL	GTT	4	QatarGas
Al Hamra	137,000	National Gas Shipping	Kvaerner-Masa	Jan-97	Liberia	S	Moss	4	ADGAS
Al Huwaila	217,000	Teekay	Samsung	May-08	Bahamas	DRL	GTT	4	RasGas III
Al Jasra	137,100	J4 Consortium	Mitsubishi Nagasaki	Jul-00	Japan	S	Moss	5	Qatargas
Al Jassasiya	145,700	Maran-Nakilat	Daewoo	May-07	Greece	S	GTT	4	RasGas
Al Kharaitiyat	216,200	QGTC	Hyundai	May-09	Liberia	DRL	GTT	4	Qatargas III
Al Kharaana	210,000	QGTC	Daewoo	Oct-09	Marshall Is.	DRL	GTT	4	Qatargas IV
Al Kharsaah	217,000	Teekay	Samsung	May-08	Bahamas	DRL	GTT	4	RasGas III
Al Khatiya	210,000	QGTC	DSME	Oct-09	Marshall Is.	DRL	GTT	4	Qatargas IV
Al Khaznah	135,500	National Gas Shipping	Mitsui Chiba	Jun-94	Liberia	S	Moss	5	ADGAS
Al Khor	137,350	J4 Consortium	Mitsubishi Nagasaki	Dec-96	Japan	S	Moss	5	Qatargas
Al Khuwair	217,000	Teekay LNG	Samsung	Jul-08	Korea	DRL	GTT	4	RasGas
Al Mafyar	266,000	OSG/Nakilat	Hyundai	Oct-07	Marshall Is.	DRL	GTT	4	Qatargas II
Al Marrouna	151,700	Teekay	Daewoo	Nov-07	Bahamas	S	GTT		Ras Gas I
Al Mayeda	266,000	QGTC	Samsung	Jan-09	Liberia	DRL	GTT	5	Qatar-US/Var.
Al Nuaman	210,000	QGTC	DSME	Dec-09	Marshall Is.	DRL	GTT	4	Qatargas IV
Al Oraiq	210,000	J5 Consortium	Daewoo	Apr-08	Marshall Is.	DRL	GTT	4	Various
Al Rayyan	135,360	J4 Consortium	Kawasaki Sakaide	Mar-97	Japan	S	Moss	5	Qatargas
Al Rekayyat	216,200	QGTC	Hyundai	Jun-09	Bahamas	DRL	GTT	4	Qatar-Atlantic
Al Ruwais	210,100	ProNav	Daewoo	Nov-07	Germany	DRL	GTT	4	Qatargas II
Al Sadd	210,100	QGTC	Daewoo	Mar-09	Liberia	DRL	GTT	4	Qatar-Atlantic Basin
Al Safliya	210,100	ProNav	Daewoo	Dec-07	Bahamas	DRL	GTT	4	Qatargas II
Al Sahla	216,200	J5	Hyundai	Jun-08	Japan	DRL	GTT	4	Ras Gas III
Al Samriya	261,700	QGTC	Daewoo	Sep-08	Marshall Is.	DRL	GTT	5	Qatargas II
Al Sheehaniya	210,100	QGTC	Daewoo	Feb-09	Liberia	DRL	GTT	4	Qatar-Atlantic Basin
Al Shamal	217,000	Teekay LNG	Samsung	Jun-08	Qatar	DRL	GTT	4	RasGas
Al Thakhira	145,000	Peninsular LNG	Samsung	Sep-05	Bahamas	S	GTT	4	Qatargas
Al Thumama	216,000	J5 Consortium	Hyundai	Apr-08	Japan	DRL	GTT	4	Rasgas
Al Utouriya	215,000	J5	Hyundai	Sep-08	Panama	DRL	GTT	4	RasGas
Al Utourma	215,000	J5	Hyundai	Sep-08	Panama	DRL	GTT	4	Ras Gas III
Al Wajbah	137,350	J4 Consortium	Mitsubishi Nagasaki	Jun-97	Japan	S	Moss	5	Qatargas
Al Wakrah	135,360	J4 Consortium	Kawasaki Sakaide	Dec-98	Japan	S	Moss	5	Qatargas
Al Zhubarah	137,570	J4 Consortium	Mitsui Chiba	Dec-96	Japan	S	Moss	5	Qatargas
Alto Acrux	147,000	LNG Marine Transport	Mitsubishi	Mar-08	Bahamas	S	Moss	4	Various
Amali	148,000	Brunei-Shell	DSME	Jul-11	Brunei	DFDE	GTT	4	Brunei LNG
Amanl	154,800	Brunei-Shell	Hyundai	Nov-14	Brunei	DFDE	GTT	4	Brunei LNG
Aman Bintulu	18,928	Perbadanan / NYK Line	NKK Tsu	Oct-93	Malaysia	S	GTT	3	Petronas
Aman Hakata	18,800	Perbadanan / NYK Line	NKK Tsu	Nov-98	Malaysia	S	GTT	3	Petronas
Aman Sendai	18,928	Perbadanan / NYK Line	NKK Tsu	May-97	Malaysia	S	GTT	3	Petronas
Arctic Aurora	160,000	Dynagas	Hyundai	Jul-13	Marshall Is.	DFDE	GTT	4	Various
Arctic Discoverer	140,000	K Line	Mitsui Chiba	Jan-06	Bahamas	S	Moss	4	Various
Arctic Lady	147,200	MOL/Hoegh LNG	Mitsubishi Nagasaki	Apr-86	Norway	S	Moss	4	Various
Arctic Princess	147,200	MOL/Hoegh LNG	Mitsubishi Nagasaki	Jan-06	Norway	S	Moss	4	Various
Arctic Sun	89,880	Arctic LNG Shipping	IHI Chita	Dec-93	Liberia	S	IHI SPB	4	ConocoPhillips/Marathon
Arctic Voyager	140,000	K Line	Kawasaki	Jul-06	Bahamas	S	Moss	4	Statoil
Arkat	148,000	Brunei-Shell	DSME	Feb-11	Brunei	DFDE	GTT	4	Brunei LNG
Arwa Spirit	165,000	Teekay LNG	Samsung	Sep-08	Marshall Is.	DFDE	GTT	4	Various

CARRIER FLEET



Aseem	154,850	K Line-Petronet	Samsung	Nov-09	Malta	S	GTT	4	Qatar-India
Asia Endeavour	160,000	Chevron	Samsung	Dec-14	Bahamas	DFDE	GTT	4	Various
Asia Energy	160,000	Chevron	Samsung	Sept-14	Bahamas	DFDE	GTT	4	Various
Asia Excellence	160,000	Chevron	Samsung	Sept-13	Bahamas	DFDE	GTT	4	Various
Asia Venture	160,000	Chevron	Samsung	Sept-17	Bahamas	DFDE	GTT	4	Various
Asia Vision	160,000	Chevron	Samsung	June-14	Bahamas	DFDE	GTT	4	Various
Bahrain Spirit	173,000	Teekay	Daewoo	Sept-18	Bahamas	DFDE	GTT	4	Various
Barcelona Knutsen	173,400	Knutsen	Daewoo	May-10	N.I.S.	DFDE	GTT	4	Various
Bebatic	75,060	Brunei Shell Tankers	Atlantique	Oct-72	Brunei	S	GTT	6	Brunei LNG
Beidou Star	172,000	MOL	Hudong	Oct-15	Hong Kong	DRL	GTT	4	Various
Berge Arzew	138,088	BW Gas	Daewoo	Jul-04	Norway	S	GTT	4	Sonatrach
Bilbao Knutsen	138,000	Knutsen / Marpetrol	IZAR Sestao	Jan-04	Spain	S	GTT	4	Atlantic LNG
Bilis	77,730	Brunei Shell Tankers	La Seyne	Mar-75	Brunei	S	GTT	5	Brunei LNG
Bishu Maru	162,000	K Line-Transpacific	Kawasaki Sakaide	Dec-15	Panama	S	Moss	4	Australia-Japan
Boris Davydov	172,600	Dynagas	Daewoo	Sept-18	Cyprus	DFDE	GTT	4	Yamal LNG
Boris Vilkitsky	172,600	Dynagas	Daewoo	Jan-17	Cyprus	DFDE	GTT	4	Yamal LNG
British Achiever	173,644	BP Shipping	Daewoo	June-18	Isle of Man	MEGI-DF	GTT	4	Various
British Contributor	173,644	BP Shipping	Daewoo	Oct-18	Isle of Man	MEGI-DF	GTT	4	Various
British Diamond	155,000	BP Shipping	Hyundai	Sep-08	Isle of Man	DFDE	GTT	4	Indonesia-Various
British Emerald	155,000	BP Shipping	Hyundai	Jun-07	UK	DFDE	GTT	4	Tangguh LNG
British Innovator	138,200	BP Shipping	Samsung	Jul-03	Isle of Man	S	GTT	4	Various
British Listener	173,644	BP Shipping	Daewoo	June-19	Isle of Man	MEGI-DF	GTT	4	Various
British Mentor	173,644	BP Shipping	Daewoo	July-19	Isle of Man	MEGI-DF	GTT	4	Various
British Merchant	138,000	BP Shipping	Samsung	Apr-03	Isle of Man	S	GTT	4	Various
British Partner	173,644	BP Shipping	Daewoo	Mar-18	Isle of Man	MEGI-DF	GTT	4	Various
British Ruby	155,000	BP Shipping	Hyundai	Jan-08	U.K.	DFDE	GTT	4	Various
British Sapphire	155,000	BP Shipping	Hyundai	Sep-08	Isle of Man	DFDE	GTT	4	Tangguh
British Sponsor	173,644	BP Shipping	Daewoo	Sept-19	Isle of Man	MEGI-DF	GTT	4	Various
British Trader	138,000	BP Shipping	Samsung	Dec-02	Isle of Man	S	GTT	4	Engas
Broog	135,466	J4 Consortium	Mitsui Chiba	May-98	Japan	S	Moss	5	Qatargas
Bu Samara	266,000	QGTC	Samsung	Dec-08	Qatar	DRL	GTT	5	Qatargas
BW GDF Suez Boston	138,059	BW Gas	Daewoo	Jan-03	Norway	S	GTT	4	Suez LN
BW GDF Suez Everett	138,028	BW Gas	Daewoo	Jun-03	Norway	S	GTT	4	Suez LNG
BW Integrity	170,000	BW Gas	Samsung	May-17	Singapore	DFDE	GTT	4	FSRU
BW Lilac	173,400	BW Gas	Daewoo	Mar-18	Malta	MEGI-DF	GTT	4	various
BW Magna	173,400	BW Gas-Acu Brazil	Daewoo	Mar-19	Singapore	DFDE	GTT	4	FSRU-Brazil
BW Pavilion Aranda	173,400	BW Gas	Daewoo	Oct-19	Singapore	MEGI-DF	GTT	4	Various
BW Pavilion Leeara	161,880	BW Gas	Hyundai	Feb-15	Singapore	DFDE	GTT	4	Various
BW Pavilion Vanda	161,880	BW Gas	Hyundai	Feb-15	Singapore	DFDE	GTT	4	Various
BW Singapore	170,000	BW Gas	Samsung	May-15	Singapore	DFDE	GTT	4	FSRU
BW Suez Brussels	162,400	BW Gas	Daewoo	May-09	N.I.S.	DFDE	GTT	4	Yemen-Atlantic
BW Suez Paris	162,400	BW Gas	Daewoo	May-09	N.I.S.	DFDE	GTT	4	Yemen-Atlantic
BW Tulip	173,400	BW Gas	Daewoo	Jan-18	Malta	MEGI-DF	GTT	4	various
Cadiz Knutsen	138,826	Knutsen / Marpetrol	IZAR Puerto Real	Jun-04	Spain	S	GTT	4	Engas
Cape Ann	145,000	Hoegh LNG/MOL	Samsung	May-10	Liberia	DFDE	GTT	4	Various
Castillo de Santisteban	173,600	Elcano	STX	Aug-10	Malta	S	GTT		Various
Castillo de Villalba	138,000	Elcano	IZAR	Nov-03	Spain	S	GTT	4	Sonatrach
Catalunya Spirit	138,000	Teekay LNG Partners	IZAR Sestao	Mar-03	Liberia	S	GTT	4	Atlantic LNG
Celestine River	145,000	KLNG	Kawasaki	Dec-07	Bahamas	S	Moss		Various
Cesi Beihai	174,100	MOL-China LNG	Hudong	June-17	Hong Kong	S	GTT	4	Australia-China
Cesi Gladstone	174,100	MOL-China LNG	Hudong	Oct-16	Hong Kong	S	GTT	4	Australia-China
Cesi Lianyungang	174,100	MOL-China LNG	Hudong	June-18	Hong Kong	S	GTT	4	Australia-China
Cesi Qingdao	174,100	MOL-China LNG	Hudong	Nov-16	Hong Kong	S	GTT	4	Australia-China
Cesi Tianjin	174,100	MOL-China LNG	Hudong	Sept-17	Hong Kong	S	GTT	4	Australia-China
Challenger FSRU	263,000	MOL LNG	Daewoo	Oct-17	St Kitts	DFDE	GTT	4	Various
Cheikh Bouamama	75,500	Skikda LNG Transport	USC	Jul-08	Bahamas	S	GTT	4	Sonatrach
Cheikh El Mokrani	75,500	Med LNG Corp	USC	Jun-07	Bahamas	S	GTT	4	Sonatrach
Christophe de Margerie	172,600	SCF	Daewoo	Nov-16	Cyprus	DFDE	GTT	4	Various
Clean Energy	150,000	Dynagas	Hyundai	Mar-07	Marshall Is.	S	GTT	4	Various
Clean Force	150,000	Dynagas	Hyundai	Jan-08	Marshall Is.	S	GTT	4	Various
Clean Ocean	155,900	Dynagas	Hyundai	Mar-14	Marshall Is.	DFDE	GTT	4	Various
Clean Planet	155,900	Dynagas	Hyundai	Mar-14	Marshall Is.	DFDE	GTT	4	Various
Clean Vision	160,000	Dynagas	Hyundai	Jun-15	Marshall Is.	DFDE	GTT	4	Various
Cool Explorer	160,000	Thenamaris	Samsung	Oct-13	Bermuda	DFDE	GTT	4	Various
Cool Runner	160,000	Thenamaris	Samsung	May-14	Bermuda	DFDE	GTT	4	Various
Cool Voyager	160,000	Thenamaris	Samsung	Oct-13	Bermuda	DFDE	GTT	4	Various
Corcovado LNG	160,106	TMSC Gas	Daewoo	Jun-14	Malta	TFDE	GTT	4	Various
Creole Spirit	174,000	Teekay	Daewoo	Jan-16	Bahamas	MEGI-DF	GTT	4	Cheniere



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Cubal	160,400	Mitsui/NYK/Teekay	Samsung	Jan-12	Bahamas	DFDE	GTT	4	Various
Cygnus Passage	145,400	Cygnus LNG	Mitsubishi	Feb-09	Panama	S	Moss	4	Various
Dapeng Moon	147,000	China Ships	Hudong	Jul-09	China	S	GTT	4	Various
Dapeng Star	147,000	China Ships	Hudong	Nov-09	China	S	GTT	4	Various
Dapeng Sun	147,000	China Ships	Hudong	Jul-07	China	S	GTT	4	Woodside Energy
Diamond Gas Orchid	165,000	MOL-Jera	MHI-Nagasaki	Aug-18	Japan	S-gas	Moss	4	US-Japan
Diamond Gas Rose	165,000	MOL-Jera	MHI-Nagasaki	Aug-18	Japan	S-gas	Moss	4	US-Japan
Disha	136,000	Petronet LNG Ltd.	Daewoo	Jan-04	Malta	S	GTT	4	Qatargas
Doha	137,350	J4 Consortium	Mitsubishi Nagasaki	Jun-99	Japan	S	Moss	5	Qatargas
Duhail	210,100	ProNav	Daewoo	Jan-08	Germany	DRL	GTT	4	Various
Dukhan	135,000	J4 Consortium	Mitsui Chiba	Oct-04	Japan	S	Moss	4	Qatargas
Dwiputra	127,385	Humpuss Consortium	Mitsubishi Nagasaki	Mar-94	Bahamas	S	Moss	4	Pertamina
Ebisu	147,547	Golar LNG	Kawasaki	Sep-08	Bahamas	S	Moss	4	Various
Eduard Toll	172,000	Teekay-CLNG	Daewoo	Dec-17	Bahamas	MEGI-DF	GTT	4	Various
Ejnan	145,000	4J	Samsung	Jan-07	Bahamas	S	GTT		RasGas
Ekaputra	136,400	Humpuss Consortium	Mitsubishi Nagasaki	Jan-90	Liberia	S	Moss	5	Pertamina
Energy Advance	145,000	Tokyo LNG Tankers	Kawasaki Sakaide	Mar-05	Japan	S	Moss	4	Darwin
Energy Atlantic	159,924	Alpha	STX Jinhae	Sep-15	Malta	DFDE	GTT	4	Various
Energy Confidence	155,000	Tokyo LNG Tankers	Kawasaki	Apr-09	Panama	S	Moss	4	Various
Energy Frontier	147,600	Tokyo LNG Tankers	Kawasaki Sakaide	Sep-03	Japan	S	Moss	4	Darwin
Energy Glory	165,000	Tokyo LNG Tankers	JMU	Sept-18	Japan	S	Moss	4	Various
Energy Horizon	177,000	Tokyo LNG Tankers	Kawasaki	Jul-11	Japan	S	Moss	4	Pluto LNG
Energy Innovator	165 000	MOL-Tokyo gas	JMU Tsu	April-19	Japan	TFDE	IHI-SPB	4	Cove Point-Japan
Energy Liberty	165 000	MOL	JMU Tsu	Oct-18	Japan	TFDE	IHI-SPB	4	Various
Energy Navigator	147,000	Tokyo LNG Tankers	Kawasaki Sakaide	May-08	Japan	S	Moss	4	Various
Energy Progress	145,000	MOL	Kawasaki	Nov-06	Japan	S	Moss	4	Bayu Undan LNG
Energy Universe	165,000	MOL-Tokyo Gas	JMU Tsu	Sept-19	Japan	TFDE	IHI-SPB	4	Cove Point-Japan
Enshu Maru	165,257	K Line	Kawasaki	June-18	Japan	S	Moss	4	Various
Esshu Maru	162,000	K Line-Transpacific	Kawasaki Sakaide	Dec-14	Panama	S	Moss	4	Australia-Japan
Excalibur	138,200	Exmar/ Excelerate	Daewoo	Oct-02	Belgium	S	GTT	4	Various
Excel	138,106	Exmar/ MOL	Daewoo	Sep-03	Belgium	S	GTT	4	Various
Excelerate	138,000	Exmar/Excelerate	Daewoo	Oct-06	Belgium	S	GTT	4	Various
Excellence	138,000	GKFF Ltd.	Daewoo	May-05	Belgium	S	GTT	4	Excelerate Energy
Excelsior	138,000	Exmar	Daewoo	Jan-05	Belgium	S	GTT	4	Various
Exemplar	150,900	Excelerate	Daewoo	Jun-10	Belgium	S	GTT	4	Various
Expedient	151,000	Excelerate	Daewoo	Nov-09	Belgium	S	GTT	4	Various
Experience RV	174,000	Exmar/Excelerate	Daewoo	Jul-14	Marshall Is.	DFDE	GTT		Various
Explorer	150,900	Exmar/Excelerate	Daewoo	Mar-08	Belgium	S	GTT	4	Excelerate
Express	151,000	Exmar/Excelerate	Daewoo	May-09	Belgium	S	GTT	4	Various
Exquisite	150,900	Excelerate	Daewoo	Sep-09	Belgium	S	GTT	4	Various
Fedor Litke	172,636	Dynagas	Daewoo	Nov-17	Cyprus	DFDE	GTT	4	Various
Flex Endeavour	173,400	Flex LNG	Daewoo	Jan-18	Marshall Is.	MEGI-DF	GTT	4	Various
Flex Enterprise	173,400	Flex LNG	Daewoo	Jan-18	Marshall Is.	MEGI-DF	GTT	4	Various
Flex Rainbow	174,000	Flex LNG	Samsung	July-18	Marshall Is.	MEGI-DF	GTT	4	Various
Flex Ranger	174,000	Flex LNG	Samsung	April-18	Marshall Is.	MEGI-DF	GTT	4	Various
Fraiha	210,100	J5 Consortium	Daewoo	Sep-08	Marshall Is.	DRL	GTT	4	Qatargas
FSRU Independence	170,000	Hoegh	Hyundai	Feb-14	NIS	DFDE	GTT	4	Various
FSRU Lampung	170,000	Hoegh	Hyundai	May-14	Indonesia	DFDE	GTT	4	Various
Fuji LNG	147,895	TMSC Gas	Kawasaki	Jun-04	Malta	S	Moss	4	Various
Fuwairit	138,000	Peninsular LNG	Samsung	Jan-04	Bahamas	S	GTT	4	RasGas II
Galea	134,425	Shell Shipping	Mitsubishi Nagasaki	Oct-02	Singapore	S	Moss	5	Shell
Galicia Spirit	140,620	Teekay LNG Partners	Daewoo	Jul-04	Liberia	S	GTT	4	Engas
Gaselys	153,500	GdF/NYK	Atlantique	Mar-07	France	DFDE	CS 1	4	Engas
Gallina	134,425	Shell Shipping	Mitsubishi Nagasaki	Oct-02	Singapore	S	Moss	5	Shell
GasLog Chelsea	153,000	GasLog	Hanjin Korea	Dec-09	Panama	TFDE	GTT	4	Various
Gaslog Geneva	174,000	GasLog	Samsung	Sept-16	Bermuda	TFDE	GTT	4	Shell charter
Gaslog Genoa	174,000	GasLog	Samsung	Jun-18	Bermuda	TFDE	XDF	4	Various
Gaslog Gibraltar	174,000	GasLog	Samsung	Oct-16	Bermuda	TFDE	GTT	4	Shell charter
Gaslog Glasgow	174,000	GasLog	Samsung	Jun-16	Bermuda	TFDE	GTT	4	Shell charter
Gaslog Gladstone	174,000	GasLog	Samsung	May-19	Bermuda	XDF	GTT	4	Various
Gaslog Greece	174,000	GasLog	Samsung	Mar-16	Bermuda	TFDE	GTT	4	Shell charter
GasLog Hongkong	174,000	GasLog	Hyundai	Jun-18	Bermuda	XDF	GTT	4	Various
GasLog Houston	174,000	GasLog	Hyundai	Jan-18	Bermuda	XDF	GTT	4	Various
GasLog Salem	165,000	GasLog	Samsung	Apr-15	Liberia	TFDE	GTT	4	Various
GasLog Santiago	155,000	GasLog	Samsung	Mar-13	Liberia	TFDE	GTT	4	Various
GasLog Saratoga	155,000	GasLog	Samsung	Dec-14	Bermuda	TFDE	GTT	4	Various
Gaslog Savannah	155,000	GasLog	Samsung	May-10	Bermuda	DFDE	GTT	4	Various
GasLog Seattle	155,000	GasLog	Samsung	Oct-13	Bermuda	TFDE	GTT	4	Various



GasLog Shanghai	155,000	GasLog	Samsung	Jan-13	Liberia	TFDE	GTT	4	Various
Gaslog Singapore	155,000	GasLog	Samsung	Jul-10	Bermuda	DFDE	GTT	4	Various
Gaslog Skagen	155,000	GasLog	Samsung	Oct-13	Bermuda	DFDE	GTT	4	Various
Gaslog Sydney	155,000	GasLog	Samsung	May-13	Bermuda	DFDE	GTT	4	Various
Gaslog Warsaw	174,000	GasLog	Samsung	May-19	Bermuda	TFDE	GTT	4	Various
GDF-Suez Global Energy	74,000	Gaz de France	Chantiers	Dec-06	France	DFDE	CS1	4	Sonatrach
GDF-Suez Point Fortin	154,200	LNG Japan	Imabari/Koyo	Feb-10	Panama	DFDE	GTT	4	Various
Gemmata	138,100	Shell Shipping	Mitsubishi Nagasaki	Mar-04	Singapore	S	Moss	5	Shell
Georgiy Brusilov	172,000	Dynagas	Daewoo	Jun-18	Cyprus	DFDE	GTT	4	Yamal LNG
Georgiy Ushakov	172,600	Teekay-China	JV Daewoo	Oct-19	Bahamas	MEGI-DF	GTT	4	Various
Ghasha	137,510	National Gas Shipping	Mitsui	Jun-95	Liberia	S	Moss	5	ADGAS
Gigira Laitebo	177,000	MOL-Itochu	Hyundai	Feb-09	Panama	DFDE	GTT	4	Various
Golar Arctic	140,645	Golar LNG	Daewoo	Dec-03	Marshall Is.	S	GTT	4	Shell Spot
Golar Bear	160,000	Golar	Samsung	Mar-14	Bermuda	TFDE	GTT	4	Various
Golar Celsius	160,000	Golar LNG	Samsung	Sep-13	Bermuda	DFDE	GTT	4	Various
Golar Crystal	160,000	Golar LNG	Samsung	Oct-13	Bermuda	TFDE	GTT	4	Various
Golar Eskimo (FSRU)	160,000	Golar LNG	Samsung	Jan-15	Bermuda	DFDE	GTT	4	Various
Golar Freeze	125,850	Golar LNG	HDW	Feb-77	UK	S	Moss	5	Various
Golar Glacier	162,000	Golar LNG	Hyundai	Sep-14	Marshall Is.	TFDE	GTT	4	Various
Golar Grand	145,880	Golar LNG	Daewoo	2006	IoM	S	GTT	4	Various
Golar Ice	160,000	Golar LNG	Samsung	Feb-15	Bermuda	DFDE	GTT	4	Various
Golar Igloo (FSRU)	160,000	Golar LNG	Samsung	Oct-13	Bermuda	DFDE	GTT	4	Various
Golar Kelvin	160,000	Golar LNG	Samsung	Jan-15	Bermuda	DFDE	GTT	4	Various
Golar Maria	145,950	Golar LNG	Daewoo	2006	Marshall Is.	S	GTT	4	Various
Golar Mazo	135,225	Golar LNG/PPP	Mitsubishi	Jan-00	Liberia	S	Moss	5	Pertamina
Golar Penguin	160,000	Golar LNG	Samsung	Mar-14	Marshall Is.	TFDE	GTT	4	Various
Golar Seal	160,000	Golar LNG	Samsung	Aug-13	Bermuda	TFDE	GTT	4	Various
Golar Singapore (FSRU)	160,000	Golar LNG	Samsung	June-15	Bermuda	TFDE	GTT	4	Various
Golar Snow	160,000	Golar LNG	Samsung	Jan-15	Bermuda	TFDE	GTT	4	Various
Golar Tundra (FSRU)	160,000	Golar LNG	Samsung	Dec-15	Bermuda	TFDE	GTT	4	Various
Golar Viking	140,000	Golar LNG	Hyundai	Jan-05	Marshall Is.	S	Moss	4	Various
Golar Winter	138,250	Golar LNG	Daewoo	Apr-04	Marshall Is.	S	GTT	4	Petrobras
Grace Acacia	150,000	Algaet Shipping	Hyundai	Jan-07	Japan	S	GTT	4	Various
Grace Barleria	150,000	Swallowtail Ship	Hyundai	Oct-07	Japan	S	GTT	4	Various
Grace Cosmos	150,000	AGH Shipping	Hyundai	Mar-08	Japan	S	GTT	4	Various
Grace Dahlia	177,000	Tokyo Gas	Kawasaki	Oct-13	Japan	S	Moss	4	Various
Gracilis	138,830	Golar LNG	Hyundai	Jan-05	Marshall Is.	S	GTT	4	Shell BG
Granatina	140,645	Shell Shipping	Daewoo	Dec-03	Singapore	S	GTT	4	Shell
Grand Aniva	147,200	Sovcomflot/NYK	Mitsubishi	Jan-08	Japan	S	Moss	4	Various
Grand Elena	147,200	Sovcomflot/NYK	Mitsubishi	Oct-07	Japan	S	Moss	4	Various
Grand Mereya	147,200	Primorsk/MOL/K Line	Chiba	May-08	Japan	S	Moss	4	Sakhalin II
Hanjin Muscat	138,200	Hanjin Shipping	Hanjin	Jul-99	Panama	S	GTT	4	Oman Gas
Hanjin Pyeong Taek	130,600	Hanjin Shipping	Hanjin	Sep-95	Panama	S	GTT	4	Pertamina
Hanjin Ras Laffan	138,214	Hanjin Shipping	Hanjin	Jul-00	Panama	S	GTT	4	QatarGas
Hanjin Sur	138,333	Hanjin Shipping	Hanjin	Jan-00	Panama	S	GTT	4	Oman Gas
Hispania Spirit	140,500	Teekay LNG Partners	Daewoo	Sep-02	Spain	S	GTT	4	Atlantic LNG
Hoegh Esperanza FSRU	170,000	Hoegh	Hyundai	April-18	Norway	DFDE	GTT	4	Various
Hoegh Gallant FSRU	170,050	Hoegh LNG	Hyundai	May-14	Marshall Is.	DFDE	GTT	4	chartered
Hoegh Giant FSRU	170,050	Hoegh LNG	Hyundai	Jan-18	Marshall Is.	DFDE	GTT	4	various
Hoegh Grace FSRU	170,050	Hoegh LNG	Hyundai	May-15	Marshall Is.	DFDE	GTT	4	various
Hyundai Aquapia	135,000	Hyundai MM	Hyundai	Mar-00	Panama	S	Moss	4	Oman Gas
Hyundai	135,000	Hyundai MM	Hyundai	Jan-00	Panama	S	Moss	4	RasGas
Hyundai Ecopia	145,000	Hyundai	Hyundai	Nov-08	Panama	S	GTT	4	Various
Hyundai Greenpia	125,000	Hyundai MM	Hyundai	Nov-96	Panama	S	Moss	4	Pertamina
Hyundai Oceanpia	135,000	Hyundai MM	Hyundai	Jul-00	Panama	S	Moss	4	Oman Gas
Hyundai Technopia	135,000	Hyundai MM	Hyundai	Jul-00	Panama	S	Moss	4	RasGas
Hyundai Utopia	125,182	Hyundai MM	Hyundai	Jun-94	Panama	S	Moss	4	Pertamina
Iberica Knutsen	138,000	Knutsen OAS	Daewoo	Aug-06	Norway	S	GT 96	4	Gas Natural
Ibra LNG	147,100	Oman Gas	Samsung	Jun-06	Panama	S	GTT	4	Oman LNG
Ibri LNG	145,000	Oman Gas	Mitsubishi	Jul-06	Panama	S	GTT	4	Oman LNG
Ish	137,540	National Gas Shipping	Mitsubishi Nagasaki	Nov-95	Liberia	S	Moss	5	ADGAS
K Acacia	138,017	Korea Line	Daewoo	Jan-00	Panama	S	GTT	4	Oman Gas
K Freesia	135,256	Korea Line	Daewoo	Jun-00	Panama	S	GTT	4	RasGas
Kinisis	173,400	K-Line	Daewoo	Jan-18	Liberia	MEGI-DF	GTT	4	Various
K Jasmine	145,700	Korea Line	Daewoo	Mar-08	Panama	S	GTT	4	Kogas offtake
K Mugungwha	152,000	K Line	Daewoo	Nov-08	Panama	S	GTT	4	Various
Kita LNG	160,106	TMSC Gas	Daewoo	Jun-14	Malta	TFDE	GTT	4	Various
Kotawaka Maru	125,200	J3 Consortium	Kawasaki Sakaide	Jan-84	Japan	S	Moss	5	Darwin



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Kumul	172,000	MOL	Hudong	May-16	Hong Kong	DRL	GTT	4	PNG-Asia
Lalla Fatma N'Soumer	145,000	Algeria Nippon Gas	Kawasaki Sakaide	Dec-04	Bahamas	S	Moss	4	Various
Lijmilya	261,700	QGTC	Daewoo	Sep-08	Marshall Is.	DRL	GTT	5	Various
LNG Abalamabie	174,900	Bonny Gas	Samsung	Nov-16	Bermuda	DFDE	GTT	4	Nigeria LNG
LNG Abuja	126,530	Bonny Gas Transport	GD Quincy	Sep-80	Bahamas	S	Moss	5	Nigeria LNG
LNG Abuja II	174,900	Bonny Gas	Samsung	Oct 16	Bermuda	DFDE	GTT	4	Nigeria LNG
LNG Adamawa	141,000	Bonny Gas Transport	Hyundai	Jun-05	Bermuda	S	Moss	4	Various
LNG Akwa Ibom	141,000	Bonny Gas Transport	Hyundai	Nov-04	Bermuda	S	Moss	4	Various
LNG Aquarius	126,300	MOL/LNG Japan	GD Quincy	Jun-77	Marshall Is.	S	Moss	5	Various
LNG Barka	153,000	NYK	Kawasaki	Jan-09	Bahamas	S	Moss	4	Various
LNG Bayelsa	137,500	Bonny Gas Transport	Hyundai	Feb-03	Bermuda	S	Moss	4	Nigeria LNG
LNG Benue	145,700	BW Gas	Daewoo	Mar-06	Bermuda	S	GTT	4	Nigeria LNG
LNG Bonny	177,000	Bonny Gas Transport	Hyundai	Oct-15	Bermuda	DFDE	GTT	4	Nigeria LNG
LNG Borno	149,600	NYK Line	Samsung	Aug-07	Japan	S	GTT	4	Nigeria LNG
LNG Capricorn	126,300	MOL/LNG Japan	GD Quincy	Jun-78	Marshall Is.	S	Moss	5	Pertamina
LNG Cross River	141,000	Bonny Gas Transport	Hyundai	Sep-05	Bermuda	S	Moss	4	Various
LNG Dream	145,000	Osaka Gas	Kawasaki	Sep-06	Japan	S	Moss	4	Woodside Energy
LNG Dubhe	174,000	MOL-Cosco	Hudong	Sept-19	China	S	GTT	4	Russia-Asia
LNG Ebisu	147,500	MOL	Kawasaki	Sep-08	Bahamas	S	Moss	4	Various
LNG Edo	126,530	Bonny Gas Transport	GD Quincy	May-80	Bahamas	S	Moss	5	Nigeria LNG
LNG Enugu	145,000	BW Gas	Daewoo	Oct-05	Bermuda	S	GTT	4	Nigeria LNG
LNG Fimina	175,000	Bonny Gas Transport	Samsung	Oct-15	Bermuda	DFDE	GTT	4	Nigeria LNG
LNG Flora	127,700	J3 Consortium	Kawasaki Sakaide	Mar-93	Japan	S	Moss	4	Pertamina
LNG Fukurokuju	165,000	MOL	Kawasaki	June-15	Japan	S	Moss	4	Various
LNG Gemini	126,300	MOL/LNG Japan	GD Quincy	Sep-78	Marshall Is.	S	Moss	5	Pertamina
LNG Imo	148,300	BW Gas	Daewoo	Jun-08	Bermuda	S	GTT	4	Nigeria LNG
LNG Jamal	135,330	Osaka Gas/J3 Consortium	Mitsubishi Nagasaki	Oct-00	Japan	S	Moss	5	Oman Gas
LNG Juno	177,300	MOL-Osaka	Mitsubishi	Oct-18	Marshall Is.	DFDE	Moss	4	Freeport LNG/Various
LNG Jupiter	145,000	NYK Line	Kawasaki	Jul-09	Bahamas	S	Moss	4	Various
LNG Jurojin	155,300	MOL	MHI Nagasaki	Nov-15	Japan	S	KM	4	Various
LNG Kano	148,471	BW Gas	Daewoo	Jan-07	Bermuda	S	GTT	4	NLNG
LNG Lagos	177,000	Bonny Gas	Hyundai	Oct-15	Bermuda	DFDE	GTT	4	Nigeria LNG
LNG Leo	126,400	MOL/LNG Japan	GD Quincy	Dec-78	Marshall Is.	S	Moss	5	Pertamina
LNG Lerici	65,000	Exmar	Italcantieri Sestri	Mar-98	Italy	S	GTT	4	Sonatrach
LNG Libra	126,400	Hoegh LNG	GD Quincy	Apr-79	Marshall Is.	S	Moss	5	Various
LNG Lokoja	148,300	BW Gas	Daewoo	Dec-06	Bermuda	S	GTT	4	Nigeria LNG
LNG Mars	155,000	MOL/Osaka Gas	Mitsubishi	Oct-16	Marshall Is.	S	Moss	5	Various
LNG Merak	174,000	MOL-Cosco	Hudong	Nov-19	China	S	GTT	4	Russia-Asia
LNG Ogun	148,300	NYK Line	Samsung	Aug-07	Japan	S	GTT	4	Nigeria LNG
LNG Ondo	148,300	BW Gas	Daewoo	Sep-07	Bermuda	S	GTT	4	Nigeria LNG
LNG Oyo	140,500	BW Gas	Daewoo	Dec-05	Bermuda	S	GTT	4	Nigeria LNG
LNG Pioneer	138,000	MOL	Daewoo	Jul-05	Bahamas	S	GTT	4	Idku
LNG Port Harcourt	175,000	Bonny Gas	Samsung	Oct-15	Bermuda	DFDE	GTT	4	Nigeria LNG
LNG Portovenere	65,000	Exmar	Italcantieri Sestri	Jun-96	Italy	S	GTT	4	Sonatrach
LNG River Niger	141,000	Bonny Gas Transport	Hyundai	May-06	Bermuda	S	Moss	4	Various
LNG River Orashi	145,910	BW Gas	Daewoo	Nov-04	Bermuda	S	GTT	4	Nigeria LNG
LNG Rivers	137,231	Bonny Gas Transport	Hyundai	Jun-02	Bermuda	S	Moss	4	Nigeria LNG
LNG Sakura	177,000	NYK-Kepco	Kawasaki	Mar-18	Bahamas	DFDE	GTT	4	Various
LNG Saturn	153,000	MOL	MHI	Nov-15	Japan	S	Moss	4	Various
LNG Schneeweisschen	180,000	MOL-Itochu	Daewoo	Aug-18	Panama	XDF	GTT	4	Various
LNG Sokoto	137,231	Bonny Gas Transport	Hyundai	Aug-02	Bermuda	S	Moss	4	Nigeria LNG
LNG Taurus	126,300	MOL/LNG Japan	GD Quincy	Aug-79	Marshall Is.	S	Moss	5	Various
LNG Venus	155,000	Osaka/MOL	MHI	Oct-14	Japan	S	Moss	4	Various
LNG Vesta	127,547	Tokyo Gas Consortium	Mitsubishi Nagasaki	Jun-94	Japan	S	Moss	4	Pertamina
LNG Virgo	126,400	MOL/LNG Japan	GD Quincy	Dec-79	Marshall Is.	S	Moss	5	Pertamina
Lobito	160,400	Mitsui/NYK/Teekay	Samsung	Oct-11	Bahamas	DFDE	GTT	4	Various
Lusail	138,000	Peninsular LNG	Samsung	May-05	Bahamas	S	GTT	4	Qatar
Macoma	173,400	Teekay	Daewoo	Oct-17	Bahamas	DFDE	GTT	4	Various
Madrid Spirit	138,000	Teekay LNG Partners	IZAR Puerto Real	Jan-05	Spain	S	GTT	4	Engas
Magdala	173,400	Teekay	Daewoo	Feb-18	Bahamas	DFDE	GTT	4	Various
Magellan Spirit	165,500	Teekay LNG Partners	Samsung	Sep-08	Denmark	DFDE	GTT	4	Various
Malanje	160,400	Mitsui/NYK/Teekay	Samsung	Jul-11	Bahamas	DFDE	GTT	4	Various
Maran Gas Achilles	174,000	Maran	Hyundai Samho	Feb-16	Greece	DFDE	GTT	4	Various
Maran Gas Agamemnon	174,000	Maran	Hyundai Samho	May-16	Greece	DFDE	GTT	4	Various
Maran Gas Alexandria	161,870	Maran	Hyundai Samho	Sep-15	Greece	DFDE	GTT	4	Various
Maran Gas Amphipolis	173,400	Maran	Daewoo	Aug-16	Greece	DFDE	GTT	4	Various
Maran Gas Apollonia	161,870	Maran	Daewoo	Jan-14	Greece	DFDE	GTT	4	Various
Maran Gas Asclepius	145,000	Kristen Navigation	Daewoo	Jul-05	Bermuda	S	GTT	4	Qatar

CARRIER FLEET



Maran Gas Chios	173,548	Maran	Daewoo	March-19	Greece	DFDE	GTT	4	Various
Maran Gas Coronis	145,700	Maran	Daewoo	Sep-07	Greece	S	GTT	4	Rasgas II
Maran Gas Delphi	159,800	Maran	Daewoo	Feb-14	Greece	DFDE	GTT	4	Various
Maran Gas Efessos	159,800	Maran	Daewoo	Jun-14	Greece	DFDE	GTT	4	Various
Maran Gas Hector	174,000	Maran	Hyundai Samho	Nov-16	Greece	DFDE	GTT	4	Various
Maran Gas Hydra	173,617	Maran	Daewoo	Feb-19	Greece	DFDE	GTT	4	Various
Maran Gas Lindos	159,800	Maran	Daewoo	Jun-15	Greece	DFDE	GTT	4	Various
Maran Gas Mystras	155,900	Maran Gas	Daewoo	May-15	Greece	DFDE	GTT	4	Various
Maran Gas Olympias	174,500	Maran	DSME	Feb-17	Greece	DFDE	GTT	4	Various
Maran Gas Pericles	174,000	Maran	Hyundai Samho	June-16	Greece	DFDE	GTT	4	Various
Maran Gas Posidonia	161,870	Maran	Daewoo	May-14	Greece	DFDE	GTT	4	Various
Maran Gas Roxana	173,400	Maran	Daewoo	Jan-17	Greece	DFDE	GTT	4	Various
Maran Gas Sparta	161,870	Maran	Hyundai Samho	April-15	Greece	DFDE	GTT	4	Various
Maran Gas Spetses	174,000	Maran	Daewoo	Feb-18	Greece	DFDE	GTT	4	Various
Maran Gas Troy	155,900	Maran Gas	Daewoo	May-15	Greece	DFDE	GTT	4	various
Maran Gas Ulysses	174,000	Maran	Hyundai Samho	Jan-17	Greece	DFDE	GTT	4	Various
Maran Gas Vergina	173,605	Maran	Daewoo	Dec-2016	Greece	DFDE	GTT	4	Various
Maria Energy	174,000	Tsakos	Hyundai	Mar-15	Marshall Is.	TFDE	GTT	4	Various
Marib Spirit	165,000	Teekay LNG	Samsung	May-08	Marshall Is.	DFDE	GTT	4	Various
Marshal Vasilevskiy	174,000	Gazprom	Hyundai	Russia	Jan-2019	DFDE	GTT	4	Russia-FSRU
Marvel Crane	177,000	NYK-Mitsui	Mitsubishi	Mar-19	Singapore	S	Moss	4	US/Various
Marvel Eagle	155,000	MOL-Osaka	Kawasaki	Sept-18	Marshall Is.	S	Moss	4	Cameron LNG/Various
Marvel Falcon	174,000	NYK-Mitsui	Samsung	Dec-18	Singapore	XDF	GTT	4	Cameron LNG/Various
Marvel Hawk	174,000	NYK-Mitsui	Samsung	Dec-18	Singapore	XDF	GTT	4	Cameron LNG/Various
Marvel Kite	174,000	NYK-Mitsui	Samsung	Dec-18	Singapore	XDF	GTT	4	Various
Marvel Pelican	155,000	MOL-Mitsui	Kawasaki	Dec-19	Marshall Is.	DFD	Moss	4	Cameron LNG-Various
Matthew	126,540	Suez LNG Shiping	Newport News	Jun-79	Bahamas	S	GTT	6	Atlantic LNG
Megara	173,000	Teekay	Daewoo	Oct-18	Bahama	MEGI-DF	GTT	4	Various
Mekaines	266,000	Naklilat	Samsung	Mar-09	Liberia	DRL	GTT	4	Qatar-Atlantic Basin
Meridian Spirit	165,500	Teekay LNG	Samsung	Jan-10	Denmark	DFDE	GTT	4	Various
Mesaimeer	210,100	Naklilat	Hyundai	Mar-09	Liberia	DRL	GTT	4	Qatar-Atlantic Basin
Methane Alison Victoria	145,000	GasLog	Samsung	Aug-07	Bermuda	S	GTT	4	Eq.Guinea LNG
Methane Becki Anne	170,000	GasLog	Samsung	Sep-10	Bermuda	TFDE	GTT	4	Various
Methane Heather Sally	145,000	GasLog	Samsung	Jul-07	Bermuda	S	GTT	4	Eq.Guinea LNG
Methane Jane Elizabeth	145,000	GasLog	Samsung	Jun-06	Bermuda	TFDE	GTT	4	Engas
Methane Julia Louise	170,000	GasLog	Samsung	Dec-09	Bermuda	TFDE	GTT	4	Various
Methane Kari Elin	138,200	Shell	Samsung	Jun-04	Bermuda	S	GTT	4	Various
Methane Lake Charles	145,000	Shell	Samsung	Feb-07	Bermuda	S	GTT	4	Marathon Oil
Methane Lydon Volney	145,000	Shell	Samsung	Aug-06	Bermuda	S	GTT	4	Engas
Methane Mickie Harper	170,000	Shell-GasLog	Samsung	Nov-10	Bermuda	TFDE	GTT	4	Various
Methane Nile Eagle	145,000	Shell-GasLog	Samsung	Dec-07	Bermuda	S	GTT	4	Engas
Methane Patricia Camila	170,000	Shell-GasLog	Samsung	Oct-10	Bermuda	TFDE	GTT	4	Various
Methane Princess	138,159	Golar LNG	Daewoo	2003	UK	S	GTT	4	Spot BG
Methane Rita Andre	145,000	GasLog	Samsung	Mar-06	Bermuda	S	GTT	4	Engas
Methane Shirley Elizabeth	145,000	GasLog	Samsung	Apr-07	Bermuda	S	GTT	4	Marathon Oil
Methane Sprit	165,000	Teekay LNG	Samsung	Mar-08	Singapore	DFDE	GTT	4	Various
Milaha Qatar	145,000	Milaha	Samsung	Apr-06	Denmark	S	GTT	4	Qatar
Milaha Ras Laffan	138,270	Milaha	Samsung	Mar-04	Denmark	S	GTT	4	RasGas II
Min Lu	147,000	China Ships	Hudong	Aug-09	China	S	GTT	4	Various
Min Rong	147,000	China LNG Ships	Hudong	Feb-09	Hong Kong	S	GTT	4	Australia-China
Mourad Didouche	126,130	Hyproc Shipping	Atlantique	Jul-80	Algeria	S	GTT	5	Sonatrach
Mozah	266,000	QGTC	Samsung	Aug-08	Qatar	DRL	GTT	5	Qatargas II
Mraweh	137,000	National Gas Shipping	Kvaerner-Masa	Jun-96	Liberia	S	Moss	4	ADGAS
Mubaraz	137,000	National Gas Shipping	Kvaerner-Masa	Jan-96	Liberia	S	Moss	4	Various
Muraq	210,100	J5-K Line	Daewoo	May-08	Marshall Is.	DRL	GTT	4	Qatar-Atlantic Basin
Murex	173,400	Teekay	Daewoo	Oct-17	Bahamas	DFDE	GTT	4	Various
Murwab	210,100	J5 Consortium	Daewoo	May-08	Marshall Is.	DRL	GTT	4	Qatargas
Muscat LNG	149,170	Oman Gas/MOL	Kawasaki Sakaide	Mar-04	Japan	S	Moss	4	Oman Gas
Myrina	173,000	Teekay	Daewoo	Sept-18	Bahamas	MEGI-DF	GTT	4	Various
Neo Energy	149,700	Tsakos	Hyundai	Feb-07	Liberia	S	GTT	4	Various
Neptune	145,000	Hoegh LNG/MOL	Samsung	Dec-09	Liberia	DFDE	GTT	4	Various
Nikolay Urvantsev	172,000	MOL-China Ships	Daewoo	Nov-19	Hong Kong	DFDE	GTT	4	Yamal
Nikolay Yevgenov	172,600	Teekay	Daewoo	Oct-18	Bahamas	MEGI-DF	GTT	4	Various
Nikolay Zubkov	172,600	Dynagas	Daewoo	Nov-18	Cyprus	DFDE	GTT	4	Yamal LNG
Nizwah LNG	145,000	Oryx LNG Carriers	Kawasaki Sakaide	Dec-05	Japan	S	Moss	4	Oman Gas
Northwest Sanderling	127,525	Australia LNG	Mitsubishi Nagasaki	Jun-89	Australia	S	Moss	4	NWS
Northwest Sandpiper	127,500	Australia LNG	Mitsui Chiba	Feb-93	Australia	S	Moss	4	NWS
Northwest Seaeagle	127,450	Australia LNG	Mitsubishi Nagasaki	Nov-92	Bermuda	S	Moss	4	NWS



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Northwest Shearwater	127,500	Australia LNG	Kawasaki Sakaide	Sep-91	Bermuda	S	Moss	4	NWS
Northwest Snipe	127,747	Australia LNG	Mitsui Chiba	Sep-90	Australia	S	Moss	4	NWS
Northwest Stormpetrel	127,600	Australia LNG	Mitsubishi Nagasaki	Dec-94	Australia	S	Moss	4	NWS
Northwest Swallow	127,708	J3 Consortium	Mitsui Chiba	Nov-89	Japan	S	Moss	4	NWS
Northwest Swan	138,000	Australia LNG	Daewoo	Mar-04	Australia	S	GTT	4	NWS
Northwest Swift	127,590	J3 Consortium	Mitsubishi Nagasaki	Sep-89	Japan	S	Moss	4	NWS
Noshu Maru	180,000	MOL-Jera	MHI-Nagasaki	Feb-19	Japan	S-gas	Moss	4	US-Japan
Oak Spirit	173,400	Teekay	Daewoo	Jan-16	Bahamas	MEGI-DF	GTT	4	Cheniere
Ob River	150,000	Lance Shipping	Hyundai	Oct-07	Marshall Is.	S	GTT	4	Various
Oceanic Breeze	155,300	K-Line	Mitsubishi-Nagasaki	June-18	Japan	S	Moss	4	Darwin-Japan
Onaiza	210,100	Nakilat	Daewoo	Apr-09	Liberia	DRL	GTT	4	Qatar-Atlantic Basin
Ougarta	171,866	Hyproc Shipping	Hyundai	Mar-17	Algeria	DFDE	GTT	4	Sonatrach
Pacific Arcadia	147,200	NYK Line	MHI	Oct-14	Bahamas	S	KM	4	Various
Pacific Breeze	182,000	K Line	Kawasaki	Mar-18	Marshall Is.	DFDE	Moss	4	Ichthys LNG
Pacific Enlighten	145,000	LNG MT	Mitsubishi	Mar-09	Japan	S	Moss	4	Various
Pacific Eurys	137,000	LNG Marine Transport	Mitsubishi Nagasaki	Mar-06	Bahamas	S	Moss	4	Darwin
Pacific Mimosa	155,300	NYK Line	MHI	Nov-17	Bahamas	S	Moss	4	Australia-Japan
Pacific Notus	137,006	Pacific LNG Shipping	Mitsubishi Nagasaki	Sep-03	Bahamas	S	Moss	5	Darwin
Palu LNG	160,106	TMSC Gas	Daewoo	Jun-14	Malta	TFDE	GTT	4	Various
Pan Americas	174,000	Teekay	Hudong	Mar-18	Hong Kong	TFDE	GTT	4	US-Asia
Pan Asia	174,000	Teekay	Hudong-Zhonghua	July-17	Bahamas	TFDE	GTT	4	Cheniere
Pan Europe	174,000	Teekay	Hudong	Sept-18	Hong Kong	TFDE	GTT	4	US-global
Papua	171,800	MOL-China	Hudong	Jan-15	Hong Kong	DFDE	SSD	4	PNG LNG
Patris	173,400	K-Line	Daewoo	Feb-18	Liberia	MEGI-DF	GTT	4	Various
Polar Eagle	89,880	Polar LNG	IHI Chita	Jun-93	Liberia	S	IHI SPB	4	ConocoPhillips/Marathon
Prachi	173,000	NYK-SCI	Hyundai	Nov-16	Singapore	TFDE	GTT	4	Petronet
Prism Agility	180,024	SK Shipping	Hyundai	April-19	Panama	DFDE	GTT	5	Various
Prism Brilliance	180,016	SK Shipping	Hyundai	March-19	Panama	DFDE	GTT	5	Various
Provalys	153,500	Gaz de France	Chantiers	Nov-06	France	DFDE	CS1	4	ELNG
Pskov	170,200	SovComFlot	STX	Mar-14	Liberia	DFDE	GTT	4	Various
Puteri Delima	130,400	MISC	Atlantique	Jan-95	Malaysia	S	GTT	4	Petronas
Puteri Delima Satu	137,100	MISC	Mitsui Chiba	Apr-02	Malaysia	S	GTT	4	Petronas
Puteri Firuz	130,400	MISC	Atlantique	May-97	Malaysia	S	GTT	4	Petronas
Puteri Firuz Satu	137,100	MISC	Mitsubishi Nagasaki	Sep-04	Malaysia	S	GTT	4	Petronas
Puteri Intan	130,400	MISC	Atlantique	Aug-94	Malaysia	S	GTT	4	Petronas
Puteri Intan Satu	137,100	MISC	Mitsubishi Nagasaki	Dec-01	Malaysia	S	GTT	4	Petronas
Puteri Mutiera Satu	137,100	MISC	Mitsui Chiba	Apr-05	Malaysia	S	GTT	4	Petronas
Puteri Nilam	130,400	MISC	Atlantique	Jun-95	Malaysia	S	GTT	4	Petronas
Puteri Nilam Satu	137,100	MISC	Mitsubishi Nagasaki	Sep-03	Malaysia	S	GTT	4	Petronas
Puteri Zamrud	130,400	MISC	Atlantique	May-96	Malaysia	S	GTT	4	Petronas
Puteri Zamrud Satu	137,100	MISC	Mitsui Chiba	Apr-87	Malaysia	S	GTT	4	Atlantic LNG
Raahi	136,000	Petronet LNG Ltd	Daewoo	Dec-04	Malta	S	GTT	4	Qatargas
Ramdane Abane	126,130	Hyproc Shipping	Atlantique	Jul-81	Algeria	S	GTT	5	Sonatrach
Rasheeda	266,000	QGTC	Samsung	Jun-10	Liberia	DRL	GTT		Various
Rias Baixas Knutsen	180,000	Knutsen	Hyundai	Aug-19	Spain	MEGI-DF	GTT	4	Various
Ribera del Duero Knutsen	173,400	Knutsen	Daewoo	Nov-10	Nor-NIS	DFDE	GTT	4	Various
Rioja Knutsen	176,300	Knutsen	Daewoo	Dec-16	Nor-NIS	DFDE	GTT	4	Various
Rudolf Samoylovich	172,652	Teekay-CLNG	Daewoo	Oct-18	Bahamas	MEGI-DF	GTT	4	Various
Salalah LNG	147,000	Oman Gas/MOL	Samsung	Dec-05	Japan	S	GTT	4	Oman
SCF Polar	71,500	Sovcomflot	Kockums	Aug-69	Liberia	S	GTT	6	Sonatrach
Sean Spirit	174,000	Teekay	Hyundai Samho	Feb-19	Bahama	MEGI-DF	GTT	4	Various
Seishu Maru	162,000	K Line-Transpacific	Kawasaki Sakaide	Jan-15	Panama	S	Moss	4	Australia-Japan
Seri Alam	138,000	MISC	Samsung	Oct-05	Malaysia	S	GTT	4	Yemen LNG
Seri Amanah	145,000	MISC	Samsung	Mar-06	Malaysia	S	GTT	4	Yemen LNG
Seri Anggun	145,000	MISC	Samsung	Nov-06	Malaysia	S	GTT	4	Yemen LNG
Seri Angkasa	145,000	MISC	Samsung	Feb-07	Malaysia	S	GTT	4	Petronas
Seri Ayu	145,000	MISC	Samsung	Oct-07	Malaysia	S	GTT	4	Various
Seri Bakti	152,300	MISC	Mitsubishi	Mar-07	Malaysia	S	GTT	4	Petronas
Seri Balhaf	152,000	MISC	Mitsubishi	Sep-08	Malaysia	S	GTT	4	Various
Seri Balquis	152,000	MISC	Mitsubishi	Dec-08	Malaysia	S	GTT	4	Various
Seri Begawan	152,300	MISC	Mitsubishi	Dec-07	Malaysia	S	GTT	4	Various
Seri Bijaksana	152,300	MISC	Mitsubishi	Feb-08	Malaysia	S	GTT	4	Petronas
Seri Camar	150,200	MISC	Hyundai	Feb-18	Malaysia	S	Moss	4	Petronas
Seri Camellia	150,000	MISC	Hyundai	Nov-16	Malaysia	S	Moss	4	Petronas
Seri Cemara	150,200	MISC	Hyundai	Apr-18	Malaysia	S	Moss	4	Petronas
Seri Cempak	150,200	MISC	Hyundai	Feb-18	Malaysia	S	Moss	4	Petronas
Seri Cenderawasih	150,000	MISC	Hyundai	Jan-17	Malaysia	S	Moss	4	Petronas
Sestao Knutsen	138,000	Knutsen	IZAR Sestao	Jan-07	Spain	S	GTT	4	Atlantic LNG

CARRIER FLEET



Sevilla Knutsen	173,400	Knutsen	Daewoo	Jun-10	N.I.S.	DFDE	GTT	4	Various
Shahamah	135,500	National Gas Shipping	Kawasaki Sakaide	Oct-94	Liberia	S	Moss	5	ADGAS
Shangra	266,000	QGTC	Samsung	Nov-09	Liberia	DRL	GTT	5	Qatargas IV
Shen Hai	147,100	China LNG	Hudong Zhonghua	Sep-12	China	AB/CC Steam	GTT	4	Various
Simaisma	147,700	Maran Gas Maritime	Daewoo	Jul-06	Greece	S	GTT	4	Qatar
SK Audace	180,000	SK-Marubeni	Samsung	Jul-17	Panama	XDF	GTT	4	Various
SK Resolute	180,000	SK-Marubeni	Samsung	Jun-18	Panama	XDF	GTT	4	Various
SK Splendor	138,375	SK Shipping	Samsung	Mar-00	Panama	S	GTT	4	Oman Gas
SK Stellar	138,375	SK Shipping	Samsung	Dec-00	Panama	S	GTT	4	RasGas
SK Summit	138,000	SK Shipping	Daewoo	Aug-99	Panama	S	GTT	4	RasGas
SK Sunrise	138,306	I. S. Carriers	Samsung	Sep-03	Panama	S	GTT	4	RasGas
SK Supreme	138,200	SK Shipping	Samsung	Jan-00	Panama	S	GTT	4	RasGas
Sohar LNG	137,250	Oman Gas/ MOL	Mitsubishi Nagasaki	Oct-01	Malta	S	Moss	5	Oman Gas
Sohshu Maru	180,000	MOL	Kawasaki HI	Nov-19	Japan	S-gas	Moss	4	Various-Japan
Solaris	155,000	GasLog	Samsung	Jul-14	Bermuda	TFDE	GTT	4	Various
Sonangol Benguela	160,500	Sonangol	Daewoo	Sep-11	Bahamas	S	GTT	4	Angola LNG
Sonangol Etosha	160,500	Sonangol	Daewoo	Sep-11	Bahamas	S	GTT	4	Angola LNG
Sonangol Sambizanga	160,500	Sonangol	Daewoo	Sep-11	Bahamas	S	GTT	4	Angola LNG
Southern Cross	172,000	MOL	Hudong	May-15	Hong Kong	DRL	GTT	4	Various
Soyo	160,400	Mitsui/NYK/Teekay	Samsung	May-11	Bahamas	DFDE	GTT	4	Various
Spirit of Hela	177,000	MOL	Hyundai	Oct-09	Panama	DFDE	GTT	4	Various
Stena Blue Sky	145,700	Stena	Daewoo	Jan-06	Panama	S	GTT	4	Various
Stena Clear Sky	171,800	Stena	Daewoo	Sep-10	Panama	DFDE	GTT	4	Various
Stena Crystal Sky	171,800	Stena	Daewoo	Jul-10	Panama	DFDE	GTT	4	Various
STX Kolt	145,700	STX Panocean	Korea Hanjin	Nov-08	Panama	DFDE	GTT	4	Various
Suez Point Fortin	154,200	Trinity LNG	Koyo Japan	Nov-09	Panama	S	GTT	4	Yemen LNG
Symphonic Breeze	147,608	K-Line	Mitsubishi Nagasaki	Oct-07	Bahamas	DFDE	Moss	4	Australia-Japan
Taitar No. 1	145,000	NYK Line	Mitsubishi	Oct-09	Liberia	S	Moss	4	Various
Taitar No. 3	145,000	NYK Line	Mitsubishi	Jan-10	Liberia	S	Moss	4	Various
Taitar No. 4	145,000	NYK	Mitsubishi	Jan-10	Liberia	S	Moss	4	Various
Tangguh Batur	145,700	Sovcomflot/NYK	Daewoo	Dec-08	Cyprus	S	GTT		Tangguh
Tangguh Foja	155,000	K Line	Samsung	Jul-08	Panama	DFDE	GTT	4	Tangguh LNG
Tangguh Hiri	155,000	Teekay LNG	Hyundai	Nov-08	Isle of Man	DFDE	GTT	4	Tangguh
Tangguh Jaya	145,700	K Line	Samsung	Nov-08	Panama	DFDE	GTT	4	Tangguh
Tangguh Palung	155,000	K Line	Samsung	Mar-09	Panama	DFDE	GTT	4	Tangguh
Tangguh Sago	155,000	Teekay LNG	Hyundai	Mar-09	Isle of Man	DFDE	GTT	4	Tangguh LNG
Tangguh Towuti	145,700	Sovcomflot/NYK	Daewoo	Oct-08	Cyprus	S	GTT	4	Tangguh
Tembek	216,200	OSG/Nakilat	Samsung	Sep-07	Marshall Is.	DRL	GTT	4	Qatargas II
Tenaga Satu	130,000	MISC	Dunkerque	Sep-82	Malaysia	S	GTT	5	Petronas
Tessala	171,866	Hyproc Shipping	Hyundai	Dec-16	Algeria	DFDE	GTT	4	Sonatrach
Torben Spirit	173,000	Teekay	Daewoo	Feb-17	Bahama	MEGI-DF	GTT	4	Various
Trinity Arrow	154,900	K Line	Imabari Shipbuilding	Mar-08	Panama	S	GTT	4	Various
Umm Al Amad	210,100	J5	Daewoo	Aug-08	Marshall Is.	DRL	GTT	4	Ras Gas III
Umm Al Ashtan	137,000	National Gas Shipping	Kvaerner- Masa	May-97	Liberia	S	Moss	4	ADGAS
Umm Bab	145,000	Kristen Navigation	Daewoo	Nov-05	Bermuda	S	GTT	4	Qatargas
Umm Slaal	266,000	QGTC	Samsung	Nov-08	Qatar	DRL	GTT	5	Qatargas
Valencia Knutsen	173,400	Knutsen	Daewoo	Sep-10	Nor-NIS	DFDE	GTT	4	Various
Velikiy Novgorod	170,200	SovComFlot	STX	Feb-14	Liberia	DFDE	GTT	4	Various
Vladimir Rusanov	172,000	MOL-China Shipping	Daewoo	Mar-18	Hong Kong	DFDE	GTT	4	Yamal
Vladimir Viz	172,000	MOL-China Shipping	Daewoo	Sept-18	Hong Kong	DFDE	GTT	4	Yamal
Vladimir Voronin	172,600	Teekay	Daewoo	Jun-19	Bahamas	MEGI-DF	GTT	4	Various
Wakaba Maru	125,000	J3 Consortium	Mitsui Chiba	Apr-85	Japan	S	Moss	5	Pertamina
WilForce	156,000	Teekay LNG	Daewoo	Aug-13	NIS	DFDE	GTT	4	Various
WilPride	156,000	Teekay	Daewoo	June-13	NIS	DFDE	GTT	4	Various
Woodside Cheney	174,000	Maran	Hyundai Samho	Mar-16	Greece	DFDE	GTT	4	Various
Woodside Donaldson	165,500	Teekay LNG	Samsung	Dec-09	Singapore	DFDE	GTT	4	Various
Woodside Goode	159,800	Maran	Daewoo	Jul-14	Greece	DFDE	GTT	4	Various
Woodside Reeswithers	173,400	Maran	Daewoo	Nov-16	Greece	DFDE	GTT	4	Various
Woodside Rogers	155,900	Maran Gas	DSME	Jul-13	Greece	DFDE	GTT	4	Various
Yakov Gakkel	172,600	Teekay-China JV	Daewoo	Nov-19	Bahamas	MEGI-DF	GTT	4	Various
Yamal Spirit	174,000	Teekay	Hyundai Samho	Jan-19	Bahama	MEGI-DF	GTT	4	Various
Yari LNG	159,983	TMSC Gas	Daewoo	Jun-14	Malta	TFDE	GTT	4	Various
Yenisei River	155,000	Dynagas	Hyundai	Jul-13	Marshall Is.	DFDE	GTT	4	Various
YK Sovereign	127,125	SK Shipping	Hyundai	Dec-94	Panama	S	Moss	4	Pertamina
Zarga	266,000	QGTC	Samsung	Dec-09	Liberia	DRL	GTT	5	Qatar-Atlantic
Zekreet	135,420	J4 Consortium	Mitsui Chiba	Dec-98	Japan	S	Moss	5	Qatargas

Any observations, additions or suggested revisions to the LNG journal World LNG Carrier Fleet list should be sent to editor@lngjournal.com

LNG Import Terminals

Explanatory Notes

- The tables do not include the following types of LNG facilities :
 - ♦ Small marine satellite terminals receiving LNG from liquefaction plants in their own country (such as exist in Norway) or which receive LNG transhipped from nearby reception terminals in their own country (such as in Japan)
 - ♦ Satellite LNG storage facilities that receive LNG transported only by road or rail
- Expansions of LNG reception terminals are only shown if they involve new storage tanks
- Where there is a blank in the table the information is uncertain or unknown.

Any comments on the tables, and corrections / additional information from terminal shareholders and project developers would be most welcome, and should be sent to John McKay e-mail editor@lngjournal.com

Country	Location (Project)	Owners	Start up	Tanks	Storage Capacity
Belgium	Zeebrugge	Fluxys	1987	4	380,000
Canada	Canaport Saint John	Irving Oil, Repsol	2009	3	480,000
Chile	Quintero	ENAP, Metrogas, Enagas	2009	3	334,000
	Mejillones	Engie, Ameris Capital AGF	2010	1	175,000
China	Beihai LNG, Guangxi	Sinopec	2015	4	640,000
	Dalian	PetroChina	2011	3	480,000
	Dapeng ND Guangdong	CNOOC	2018	4	640,000
	Dongguan, Guangdong	Jovo Group	2013	2	160 000
	Fujian LNG (Xiuyu)	CNOOC, Fujian I&D Corp.	2008	2	640,000
	Guangdong	CNOOC,BP	2006	3	480,000
	Haikou, Hainan LNG	CNOOC	2014	3	480,000
	Ningbo, Zhejiang	CNOOC, Zhejiang Energy	2012	3	480,000
	Qidong, Jiangsu	Guanghui Energy	2018	1	60,000
	Qingdao, Shandong	Sinopec	2014	3	480,000
	Rudong	PetroChina	2011	3	530,000
	Shanghai	CNOOC, Shenergy Group	2009	3	495,000
	Shanghai, Mengtougou	Shanghai Gas	2008	3	120 000
	Shenzen, Diefu	CNOOC	2016	2	320,000
	Tangshan, Hebei	PetroChina	2013	3	480,000
	Tianjin North	Sinopec	2017	2	320,000
	Yuedong, Guangdong	CNOOC	2016	2	320,000
	Zhoushan Zhejiang	Enn Group	2018	2	320,000
	Zhuhai, Gaolan	CNOOC	2013	3	480,000
Dominican Republic	Punta Caucedo	AES Andres	2003	1	160 000
Finland	Pori	Gasum Skangas	2016	1	30,000
	Tornio	Gasum Skangas	2018	1	30,000
France	Fos Tonkin	Elengy	1972	3	150,000
	Montoir-de-Bretagne	Elengy	1980	3	360,000
	Fos Cavaou	Engie, Total	2010	3	330,000
	Dunkirk LNG	EDF, Fluxys, Total	2016	3	570,000
Gibraltar	Gasnor	Shell	2018	1	5,000
Greece	Revithoussa	DEPA	2000	3	225,000
India	Dabhol	GAIL, NTPC (Ratnagiri Gas & Power)	2009	3	480,000
	Dahej	Petronet LNG	2004	4	592,000
	Hazira	Shell India, Total	2005	2	320,000
	Kochi, Kerala	Petronet LNG	2013	2	320,000
	Mundra	Gujarat State Petroleum, Adani Group	2018	2	320,000
	Kamarajar (Ennore), Tamil Nadu	Indian Oil, DFC, ICICI Bank	2019	2	360,000
Indonesia	Arun	Pertamina	2015	5	507,000
Italy	Panigaglia	Snam	1969	2	100,000
	Porto Levante (offshore GBS)	ExxonMobil, Qatar Petroleum, Edison Gas	2009	2	250,000
Jamaica	Montego Bay	New Fortress	2018	1	7,000
Japan	Negishi	Tokyo Gas	1969	14	1,180,000
	Sodegaura	Tokyo Gas JERA Co. Inc	1973	35	2,660,000
	Ohgishima	Tokyo Gas	1998	4	850,000
	Higashi-Ohgishima	JERA Co. Inc.	1984	9	540,000
	Futtsu	JERA Co. Inc.	1985	10	1,360,000
	Yokkaichi LNG	JERA Co. Inc.	1988	4	320,000
	Kawagoe	JERA Co. Inc.	1997	6	840,000
	Yokkaichi Works	Toho Gas	1991	2	160,000
	Chita LNG Joint	Toho Gas, Chubu Electric	1978	4	300,000
	Chita LNG	Toho Gas, Chubu Electric	1983	7	640,000
	Chita - Midorihamma	Toho Gas	2001	3	600,000
	Senboku I	Osaka Gas	1972	4	180,000
	Senboku II	Osaka Gas	1977	18	1,585,000
	Himeji	Osaka Gas	1984	8	740,000
	Himeji LNG	Kansai Electric	1979	7	520,000
	Yanai	Chugoku Electric	1990	6	480,000
	Niigata	Nihonkai LNG, Tohoku Electric	1984	8	720,000
	Oita	Oita Gas, Kyushu Electric	1990	5	460,000
	Tobata	Kitakyushu LNG	1977	8	480,000
	Fukuoka	Saibu Gas	1993	2	70,000
	Sodeshi	Shizuoka Gas	1996	3	337,200
	Hatsukaichi	Hiroshima Gas	1996	2	170,000
	Kagoshima	Nippon Gas	1996	2	136,000
	Shin-Minato	Sendai City Gas	1997	1	80,000
	Nagasaki	Saibu Gas	2003	1	36,000
	Sakai	Kansai Electric, Cosmo Oil	2006	3	420,000
	Mizushima	Nippon Oil, Chugoku Electric	2006	2	320,000

LNG Import Terminals (continued)

Country	Location (Project)	Owners	Start up	Storage	
				Tanks	Capacity
Japan (continued)	Sakaide	Shikoku Electric, Cosmo Oil	2011	1	180,000
	Ishikari LNG	Hokkaido Gas, Hokkaido Electric	2012	2	380,000
	Okinawa	Okinawa Electric Power	2012	2	280,000
	Naoetsu	Inpex	2013	2	360,000
	Joetsu	JERA Co. Inc.	2011	3	540,000
	Hachinohe LNG	Nippon Oil	2015	2	280,000
	Hitachi LNG	Tokyo Gas	2015	1	230,000
Korea	Soma Fukushima	Japan Petroleum Exploration	2017	1	225,000
	Boryyeong	GS Energy, SK E&S	2017	3	200,000
	Incheon	Kogas	1996	20	2,880,000
	Kwangyang	POSCO SK E&S	2005	4	530,000
	Pyeong-Taek	Kogas	1986	23	3,360,000
	Samcheok	Kogas	2014	3	600,000
	Tong-Yeong	Kogas	2002	17	2,620,000
Malaysia	Jeju	Kogas	2019	2	90,000
	Pengerang Johor	Petronas Gas	2017	2	400,000
Mexico	Altamira	Vopak, Enagas	2006	2	300,000
	Energia Costa Azul	Sempra LNG	2008	2	320,000
	Manzanillo	Samsung, Kogas, Mitsui	2012	2	300,000
Netherlands	Gate LNG	Gasunie, Royal Vopak	2011	3	540,000
Panama	Costa Norte	AES	2018	1	130,000
Phillipines	Pagbilao LNG	Energy World Corp.	2017	1	130,000
Poland	Swinoujscie	Baltic Gaz System	2015	2	320,000
Portugal	Sines	REN Atlantico	2004	3	390,000
Puerto Rico	Penuelas	EcoElectrica	2000	1	160,000
Singapore	Singapore	Singapore Energy Authority	2013	3	540,000
Spain	Barcelona	Enagas	1969	8	840,000
	Huelva	Enagas	1988	5	610,000
	Cartagena	Enagas	1989	5	587,000
	Bilbao	Enagas, EVE	2003	3	450,000
	Sagunto	GNF, Osaka Gas, Oman Oil	2006	4	600,000
	Mugardos, El Ferrol	Reganosa, Sonatrach, Sojitz Corp.	2006	2	300,000
	El Musel, Gijón,	Enagas	2013	2	300,000
Sweden	Lysekil	Gasum	2014	1	30,000
	Nynashamn	AGA Gas	2011	1	20,000
Taiwan	Yung-An	CPC	1990	6	690,000
	Tai-Chung	CPC	2009	5	800,000
Thailand	Map Ta Phut	PTT LNG	2011	2	320,000
Turkey	Marmara Ereglisi	Botas	1994	3	255,000
	Izmir	EgeGaz	2006	2	280,000
USA	Everett	Suez LNG NA	1971	2	155,000
	Lake Charles	Shell, ETE	1982	4	425,000
	Freeport	Freeport LNG Development	2008	2	320,000
	Golden Pass, TX	Qatar Petroleum, ExxonMobil	2010	5	775,000
	Pascagoula, MS	Gulf LNG, Kinder	2012	2	320,000
UK	Isle of Grain	National Grid	2005	8	1,000,000
	South Hook	ExxonMobil, Qatar Petroleum, Total	2009	5	775,000
	Dragon LNG, Milford Haven	Shell, Petronas	2009	2	310,000

LNG Import Terminal Projects

Country	Location/Project	Owners/Project Developers	Start up	Storage	
				Tanks	Capacity
China	Shenzhen	CNPC Yudean Power	2021	2	120,000
	Tianjin (Nangang)	Beijing Energy	2022	10	2,000,000
	Yangjiang	CNPC Yudean Power	2023	2	120,000
	Zhangzhou Fujian	CNOOC	2022	2	160,000
India	Dhamra Odisha	Indian Oil, Adani, GAIL	2020	2	320,000
	Jaigarh	Hiranandani Group	2019	2	320,000
	Kodinar	Hindustan Petroleum Corp.	2022	1	160,000
Japan	Himuka	Diagas Group-Osaka Gas	2022	1	65,000

LNG FSRU Import Facilities

Country	Location (Project)	Owners	Start up
Argentina	Bahia Blanca GasPort	Excelerate/YPF Repsol	2008
	Escobar GasPort	Excelerate/Enarsa	2011
Bangladesh	Moheshkhali	Excelerate, PetroBangla	2018
	Cox's Bazar	Summit Power International, Excelerate Energy	2019
Brazil	Pecem, FSRU	Petrobras	2009
	Guanabara Bay FSRU	Petrobras	2009
	Salvador, Bahia FSRU	Petrobras	2013
China	Tianjin FSRU	CNOOC, Hoegh, various	2013
Colombia	Cartagena FSRU	Promigas, Sociedad Portuaria El Cayao	2016
Egypt	Ain Sokhna, Suez	EGAS, Hoegh	2015
	Ain Sokhna, Suez	EGAS, BW Gas	2015
Indonesia	Lampung	Hoegh LNG, PGN LNG	2014
	Nusantara (Jakarta Bay)	Golar LNG, Pertamina	2012
Italy	Livorno	OLT Offshore LNG Toscana	2013
Jamaica	Old Harbour	Golar FSRU, New Fortress	2019
Jordan	Aqaba, Jordan	Golar LNG	2015
Kuwait	Mina Al-Ahmadi	KPC	2009
Lithuania	Klaipeda	Klaipedos Nafta Hoegh LNG	2014
Malaysia	Malacca FSRU	Petronas	2012
Malta	FSU Armada Mediterranea	ElectroGas	2016
Pakistan	Port Qasim	Excelerate, Engro Corp	2015
	Port Qasim	BW-Mitsui, PGP Consortium	2017
Turkey	Aliaga FSRU, Turquoise FLNG	Etki LNG	2016
	Dortyol FSRU Challenger	Botas	2018
UAE	Ruwais, Abu Dhabi	Gasco (UAE)	2016
	Jebel Ali Port, Dubai	DSA (UAE)	2010

LNG Export Projects

Country	Location/Project	Project Developers	Planned Start Up	Number of Trains	Capacity In MTPA
AUSTRALIA	Pluto LNG expansion	Woodside	2021+	2	10.0
CANADA	Bear Head LNG, Nova Scotia	LNG Ltd.	2024	4	8.0
	Goldboro LNG, Nova Scotia	Pieridae Energy	2024	2	10.0
	Kitimat LNG, BC	Woodside, Chevron	2024	2	10.0
	LNG Canada, BC	Shell, Mitsubishi, Kogas, PetroChina, Petronas	2024	2	12.0
	Kwispaa FLNG, Vancouver	Steelhead LNG	2024	4	12.0
	Vancouver Tilbury	WesPac Midstream	2021	1	3.25
	Woodfibre LNG, Squamish	Pacific Oil & Gas Co	2020	2	2.1
EQ.GUINEA	Equatorial Guinea Fortuna FLNG	Ophir, Golar LNG, GEPetrol	2020+	1	2.0
INDONESIA	Sengkang LNG	Energy World Corp.	2019	4	2.0
MALAYSIA	Rotan FLNG (Sabah)	Petronas, Murphy Oil	2021	1	1.5
MOZAMBIQUE	Area 1 Onshore	Anadarko Petroleum and partners	2023+	2	10.0
	Area 4 Onshore	Eni and partners	2023+	2	10.0
	Area 4 FLNG	Eni and partners	2022	1	3.4
NIGERIA	NLNG Train 7	NNPC, Shell, Eni, Total	2022+	1	7.0
PAPUA NEW GUINEA	Elk-Antelope LNG	Total, ExxonMobil Oil Search, Petromin	Studies		
RUSSIA	Sakhalin II expansion	Gazprom, Shell, Mitsui, Mitsubishi	2021	studies	
	Vladisvostok LNG	Gazprom, Itochu, various	2023+	2	10.0
	Arctic LNG II Siberia	Novatek, Total	2023	3	19.8
USA	Alaska LNG Nikiski	Alaska Gasline Development Corp.	2023+	3	20.0
	Annova LNG, Brownsville	Exelon Corp.	2023+	6	6.0
	Commonwealth LNG, Louisiana	Commonwealth LNG LLP	2023+	8	9.0
	Delfin LNG, Louisiana	Delfin	2023+	3	9.0
	Driftwood LNG, Louisiana	Tellurian, Total and others	2023	6	27.6
	Galveston Bay LNG	NextDecade	2023+	6	27.0
	Golden Pass, Texas	Qatar Petroleum, ExxonMobil	2024	3	15.6
	Jacksonville, St John's River	Eagle LNG, Ferus Natural Gas Fuels	2021+	small	-1
	Jordan Cove, Coos Bay	Pembina Corp.	2024	2	7.8
	Lake Charles, Louisiana	Shell, ETE	2024	3	15.0
	Magnolia LNG	Louisiana LNG Ltd.	2023+	4	8.0
	Port Arthur LNG	Sempra	2023+	2	10.0
	Rio Grande LNG	NextDecade	2023+	6	27.0
	Sabine Pass LNG, Louisiana	Cheniere	2016-19	1	4.5
	Texas LNG Brownsville	Chandra, Meyer, Samsung, others	2023+	2	4.0
	VG LNG (Cameron Parish)	Venture Global	2022	5	12.0
	VG LNG (Plaquemines)	Venture Global	2022	10	20.0
	VG LNG (Delta-Plaquemines)	Venture Global	2024	36	22.5

LNG Exporters

Country	Location/Project	Shareholders	Start up	Liquefaction		Storage	
				Trains	capacity (nominal) mtpa	No. of tanks	Total capacity m³
ABU DHABI (UAE)	Das Island (Adgas)	ADNOC, Mitsui, BP, Total	1977 1994	2 1	3.2 2.5	3	240,000
ALGERIA	Arzew	Sonatrach GL4Z	1964	3	1.1	3	35,000
	Arzew	Sonatrach GL1Z	1978	6	7.8	3	300,000
	Arzew	Sonatrach GL2Z	1980	6	8.0	3	300,000
	Arzew	Sonatrach	2014	1	4.7		
	Skikda	Sonatrach GL1K II	1980	3	3.0	5	308,000
	Skikda	Sonatrach (rebuild)	2013	1	4.5		
ANGOLA	Soyo	Sonangol, Chevron, BP, ENI, Total	2012	1	5.2	2	370,000
ARGENTINA	FLNG Tango	Bahia Blanca	2019	1	0.5	1	16,100
AUSTRALIA	Karratha	NWS Woodside, Shell, BHP	1989	2	5.0	4	260,000
		(BP, Chevron	1992	1	2.5	1	130,000
		(Mistubishi/Mitsui)	2004	1	4.4	1	130,000
		NWS partners	2008	1	4.4	1	130,000
	Darwin	Darwin (Bayu Undan) ConocoPhillips, Santos, Eni, Inpex, TEPCO, Tokyo Gas	2006	1	3.5	1	188,000
	Australia Pacific LNG	ConocoPhillips, Origin Energy, Sinopec	2016	2	7.5	2	320,000
	Gladstone LNG	Santos, Petronas, Total, Kogas	2015	2	7.8	2	280,000
	Gorgon LNG	Chevron, Shell, ExxonMobil	2016	3	15.6	2	360,000
	Pluto LNG	Woodside, Tokyo Gas, Kansei	2012	1	4.8	2	240,000
	QCLNG	Shell, CNOOC	2014	2	8.0	2	280,000
	Wheatstone LNG	Chevron, Woodside, Kuwait (KUFPEC), Jera, Kyushu	2017	2	8.9	2	300,000
	Ichthys LNG	Inpex Corp., Total	2018	2	8.9	2	330,000
	Prelude FLNG	Shell, Inpex, Kogas CPC	2019	1	3.5		
BRUNEI	Lumut	Brunei/Shell/Mitsubishi/Total	1972-74	5	7.2	3	176,000
CAMEROON	Hilli Episeyo FLNG	Kribi Perenco	2018	1	1.2	1	125,000
EGYPT	Damietta	Union Fenosa, EGPC, EGAS	2004	1	5.0	2	300,000
	Idku	EGPC, EGAS, Shell, Total, Petronas	2005	2	7.2	2	280,000
EQ.GUINEA	Bioko Island	Marathon, Sonagas, Mitsui, Marubeni	2007	1	3.4	2	272,000
INDONESIA	Bontang I	Pertamina, VICO, JILCO, Total	1977	2	5.2	5	635,000
	Bontang II		1983	2	5.2		
	Bontang III		1989	1	2.8		
	Bontang IV		1993	1	2.8		
	Bontang V		1997	1	2.8		
	Bontang VI		1999	1	3.0		
	Sulawesi LNG	Medco Energi, Pertamina, Mitsubishi	2015	1	2.0	1	170,000
	Tangguh	BP, MI Berau, CNOOC, Nippon, LNG Japan	2008	2	7.6	2	340,000
MALAYSIA	Bintulu (MLNG Satu)	Petronas, Sarawak, Mitsubishi	1983	3	8.1	4	260,000
	Bintulu (MLNG Dua)	Petronas, Shell, Sarawak, Mitsubishi	1995	3	7.8	1	65,000
	Bintulu (MLNG Tiga)	Petronas, Shell, Sarawak, Mitsubishi, Nippon Oil	2003	2	6.8	1	120,000
	Bintulu Train 9	Petronas	2016	1	3.6		
	Kanowit FLNG	Petronas	2016	1	1.2		
NIGERIA	Bonny Island	NNPC, Shell, Total, Eni	1999	2	6.4	2	168,400
		Nigeria LNG (formed by above)	2002	1	3.2	1	84,200
		Nigeria LNG	2006	2	8.2		
		Nigeria LNG	2008	1	4.1	1	84,200
NORWAY	Snøhvit/Melkoya	Equinor, Total, Petoro	2007	1	4.2	2	280,000
OMAN	Oman LNG	Oman Govt., Shell, Total, Korea LNG	2000	2	7.1	2	240,000
		Mitsubishi, Mitsui, Partex and Itochu					
PAPUA NEW GUINEA	PNG LNG	Oman Govt., Oman LNG Union Fenosa, Osaka Gas, & Itochu	2006	1	3.7	2	240,000
		ExxonMobil, Oil Search, Santos, JX Nippon Oil	2014	2	6.9	2	320,000
PERU	Peru LNG	Hunt Oil, Shell, Marubeni, SK Group	2010	1	4.4	2	260,000
QATAR	Qatargas 1-T1&2	QP, ExxonMobil, Total, Marubeni, Mitsui	1997	2	6.4	4	340,000
	Qatargas 1-T3	QP, ExxonMobil, Total, Marubeni, Mitsui	1999	1	3.1		
	Qatargas II-T1	QP, ExxonMobil	2009	1	7.8		
	Qatargas II-T2	QP, ExxonMobil, Total	2009	1	7.8	8	1,160,000
	Qatargas III-T1	QP, ConocoPhillips, Mitsui	2010	1	7.8		
	Qatargas IV-T1	QP, Shell	2010	1	7.8		
	RasGas I- T1&2	QP, ExxonMobil, Kogas, Itochu, LNG Japan	1999	2	6.6		
	RasGas II- T3	QP, ExxonMobil	2004	1	4.7		
	RasGas II- T4	QP, ExxonMobil	2005	1	4.7	6	840,000
	RasGas II- T5	QP, ExxonMobil	2007	1	4.7		
	Rasgas III – T6	QP, ExxonMobil	2009	1	7.8		
	Rasgas III – T7	QP, ExxonMobil	2010	1	7.8		
RUSSIA	Sakhalin Island	(Sakhalin Energy) Gazprom, Shell, Mitsui, Mitsubishi	2009	2	9.6	2	200,000
	Yamal LNG Siberia	Novatek, Total, CNPC, Silk Fund	2017	3	16.5	4	640,000
TRINIDAD & TOBAGO	Point Fortin Train 1	BP, Shell, CIC, NGC	1999	1	3.0	2	204,000
	Train 2	BP, Shell	2002	1	3.3	1	160,000
	Train 3	BP, Shell	2003	1	3.3	1	160,000
	Train 4	BP, Shell, NGC	2005	1	5.2	1	160,000
USA	Cheniere Sabine Pass	Cheniere Energy	2016	5	22.5	5	800,000
	Cove Point LNG	Dominion Energy	2017	1	5.3	7	695,000
	Cheniere Corpus Christi	Texas Cheniere	2018	2	9.0	3	480,000
	Cameron Hackberry	Sempra, Total, Mitsui, Mitsubishi	2019	2	9.8	3	480,000
	Elba Island Georgia	Kinder Morgan, EIG Energy	2019	10	2.5	5	535,000
	Freeport LNG, Texas	Freeport LNG	2019	2	10.2	3	483,000
YEMEN	Bal-Haf	Yemen LNG, Total, Yemen Gas, Hunt Oil, SK Group, Hyundai	2009	2	6.7	2	320,000



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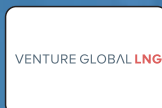
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