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Stark rebound in China's LNG demand unlikely to upend markets

Uncertainty abounds about the scale and speed of China's economic recovery after almost three years of lockdowns and the impact on energy consumption. But analysts are confident that even a stronger-than-expected Chinese LNG demand growth this year is unlikely to cause a repeat of the 2022 chaos; our Markets Editor Anja Karl has more.

Beijing's uncompromising zero-Covid policy has put large parts of the population repeatedly into quarantine, hitting the economy hard and making energy demand reach rock-bottom. GDP growth plunged to 3 percent last year, oil consumption contracted and LNG imports fell 20 percent by a staggering 16 million tons or 22 billion cubic metres (bcm) – largely displaced by a fast increase in Russian pipeline gas supply and low-cost domestic coal production.

Then, in a quiet move, President Xi Jinping started to lift lockdowns and open borders from January 8 which is bound to boost trade, investment and energy consumption. Yet China's leadership stays cautious and announced a GDP growth target of "around 5 percent" for 2023. Analysts, meanwhile, see considerable upside and anticipate GDP to expand by up to 7 percent which would have ripple

effects on global commodity markets.

These days, China's gas demand is rebounding with LNG shipments totalling 9.55 million tons over the eight weeks through March 19, our market tracker shows. Australian cargoes covered the lion's share, or 2.81 million tons, followed by Qatar with 2.89 mmt and Malaysia with 1.10 mmt, according to LNG Journal figures.

Yet Chinese gas demand could rise by more than 30 bcm, or 9 percent, supported by substantially lower LNG prices, Wood Mackenzie finds. But booming domestic production, up 14 bcm, and sustained ramp up of Russian pipeline gas supply, up 7 bcm, will constrain LNG imports to 97 bcm or 71 million tons this year in the reference case. This would be just 7.4 million tons (10 bcm) more than last year and still far less than the 80 million tons imported in 2021, analysts point out.

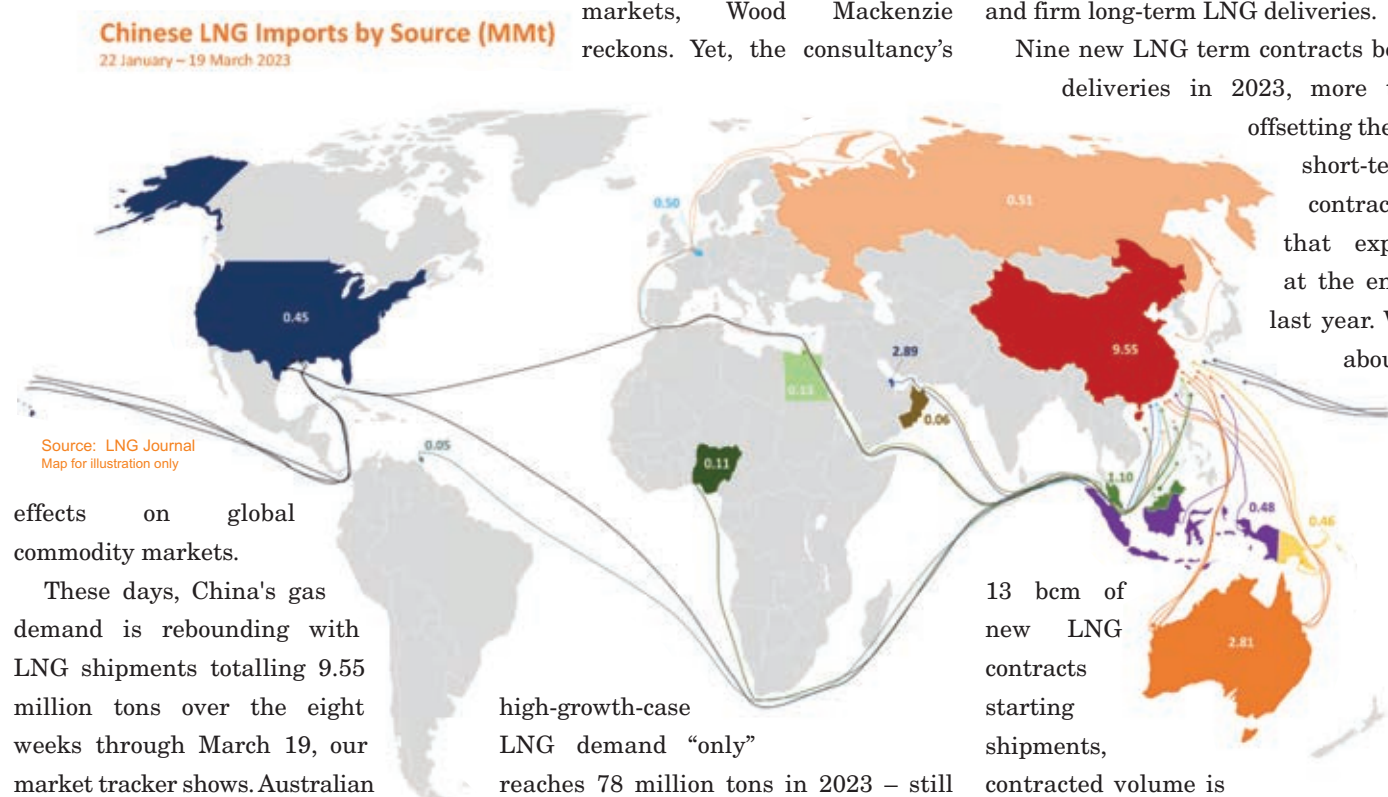
In a high-growth case, soaring construction activity boosts electricity demand and cement, bricks, glass and ceramics manufacturers switch from coal to natural gas for generating onsite power and process heat. All of this could push up gas demand by an additional 10 bcm which would have to be sourced on spot markets, Wood Mackenzie reckons. Yet, the consultancy's

US\$15-20/MMBtu in the base case in a "delicately balanced market." A stark rise in Chinese LNG demand – at a time when no new liquefaction and export projects are to be commissioned globally before 2025 – could push up prices towards US\$25/MMBtu before moderating demand elsewhere limits the upside.

Term LNG contracts could keep China well covered

All eyes are on whether, and to what extent, the latest decline in LNG prices will tempt Chinese buyers. Beijing Gas just procured a spot cargo for April, inspired by CNOOC's large spot tender early this year. But even though JKM futures for May delivery were last seen trading as low as US\$12.52 per MMBtu, most market observers reckon Chinese buyers will cover the bulk of demand with pipeline gas imports, domestic production and firm long-term LNG deliveries.

Nine new LNG term contracts began deliveries in 2023, more than offsetting the two short-term contracts that expired at the end of last year. With about



effects on global commodity markets.

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high-growth-case LNG demand "only" reaches 78 million tons in 2023 – still short of China's 2021 imports.

Prices for the super-chilled gas are forecast to remain in a range of

13 bcm of new LNG contracts starting shipments, contracted volume is on course to reach nearly 110 bcm this year – substantially higher than projected demand.

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Sinopec unloads Q-Max at the Tianjin LNG terminal in Nangang Industrial Zone

Chinese buyers could hence ramp up LNG imports back to 2021-peak of 108 bcm without having to buy comparatively expensive spot cargoes. Instead, they could be in a lucky position to re-sell term LNG deliveries to the higher-priced European spot market at a profit – just like in summer and autumn of 2022 when PetroChina, Sinpoc and CNOOC were over-contracted for LNG. Yet things could be substantially different if economic growth exceeds expectations.

Substantial demand uncertainty at 40 bcm

In today's delicately balanced global gas markets, Chinese demand remains "the big unknown," the International Energy Agency (IEA) says. In fact, Europe's supply could be harder hit by a stark rise of around 35 percent in China's LNG imports to 115 bcm this year than by a loss of all remaining pipeline gas flows from Russia, though analysts concede that the 40 bcm uncertainty range of this forecast is "pretty substantial."

The IEA's bullish scenario sees the country's LNG imports surge by 30 bcm

to well above 2021-peaks – more than 28 bcm of Russian gas flows to Europe last year since deliveries via the Nord Stream 1 pipeline were cut off at the end of August. In this event, competition for LNG cargoes could push prices up to the "unsustainable levels" seen last summer, analyst warn.

On the contrary, a rise in China's domestic gas production and higher pipeline imports from Russia, Myanmar and Central Asia could lower the country's LNG demand by 12 percent, or 10 bcm this year to just 75 bcm of net imports, IEA calculations show. Gazprom just put the huge Kovykta gas field and a new section of the Power of Siberia pipeline into operation as it pivots to China – a market which it expects to grow to a level above the cumulative gas consumption of all EU countries.

So far, China's actual imports of pipeline gas and LNG in January and February this year were down 9.4 percent to 17.93 million tons compared with 19.79 million tons over the same period last year, according to data from China's Administration of

Customs issued in mid-March.

The cost of imports fell by 9.2 percent in 2023 versus 2022 to 11.96 billion Chinese yuan (US\$1.72 billion) because of the easing in natural gas and LNG prices since the turn of the year, customs data show. Demand increased substantially after the Chinese Lunar New Year holiday and looks set to stay elevated.

Term deals give China an edge over rival buyers

As China tightens its grip as a dominant buyer of long-term LNG contracts, others loose out. "No long-term LNG contracts are on offer before 2026 – they have all been sold out," Japanese gas importers told the trade ministry in a recent survey. Europe is not faring much better.

The collapse of Chinese LNG demand in 2022 was instrumental in helping Europe boost its LNG inflows by a 65 percent, or 65 bcm, to compensate for the loss in Russian volumes. This year, however, European utility buyers brace for Chinese state-owned importers to return to the market – and their long-term buying pattern

Export Country	Export Facility	Vessel Name	IMO Number	Import Facility	Arrival Date	MMt
Malaysia	Malaysia LNG	Seri Angkasa	9321665	Jieyang LNG	15 March 2023	0.06
USA	Freeport LNG	Prism Agility	9810549	Zhoushan LNG	16 March 2023	0.04
Australia	Queensland Curtis LNG	GasLog Genoa	9744013	Zhejiang LNG	16 March 2023	0.08
Qatar	Ras Laffan	Al Hamla	9337743	Guangdong Dapeng LNG	16 March 2023	0.09
Qatar	Ras Laffan	Umm Slal	9372731	Jiangsu LNG	16 March 2023	0.09
Indonesia	Tangguh	Min Rong	9305116	Fujian LNG	16 March 2023	0.06
Australia	Australia Pacific LNG	CESI Beihai	9672844	Beihai LNG	17 March 2023	0.07
Australia	Gorgon LNG	GasLog Greece	9687019	Zhejiang LNG	17 March 2023	0.08
Malaysia	Malaysia LNG	Seri Cempaka	9714290	Tianjin LNG	17 March 2023	0.07
Papua New Guinea	PNG LNG	Spirit of Hela	9361639	Qingdao LNG	17 March 2023	0.08
Australia	Australia Pacific LNG	Seapeak Creole	9681687	Guangdong Dapeng LNG	18 March 2023	0.08
Russia	Yamal LNG	Yamal Spirit	9781920	Shanghai (Yangshan) LNG	18 March 2023	0.07
Russia	Sakhalin-2 LNG	Grand Mereya	9338929	Zhuhai LNG	19 March 2023	0.06
Singapore	Singapore LNG	British Partner	9766530	Zhejiang LNG	19 March 2023	0.07

Source: LNG Journal



gives them an edge in the global competition for firm supplies.

scrambling for alternative gas supplies.

suggesting the deal with Sinopec “takes our relationship to new heights as we have a SPA that will last into the 2050s.”

Chinese utilities turn to cheaper substitutes

But China's economic upturn will not automatically translate into higher LNG imports given that utility buyers can rely on less expensive substitutes like domestic coal and gas, renewable energy and pipeline gas imports from Russia and Central Asia. Cost control and energy self-reliance policies also limit coal-to-gas switching across the Chinese power generation and heating sectors.

To shield against high prices for imported gas, especially LNG, China's National Development and Reform Commission (NDRC) vowed to "strictly control the expansion of projects to replace coal with natural gas." Looking ahead, the state planner wants gas pricing to better reflect the cost of production and procurement. "(We shall) develop sound mechanisms to adjust urban end-user prices of natural gas in step with procurement costs," NDRC told

Parliament with some observers suggesting the country's return to coal may be temporary as the country develops renewables and energy storage.

Russia's Gazprom is keen build new pipeline links to China, notably the 50 bcm per year Power of Siberia 2 pipeline through Mongolia. Exports via the existing PoS 1 interconnector are planned to reach 22 bcm in 2023, up from just over 15 bcm this year, and this figure is meant to reach 38 bcm by 2027, according to the Russian deputy prime minister Alexander Novak. But the IEA's projections of China's gas demand growth slowing to just 2 percent through to 2030, down from 12 percent over the past decade, raise considerable doubt about the economic viability of yet another large scale gas link with Russia, once the existing pipeline ramps up to full capacity.

And considering Beijing's policy preference for renewables and cheap domestic coal as a transition fuel, there is "little room for buying additional supplies from Gazprom," IEA analysts comment. Let alone for buying much spot LNG. ■



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LNG and the ‘New German Pace’

The ‘New German Pace’ in LNG import infrastructure expansion has received sharp criticism of its proportionality, resulting in robust public debate over costs and energy security, our Markets Editor Alexander Wilk reports.

Shortly after Russia launched its attack on Ukraine in February last year, the German government announced it would fund an LNG terminal at Brunsbüttel at the mouth of the River Elbe. Since then, the roster of German LNG projects – both existing and planned – has expanded to eight FSRU installations and four conventional onshore terminals spread along the North- and Baltic Sea coasts. Most of these facilities would be run with the German state paving the way.

The ‘New German Pace’

The recognition of a pressing need to quickly install alternative gas import infrastructure led to higher costs and (on occasion) forced arguably sub-optimal project designs in the interest of speed. German news magazine Der Spiegel reported that the government’s initial plan of five FSRUs more than doubled the originally envisioned budget of €3 billion to €6.56 billion. Concurrently, the adoption of a new German LNG acceleration law (“LNG-Beschleunigungsgesetz”, LNGGG) in October 2022 cemented ambitions to inaugurate LNG import capacity in a matter of months. It provides a favourable legal framework for the construction of up to eight floating terminals and four permanent onshore terminals, presumably by 30 June 2027 (when the law in its current form is due to expire).

Notably, the LGG allows for the bypassing of environmental studies where the developer can show the LNG project is crucial for Germany’s energy security. With Germany’s economy ministry led by a prominent member of

the Green Party, this exemplifies the coalition government’s concern over gas shortages ahead of last winter. There was even talk of a ‘New German Pace’ by Chancellor Olaf Scholz.

Notably, Brunsbüttel is also an entrepot for coal as well as the site of a decommissioned nuclear power station.

The speed with which LNG import infrastructure was to be established has also led to a project design at the port of Lubmin that is more complicated than comparable FSRU projects elsewhere in the world.

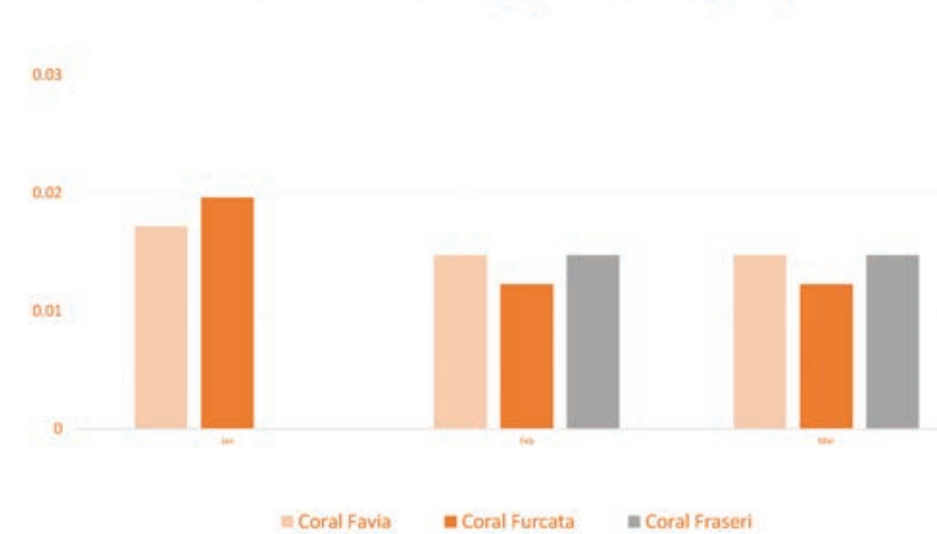
Deutsche Ostsee’s rapid three-month implementation period from September to first gas in December 2022 was made possible through the deployment of small LNG shuttles and an FSU in addition to the moored Neptune FSRU, a Deutsche ReGas presentation indicates.

The TotalEnergies-controlled FSRU Neptune (145,000 cu.m.) arrived to serve the Lubmin project in November last year, our vessel data showed.

Our data and calculations indicated the FSRU did not carry more LNG than necessary to keep it cooled. Before arriving in Germany, it had delivered an Egyptian cargo from Damietta SEGAS LNG to South Hook in the United Kingdom.

The arrival of the first direct LNG cargo in German waters was the laden Seapeak Hispania, which carried a 0.06mmt cargo from Egypt’s Idku LNG at Sassnitz in December. The Seapeak Hispania is currently serving as Deutsche Ostsee’s FSU, from which the small-scale carriers Coral Fraseri, Coral Favia and Coral Furcata are shuttling LNG cargoes

Lubmin LNG Landings via Shuttle (MMt)



piecemeal to the Neptune FSRU. At least during Phase I of the project, it requires several weeks and five vessels to process a conventional LNG cargo at Lubmin, our data show.

The Baltic Sea gets very shallow quite quickly in the Lubmin area, presumably making the direct ship-to-ship transfer by a fully laden conventional LNG carrier onto the Neptune inside of Lubmin port impossible. A permanent subsea pipeline is in planning but will only be completed later in 2023.

In addition to the ‘Deutsche Ostsee’ terminal’s first FSRU, the terminal’s developers have said two more FSRUs could be connected at the same site, but without providing a time scale. Two other projects are also operational at Wilhelmshaven and Brunsbüttel run by German gas players Uniper and RWE. A third FSRU project at Hamburg, however, was at first downsized and subsequently dismissed as being too impractical due to port and gas connector capacity constraints in December last year.

inventory levels.

Capacity vs NZE

At the beginning of March, the ambitious plan was questioned by the German environmental interest group Deutsche Umwelthilfe (DUH). DUH leaked an internal study commissioned by Germany’s Federal Ministry for Economic Affairs and Climate Action from the Institute of Energy Economics at the University of Cologne (EWI). In a press release, DUH pointed out that the EWI study only included one onshore terminal instead of four and that German gas stocks would still be filled to capacity in all modelled scenarios, even at times of harsher winters than the last. Meanwhile, DUH argued, Germany would have excess LNG import capacity, constituting misallocation of capital. Finally, DUH pointed out the study implied that operating the installed capacity even remotely close to economic levels would mean missing the government’s net-zero emissions (NZE) goals. DUH therefore called for a moratorium on all German LNG projects not yet implemented.

Replacing Russian gas

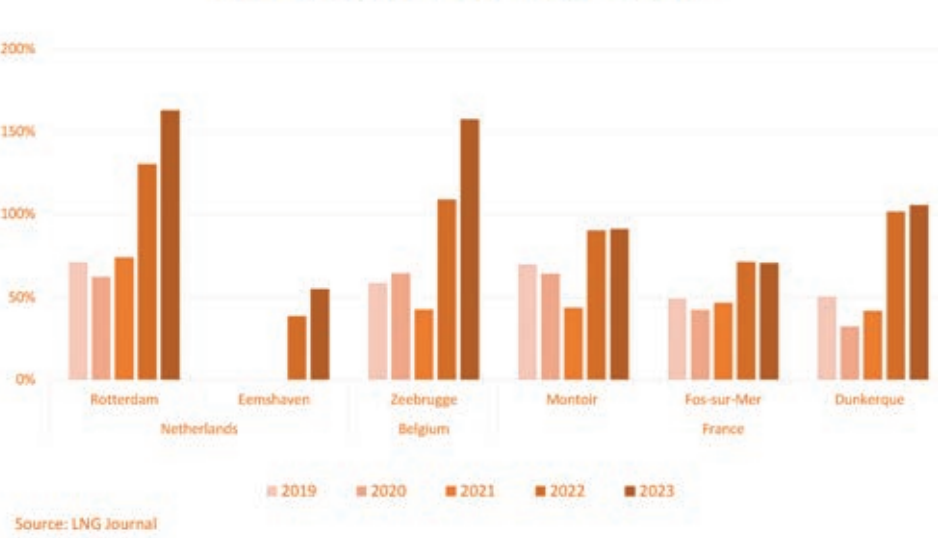
Policy makers’ determination to forego a typically lengthy planning process in the interest of speed was their direct policy response to Russian pipeline gas supplies nosediving and eventually ceasing. The planned roster of FSRUs alone was expected to be able to replace the 45 billion cubic metres of Russian pipeline gas per year. The envisioned onshore terminals would add the same capacity, too. Together, the ambition was to quickly set up alternative gas import infrastructure under German control without having to compromise on

Need for import capacity

DUH’s points notwithstanding, LNG terminal proponents such as Frank Schnabel – general manager of Brunsbüttel port – and Professor Andreas Goldthau of the University of Erfurt have argued in interviews with German state-owned broadcaster ARD that excess capacity is necessary to smooth out supply chain impasses and thereby becomes a public good.

Klaus Müller, head of Germany’s

LNG Terminal Utilisation Rates



Global market cool-off continues into March

Our preliminary March data again show weaker LNG output globally although exports were still up year-on-year. Meanwhile, net demand continued to slacken, our Market Editor Alexander Wilk reports.

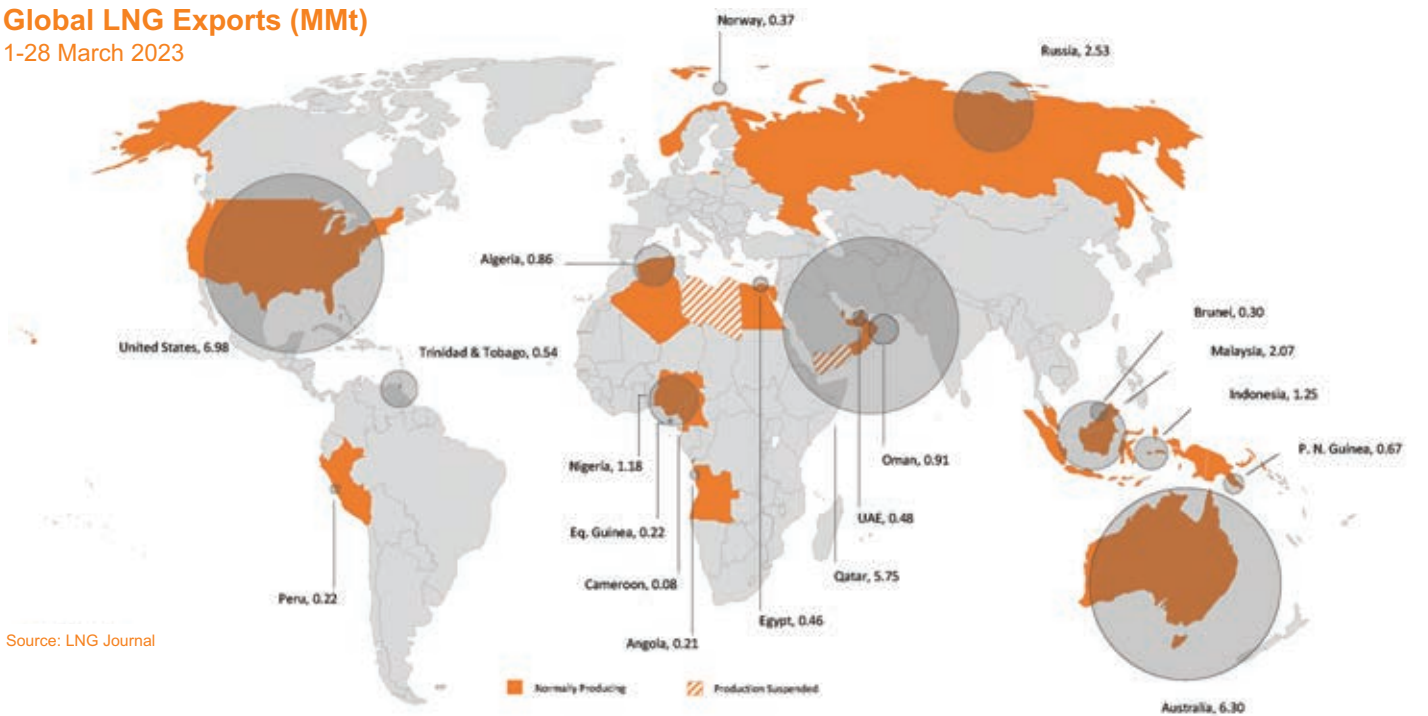
Our data at the time of writing showed global LNG trade had decreased for the month to 28 March from February. The shipped amount of 31.62mmt represented negative growth of 1.37mmt (-4 percent) from 32.99mmt shipped in February. We nevertheless still recorded year-on-year export growth of 1.31mmt (4 percent) for the reporting period of the first 28 days in March. March’s performance was due to decreases among major Middle Eastern and Pacific Basin producers, led by Qatar, Australia and Malaysia. Month-on-month export growth was often found among smaller producers, which could not offset the major reductions by larger-scale exporters. However, with March not yet over, we anticipate full-month trade to be at least on par with February.

Meanwhile, offtakes also saw net negative growth due to considerable demand decreases among key Far Eastern and Southeast Asian importers – comprising, inter alia Japan, Singapore and Malaysia.

Exports

At the time of writing on 28 March, 31.62mmt of global LNG exports for the month to date lagged the sum of their February counterparts of 32.99mmt by

Global LNG Exports (MMt)
1-28 March 2023



Source: LNG Journal

1.37mmt (-4 percent). Pacific Basin shipments were behind by 0.77mmt (-6 percent) to 11.78mmt whilst Atlantic Basin exports saw a reduction of 0.22mmt (-2 percent) to 12.24mmt. Monthly export growth was also elusive in the Middle East, where shipments were down by 0.38mmt (-5 percent) to 7.60mmt from 7.98mmt in February. However, we highlight that exports for March to date were up by 1.31mmt (4 percent) year-on-year.

Pacific Basin

Our March data at the time of writing showed Pacific exports had reached 11.78mmt, coming in below February’s full-month volume of 12.55mmt by 0.77mmt (-6 percent). Consequently, annualised capacity utilisation stood at 92 percent at the time of writing. Exports were up by 0.20mmt (2 percent) year-on-year, however.

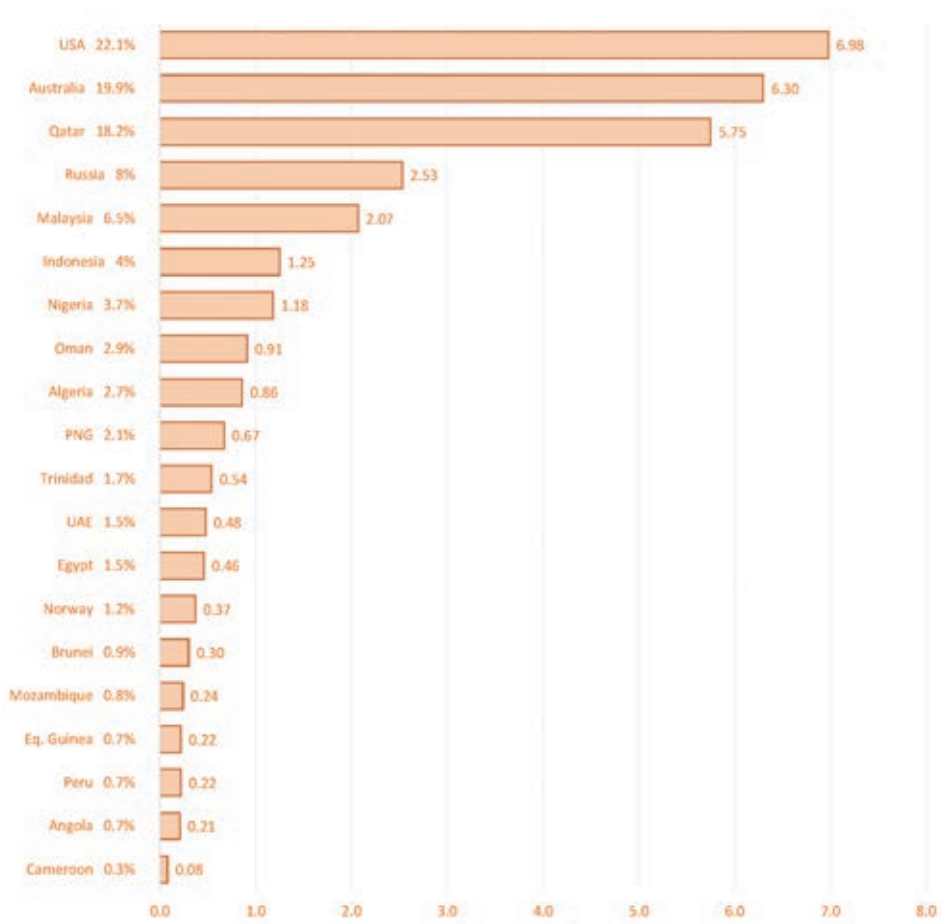
Australia: In line with the Basin’s overall export lag, its most significant exporter by installed capacity – Australia – was trailing February volumes by 0.24mmt (-4 percent) with 6.30mmt at the time of writing compared to 6.54mmt in February. Queensland Curtis LNG showed lower LNG exports by 0.17mmt (-29 percent) at 0.41mmt in March, having shipped 0.58mmt the previous month. Ichthys LNG also decreased exports by 0.12mmt (-16 percent) to 0.64mmt. Concurrently, Gladstone LNG also cut exports by 0.12mmt (-18 percent) to 0.53mmt, whilst Pluto LNG and Darwin LNG showed reduced exports by 0.07mmt (-15 percent) to 0.41mmt and by 0.01mmt (-13 percent) to 0.07mmt, respectively. Gorgon LNG, meanwhile, kept its exports broadly steady at 1.30mmt. As such, negative growth in March’s Australian LNG supply was only partially compensated by the remaining plant on Curtis Island – Australia Pacific LNG – as well as Wheatstone LNG, NWS LNG and the offshore Prelude FLNG barge. Together, the four facilities were leading their February exports by 0.23mmt (8 percent) at 2.94mmt. Notably, Australian

shipments to Taiwan and Japan had decreased considerably as of 28 March, down 0.95mmt (-28 percent) to 2.45mmt. Alongside these month-on-month reductions, there were export decreases to South Korea and Singapore amounting to 0.43mmt (-36 percent). Even though Australian LNG exports had seen a rapid increase in Thai offtakes by 0.40mmt (250 percent) to 0.56mmt alongside a 0.10mmt (63 percent) trade increase to 0.26mmt with Malaysia, these could only cushion the aforementioned reductions. Meanwhile, India, Indonesia and China kept their total offtakes of 1.68mmt broadly on track month-on-month, which left 0.59mmt still en route to yet-to-be-determined destinations in the Pacific.

Southeast Asia: North of Australia, Papua New Guinea’s PNG LNG saw shipments remain broadly steady month-on-month at 0.67mmt to date in March compared to 0.66mmt in February. PNG LNG gained market share in China, but this growth was tempered by a reduction in exports to South Korea and Japan. At 118 percent, however, the plant continued to operate well above nameplate capacity, our calculations showed.

In neighbouring Indonesia, the amount of LNG shipped per month also remained broadly level. Exports were up only marginally by 0.02mmt (2 percent) to 1.25mmt on 28 March from 1.23mmt recorded in February. Whilst the Donggi-Senoro LNG plant decreased monthly output by 0.08mmt (-38 percent) to 0.13mmt, the Bontang facility increased shipments by 0.05mmt (13 percent) to

Market Share & LNG Exports by Country (MMt)
1-28 March 2023



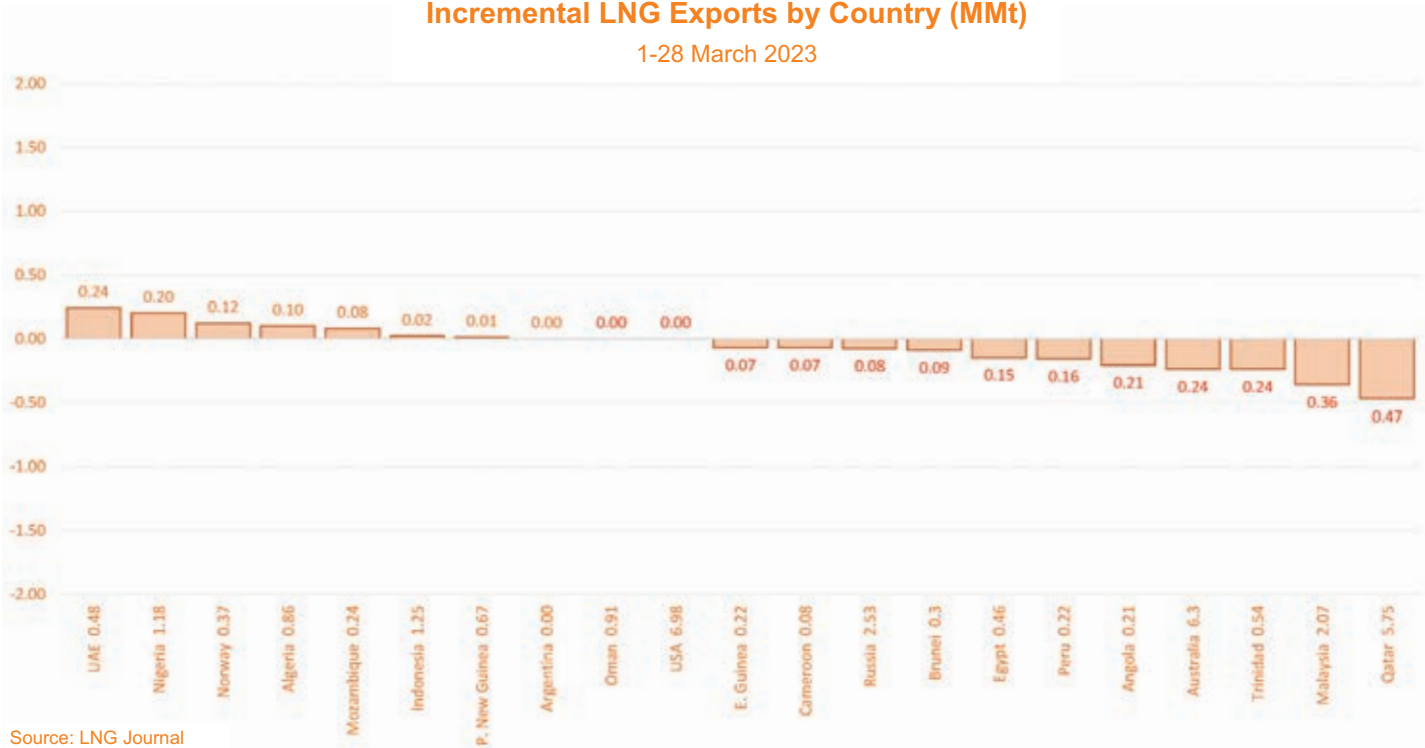
Source: LNG Journal

0.45mmt month-on-month. Bontang was thus producing at 51 percent of installed capacity. Concurrently, Tangguh LNG also increased LNG exports by 0.05mmt (8 percent) to 0.67mmt, producing at 115 percent of installed annualised capacity.

In contrast, Malaysia saw a decrease in shipments of 0.36mmt (-15 percent) to 2.07mmt during the reporting period in March compared to 2.43mmt as of 28 February. This was mainly due to a 0.23mmt (-10 percent) reduction to 2.00mmt at the Malaysia LNG plant and was compounded by the market absence of the PFLNG Dua offshore facility. Notably, Malaysia LNG thus merely brought annualised utilisation back close to 100 percent. However, the FLNG unit had shipped 0.07mmt by this time in February but had yet to appear in the market at the time of writing. Concurrently, the PFLNG Satu vessel had reduced its March production by 0.06mmt (-46 percent) to 0.07mmt, pegging annualised utilisation at 76 percent, our data showed.

Brunei, meanwhile, had decreased LNG exports as of 28 March by 0.09mmt (-23 percent) to 0.30mmt from 0.39mmt in February, with annualised capacity utilisation at 54 percent. The plant's exports to Japan, South Korea and Malaysia were down by 0.21mmt (-54 percent) with only Chinese and Thai demand of 0.12mmt in total offering some compensation.

Russia, Peru & Mozambique: Elsewhere in the Pacific, Russia's Sakhalin-2 LNG had decreased LNG exports by 0.03mmt (-4 percent). The plant's shipments amounted to 0.73mmt on 28 March compared to 0.76mmt in February. March's performance benefitted from higher exports to South Korea, but



which was outweighed by a demand reduction for Sakhalin deliveries of 0.08mmt to Japan and China. Nevertheless, the plant continued to see high annualised capacity utilisation of 99 percent.

Meanwhile, Peru's Pampa Melchorita plant had slashed exports. Shipments of 0.22mmt were down by 0.16mmt (-42 percent) from the 0.38mmt recorded in February and reduced the plant's annualised capacity utilisation to 64 percent. The plant typically exports between 0.30mmt and 0.40mmt per month, our historical data show.

Finally, Mozambique's Coral Sul FLNG unit continued to ramp up output from 0.16mmt in February to 0.24mmt as of 28 March. This represented a month-on-month increase of 50 percent. With European demand growth waning, the plant's sole capacity leaseholder – BP – shipped more of Coral Sul's production to Asia.

Atlantic Basin

In line with negative growth in the Pacific, the Atlantic Basin's overall shipped LNG had decreased by 28 March, with exports down by 0.22mmt (-2 percent) to 12.24mmt. This translated into annualised export capacity utilisation of 88 percent for the Basin.

North Africa & Europe: The amount of LNG shipped from within its northeastern part – comprising the EEA, Russia and North Africa (and not including re-exports) – had increased by 0.17mmt (6 percent) to 3.03mmt from 2.86mmt in February.

Notably, Snøhvit LNG in Norway shipped 0.12mmt (48 percent) more to reach 0.37mmt following exports of 0.25mmt in February. The plant thus produced at 115 percent of annualised capacity at the time of writing. Norwegian export growth was driven by higher demand in eastern Europe, in particular

via shipments to Lithuania's Klaipeda LNG terminal.

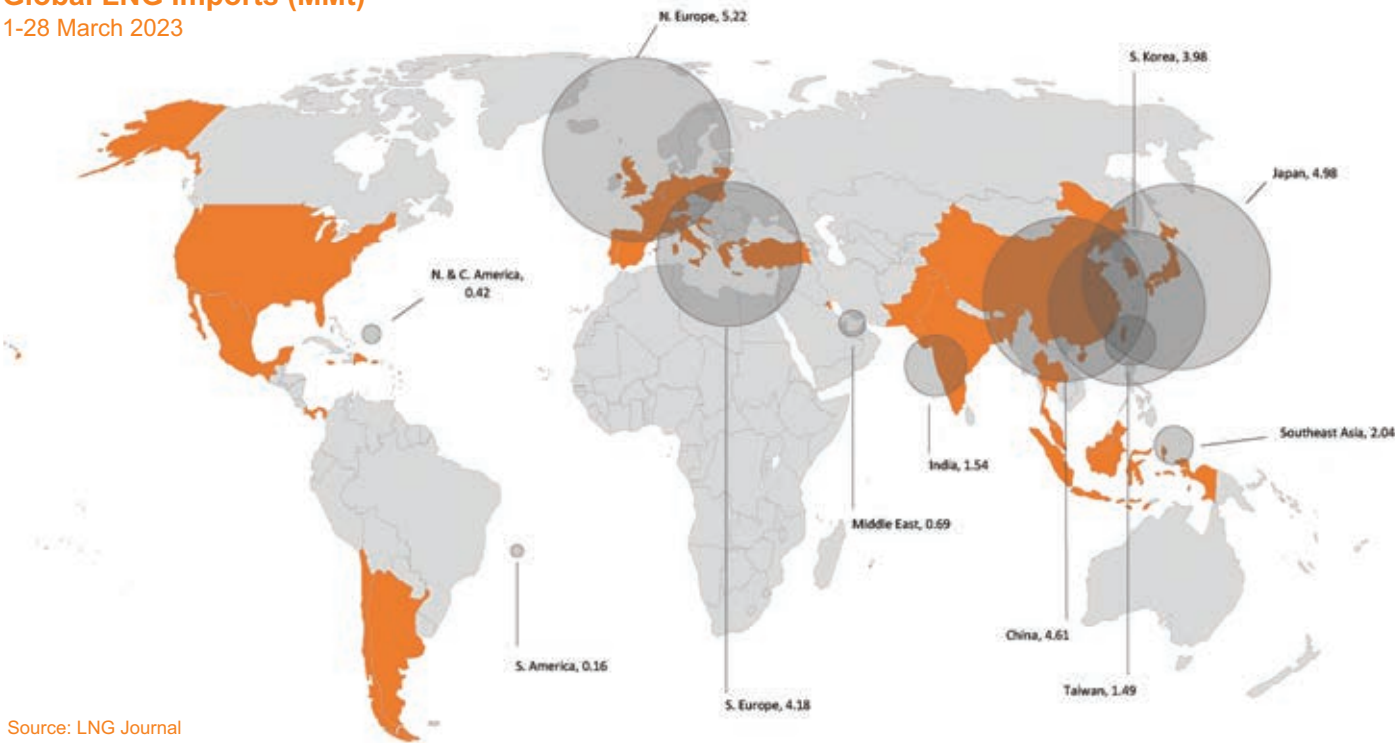
Meanwhile, at 0.86mmt, Algeria had already exported 0.10mmt (13 percent) more at the time of writing in March. Whilst the Arzew plant merely maintained shipments at 0.63mmt with 40 percent of annualised capacity utilisation, Skikda LNG boosted exports by 0.10mmt (77 percent) to 0.23mmt. However, it thereby still only produced at 38 percent of annualised capacity utilisation. Exports to France and Spain slumped by 0.31mmt in total but were offset by export growth of 0.41mmt, inter alia to Spain, Turkey, Italy and Belgium.

Norwegian and Algerian export growth was tempered, however, by lower output from Gazprom's new Portovaya facility, which had almost halved its exports in March to date, shipping 0.06mmt (-46 percent) less at 0.07mmt. Concurrently, Yamal LNG exports were broadly steady at 1.73mmt. The plant thus continued to produce considerably above annualised nameplate capacity in March. Notably, 0.44mmt of Yamal LNG exports were still at sea without confirmed destinations, which made an assessment of the plant's export markets for March difficult at the time of writing.

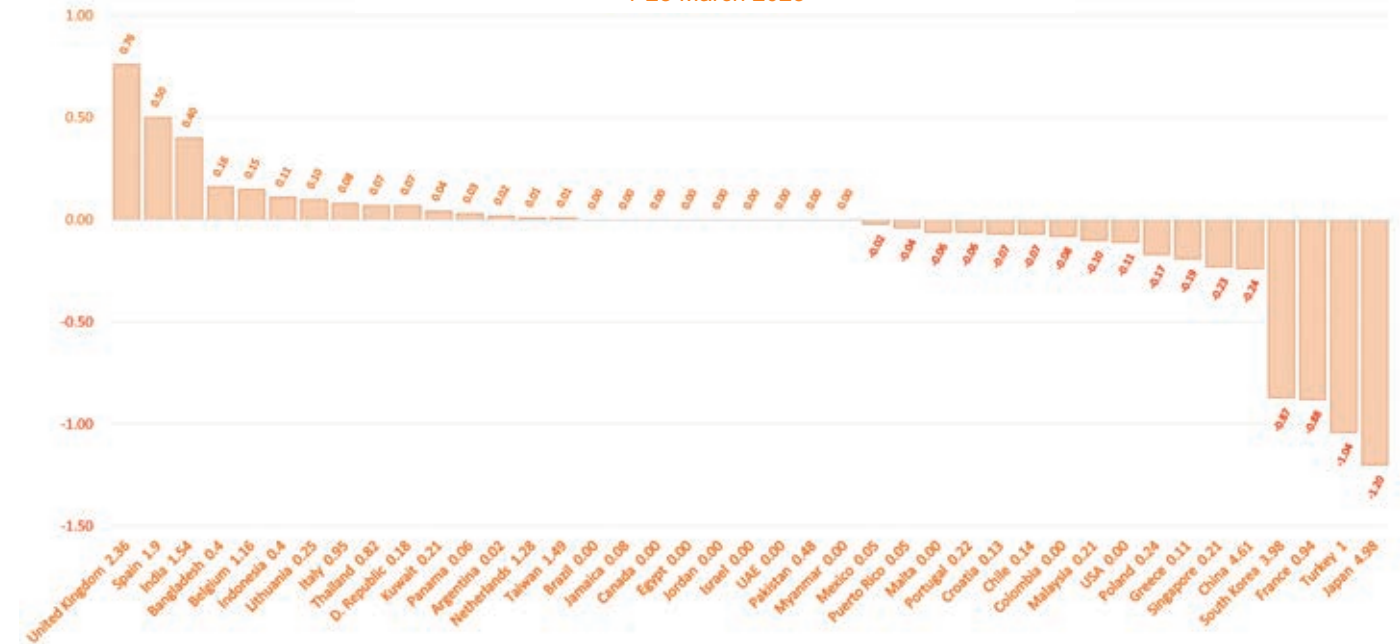
West Africa: West African exports were down by 0.15mmt (-8 percent) in March. After higher monthly exports in February, Nigeria had returned to negative LNG export growth as of 28 March, decreasing shipments by 0.15mmt (-8 percent) to 1.69mmt. However, in contrast to its fellow regional producers, Nigeria's LNG output had already increased robustly by 20 percent to 1.18mmt from 0.98mmt in February, which pegged annualised utilisation at 69

Global LNG Imports (MMt)

1-28 March 2023



Incremental LNG Imports by Country (MMt)
1-28 March 2023



Source: LNG Journal

percent, according to our calculations. Meanwhile, Angola LNG curtailed exports by 0.21mmt (-50 percent) to 0.21mmt. The plant thus operated at only roughly half of annualised nameplate capacity with utilisation at 53 percent in March. Concurrently, Cameroon LNG slashed exports by 0.07mmt (-47 percent) to 0.08mmt, pegging its annualised capacity utilisation at 87 percent. Finally, the decrease in West African export levels was compounded by a decrease of 0.07 (-24 percent) to 0.22mmt from Equatorial Guinea’s EG LNG. Overall, West African exporters lost market share in Europe, Singapore and India but shipped more to the Middle East and China whilst 0.14mmt still had their destinations to be determined within the Pacific Basin at the time of writing.

Americas: Exports from the US Gulf Coast had remained steady as of 28 March, matching the 6.98mmt we recorded in February. The lack of month-on-month growth at the time of writing was mainly due to Calcasieu Pass LNG halving exports from 0.72mmt to 0.36mmt. Cameron LNG, meanwhile, curbed shipments by 0.13mmt (-9 percent) from 1.40mmt in February to 1.27mmt in March but which still pegged annualised capacity utilisation at 123 percent. Concurrently, Corpus Christi LNG and Elba Island LNG cut exports by 0.12mmt (-9 percent) to 1.18mmt from 1.30mmt and by 0.07mmt (-30 percent) to 0.16mmt from 0.23mmt in February, respectively. Slight negative growth also came from Sabine Pass LNG, which decreased shipments by 0.04mmt (-2 percent) to 2.61mmt from 2.65mmt but continued to produce significantly above annualised nameplate capacity. Exports Cove Point LNG and in particular Freeport LNG,

meanwhile, had grown robustly as of 28 March. They were up by 0.12mmt (31 percent) to 0.51mmt and by 0.60mmt (207 percent) to 0.89mmt, respectively. In South America, Atlantic LNG in Trinidad & Tobago saw exports climb down by 0.24mmt (-31 percent) to 0.54mmt as of 28 March from the 0.78mmt we recorded for February. Atlantic LNG shipments suffered from lower exports to the Caribbean in particular whilst partially offsetting those reductions with additional cargoes to China, the United Kingdom and the United States.

Middle East

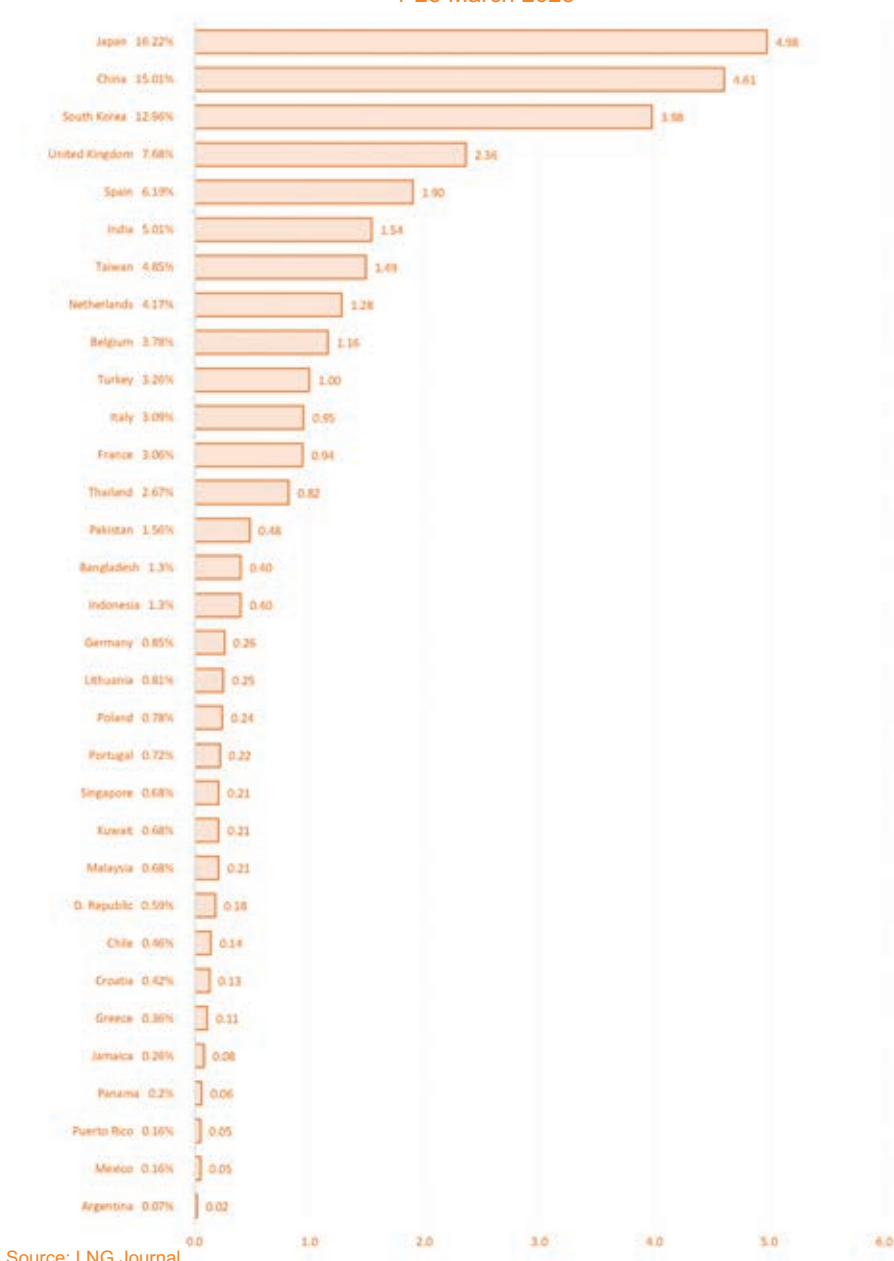
Shipments from Middle Eastern plants had equally decreased month-on-month and thus continued to level down after December’s rally, albeit slower than in February. Regional LNG exports were down by 0.38mmt (-5 percent) from 7.98mmt to 7.60mmt at the time of writing. Accordingly, our data showed the Basin’s annualised utilisation of operational export capacity (i.e., excluding Yemen) climbing down by 1pp to 89 percent in March. The Middle East’s overall negative export growth was pushed by Qatar’s Ras Laffan LNG complex. The facility cut exports to 5.75mmt, down by 0.47mmt (-8 percent) from 6.22mmt in February. In line with the month-on-month decrease, the complex stopped producing flat-out but kept annualised capacity utilisation high at 97 percent. Notably, Qatar’s March trade continued to grow in Europe whilst exports to key offtakers in the Far East and the Middle East such as China and Pakistan had continued to trend downwards by 28 March. Negative month-on-month export

0.61mmt in February to 0.46mmt in March to date. Elsewhere in the Persian Gulf, Omani exports were steady at 0.91mmt month-on-month whilst Oman LNG continued to produce at 120 percent of annualised nameplate capacity. In the neighbouring UAE, however, exports had already doubled by 0.24mmt to 0.48mmt as of 28 March. This set the Das Island plant on course to marginally outperform January, producing at 114 percent of annualised capacity utilisation.

Imports & Domestic Trade

As of 28 March, the rate at which global LNG demand was decreasing month-on-month had remained unchanged from the 9 percent we recorded in February. However, in volume terms, it had slowed to 2.96mmt from the 3.42mmt decrease seen in February. Negative demand growth at the time of writing was strongest in the Pacific Basin, closely followed by the Atlantic Basin. Although Middle Eastern offtakes saw a month-on-month uptick, this was insufficient to be a material factor globally.

Market Share & LNG Imports by Country (MMt)
1-28 March 2023



Source: LNG Journal

Pacific Basin

Month-on-month Pacific Basin imports had continued to decrease noticeably and were down by 1.98mmt (-10 percent) net as of 28 March as Japan, South Korea and China cut their offtakes by 2.31mmt (-14 percent) in total to 13.57mmt. This was only partially offset by a robust demand increase of 0.40mmt (35 percent) to 1.54mmt in India. Offtakes of 1.49mmt in Taiwan, meanwhile, represented broadly steady demand compared to the 1.48mmt we recorded at the end of February.

Concurrently, the roster of smaller Pacific buyers – including Bangladesh, Chile, Indonesia, Malaysia, Mexico, Singapore and Myanmar – collectively saw imports decrease slightly by 0.08mmt (-3 percent) to 2.23mmt in March. This was primarily due to demand decreases in Singapore and Malaysia, where offtakes were down by 0.23mmt (-52 percent) to 0.21mmt and by 0.10mmt (-32 percent) to 0.21mmt, respectively. Concurrently, Chile and Mexico had seen demand decrease by 0.07mmt (-33 percent) to 0.14mmt and by 0.02mmt (-29 percent) to 0.05mmt, respectively. However, these demand decreases were cushioned by growth totalling 0.34mmt (27 percent) to 1.62mmt in Bangladesh, Indonesia and Thailand.

Atlantic Basin

Alongside their Pacific counterparts, LNG imports in the Atlantic Basin also decreased noticeably as well as slightly faster than in February. Demand was down by 1.02mmt (-8 percent) to 11.19mmt as of 28 March compared to 12.21mmt in February, with annualised utilisation of installed capacity at 49 percent, down 2pp month-on-month.

Negative European net demand growth of 0.87mmt (-7 percent) to 10.80mmt was the leading factor. Strong negative import growth in Turkey by 1.04mmt (-51 percent) to 1.00mmt in addition to reductions totalling 1.43mmt among other European importers overshadowed growth of 1.60mmt stemming from several larger-scale European buyers, led by the United Kingdom, Spain and Belgium as well as Lithuania.

There was, also a demand reduction of 0.11mmt in the Americas as imports of 0.11mmt by the United States in February had not reoccurred by 28 March. Meanwhile, demand of 0.39mmt remained steady in the Caribbean and South America. Whilst the region saw monthly LNG demand increase in the Dominican

Republic, Panama and Argentina by 0.12mmt (86 percent) to 0.26mmt overall, offtakes in Jamaica remained unchanged at 0.08mmt. This net growth in the Caribbean was offset by a lack of demand in Colombia following the SPEC LNG facility's import of 0.08mmt in February. There was also a demand reduction of 0.04mmt (-44 percent) to 0.05mmt in Puerto Rico. Canada and Brazil did not

see LNG imports in March, unchanged from February.

Middle East

Middle Eastern LNG demand had seen a volume uptick as of 28 March. Regional offtakes were up 0.04mmt (6 percent) to 0.69mmt from 0.65mmt in February. Offtake levels were increased by a demand increase of 0.04mmt (24 percent)

to 0.21mmt in Kuwait. Concurrently, Pakistan's month-on-month demand remained steady at 0.48mmt. Jordan, meanwhile, did not import a cargo in March whilst Egypt's FSRU at Ain Sokhna and Dubai's FSRU were also not seen in the market. As such, the Middle East's annualised import capacity utilisation stood at 16 percent in March, up 1pp month-on-month. ■







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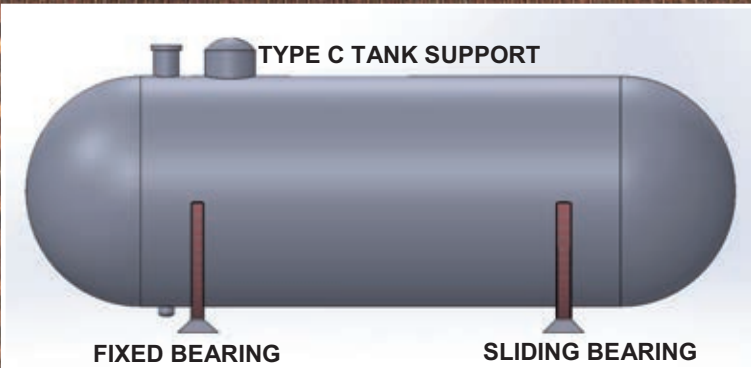




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Working towards reducing methane emissions/slip on board ship

Much has been said about negating the effect of methane emissions/methane slip in shipping. In the past six months, a new coalition has been set up mainly involving shipowners and operators with the help of Lloyd's Register (LR). Technical Editor Ian Cochran reports.

Last September, a cross industry initiative was formed aimed at reducing methane emissions across the maritime industry.

The Methane Abatement in Maritime Innovation Initiative's (MAMII) remit is to identify, accelerate and advocate technology solutions for the shipping industry to measure and manage methane emissions activity.

By doing so, it aims to minimise the environmental impact of LNG in shipping, whilst helping the transition to future fuel solutions.

MAMII is administered by Steve Price, Head of Partnerships at Safetytech Accelerator and is chaired by Panos Mitrou, Lloyd's Register's (LR) Global Gas Director.

Several leading players involved in LNG shipping have joined, including Maran Gas Maritime, Mediterranean Shipping Co (MSC), Carnival Corp, Seaspans Corp, Shell, LR and the Knutsen Group.

More recently, seven more members were announced at an LR LNG Forum event in Doha, Qatar.

These included CoolCo, United Overseas Management, Capital Gas, Celsius Tankers, Global Meridian Holdings, Mitsui OSK Lines (MOL) and TMS Cardiff Gas.

MAMII claimed that the new members bring a wealth of expertise from across the LNG value chain to the initiative, in a

signal that is hoped to show that the industry's action in tackling methane emissions in shipping is strengthening.

Despite its popularity as a transition fuel, analysis has indicated that the environmental benefits of using LNG could be partially offset, due to unburned methane passing through the combustion process.

Methane is a potent greenhouse gas, estimated to have a Global Warming Potential of 27-30 over 100 years, while CO2 has a GWP of 1 regardless of the time period used.

Since it was formed over six months ago, MAMII has mapped the LNG fuel landscape from the well to the ship, identified key measurements required, and has also identified a range of potential new measurement technologies for shipboard use.

Gaining traction

This progress comes at a time when methane abatement initiatives are gaining traction globally, such as the Green Ray project, which recently gained funding from the European Union.

Price said: "We are looking forward to the next few months when we move from analysis and research into piloting new methane measurement technology on ships. Measuring actual emissions is a critical step in the decarbonisation of

the shipping journey."

Mitrou added: "The doubling of MAMII's membership in the six months since its launch is a sign of the maritime industry's commitment to addressing methane emissions.

"It also indicates the important role of technology in measuring and managing methane emissions activity. As the chairman of the MAMII initiative, I am delighted that so many significant shipping leaders have joined the ranks," he said.

Miltos Zisis, Capital Gas Ship Management Managing Director, commented: "We are excited to pioneer together with Lloyd's Register and our peers in the MAMII project.

"Our group has invested heavily in reducing the environmental footprint of our fleet with specific focus in the reduction of methane emissions. Our participation in this project underlines our commitment to supporting important industry initiatives.

"We firmly believe that LNG will continue to be a major part of the energy mix and reducing the environmental impact of the value chain is one of the key challenges that we are facing," he said.

George Kourelis, TMS Cardiff Gas General Manager, said: "TMS Cardiff Gas has been a consistent investor in the LNG shipping space through the years, and has



Steve Price, Head of Partnerships at Safetytech Accelerator is administering MAMII

in this way clearly demonstrated its commitment to LNG as a clean alternative fuel in the path of the shipping industry towards achieving the 2050 de-carbonisation targets.

"We are convinced that MAMII will play a critical role in enhancing the information flow and adding to the tools needed to measure methane releases by LNG-fuelled ships, and taking actions in order to mitigate these and cement the position of LNG, as well as synthetic LNG in the future as an alternative green fuel for the next decades," he said.

When asked about the possible involvement of the leading engine manufacturers, Price told *LNG Journal*: "We expect involvement of the engine manufacturers to be in supporting pilots with operators who are using their engines, especially in the abatement area. WinGD has already agreed to be a technical support partner."

There is a lot of work ongoing to reduce the so called 'methane slip' at present and Price stressed that MAMII is keen to avoid undertaking work that has already been completed or is underway. "As such, we are liaising with other initiatives through our core partner's engagement," he said.

Speaking of LR's involvement, he said: "Addressing methane emissions in maritime requires significant collaboration from across the industry.

"This initiative is gaining momentum and it is anticipated that MAMII will draw more high profile partners in the months ahead," he advised. ■



Pictured at the LR Qatar Forum are - from left to right - Andy McKeran, LR CCO; Spyros Leoussis, Capital Product Partners CCO; Alexandros Politis-Kalenteris, deputy CCO at TMS Cardiff Gas; Stephen Brown, Shell Technical Manager; Nick Brown, LR CEO; Tom Strang, Carnival Corp's Senior Vice President Maritime Affairs; Bud Darr, Executive Vice President at MSC; Christos Kottas, Global Meridian Holdings Executive Director; and Panos Mitrou, LR's Global Gas Director

Green Ray receives funding

Following on from the formation of MAMII (see previous page), the Green Ray consortium, which includes Wärtsilä, has secured European Union funding to develop solutions to minimise methane slip from marine engines.

Co-ordinated by the Finnish VTT Technical Research Centre, this project brings together several companies from across the shipping value chain, including shipyard Chantiers de l'Atlantique, shipowner CMA CGM, class society DNV, the Finnish Meteorological Institute, shipmanager MSC Cruises Management, non-profit organisation Revolve Water and energy major Shell.

The project's aim is to develop on-engine technologies for low-pressure dual-fuel engines – both 2- and 4-stroke – as well as an after treatment concept.

These solutions will be advanced to a high state of technology readiness, including demonstrators installed on two newbuildings and another retrofitted to an existing vessel. All of the technologies developed in Green Ray will also be fully capable to

run with bio- or synthetic methane instead of fossil LNG.

Wärtsilä will develop technology specifically for low pressure 4-stroke dual fuel engines that enables methane slip reduction, increases efficiency and lower operational costs at all engine loads. This technology targets the largest 4-stroke engines on the market, widely used by cruise ships, ferries and gas carriers.

The company will also develop technology for use on 2-stroke engines centred around a patented LNG injection system to reduce methane slip from tankers, containerships, etc. Both technologies will be demonstrated at sea in real applications in collaboration with the Green Ray partners.

"Methane slip has become an important factor in ship owners' decisions about whether to use LNG fuel," said Kati Lehtoranta, Principal Scientist, VTT.

"With these promising technologies we aim to reduce the slip contributing directly to reduction of the total greenhouse gas emissions, opening this pathway to even wider segment of the maritime market," Lehtoranta said.

Shell has developed a proprietary methane abatement catalyst system that has been laboratory tested and scaled up to a field demonstration, where it was proven to be effective not only in significantly reducing methane slip (over 90%), but also in handling typical compounds that can degrade the catalyst, via the inclusion of a guard bed.

"Shell's climate ambition to become a net-zero emissions energy business by 2050 will require us to explore a range of avenues that have the potential to help us, our partners, and customers to decarbonise the existing LNG value chain.

"We are continuously working to

improve the value proposition of LNG through dedicated technology research, and we are keen to develop potential solutions to minimise methane slip at such a relevant project as Green Ray," explained Alexander Boekhorst, Shell's Vice President Gas Processing and Conversion Technology.

"This research will allow us to build on the continuous improvements made in reducing methane slip from engines over the past 20 years," said Sebastiaan Bleuanus, General Manager, Research Co-ordination & Funding, Wärtsilä Marine Power. "Taking these solutions for newbuilds and retrofits to near commercial readiness will be an important step for the long-term viability of LNG as a marine fuel."

Funding of around €7 mill from Horizon Europe has been received. It will run until 2027. ■

MES wins more retrofits

US-based containership operator Matson Navigation Co is to convert the main engine of its 3,600 TEU containership, 'Kaimana Hila', from an MAN B&W S90ME-C10.5 to a dual-fuel ME-GI unit, capable of running on LNG.

This was an option contained in a contract signed with MAN Energy Solutions (MES) in June, 2022 to perform an identical conversion on a sistership, 'Daniel K. Inouye'.

'Kaimana Hila' was built in 2019 and MES' after sales division, MAN PrimeServ, will perform the vessel's retrofit.

Klaus Rasmussen, Head of Projects and PVU Sales, MAN PrimeServ, said: "This order is the latest example in an increasing trend of owners choosing dual-fuel retrofits for their existing vessels in service to achieve fleet-transformation goals, while simultaneously gaining benefits in terms of upcoming regulations such as CII and EEXI.

"Retrofitting an MAN B&W engine to dual-fuel running is straightforward as our standard, electronically-controlled diesel engines are constructed as 'dual-fuel ready' and therefore readily retrofittable. Such retrofits offer a viable pathway to shipowners that wish to achieve a net-zero carbon footprint by 2050," he said.

"This will be the third vessel Matson is

retrofitting with dual-fuel LNG capability. Each retrofit is a meaningful step toward achieving our corporate sustainability goals to achieve a 40% reduction in Scope 1 greenhouse gas fleet emissions by 2030 and net-zero Scope 1 GHG emissions by 2050," explained Capt Jack Sullivan, Matson's Senior Vice President, Vessel Operations & Engineering.

This option declaration comes following the recent announcement by Matson of the building of three LNG-powered containerships that will also be fitted with ME-GI engines.

Since the first two-stroke ME-GI (LNG) retrofit in 2015, MES has built an impressive list of references and expanded its portfolio of dual-fuel retrofits to also include fuels, such as LPG and methanol.

Retrofitting a dual-fuel engine is one of the most effective ways to derive greater fleet efficiency and profitability. As such, a dual-fuel conversion delivers the fuel flexibility to take advantage of optimal fuel prices; it can also help vessels comply with IMO emission targets and extend their operational lifetimes to bring a greater return on investments, MES said. ■



Matson's containership 'Kaimana Hila'

Collaboration drives next generation LNG training

As LNG refuelling becomes more common place at ports around the world, the need for technical training is on the rise, with major energy firms forging new partnerships to invest in education. Fuelling Editor Malcolm Ramsay has more.

Early this year, ExxonMobil Marine signed a memorandum of understanding with Sepuluh Nopember Institute of Technology in Indonesia, with the goal of providing students with the skills they need to operate the next generation of vessels.

Professor Ketut Buda Artana, Marine Engineering Professor of ITS tells *LNG Journal* that alongside day-to day teaching at the university, the school “supports the ministry and companies by providing a roadmap on infrastructure for ship LNG bunkering as well as carrying out technical design.”

Located in Surabaya, East Java, the university has a strong emphasis on scientific, engineering, and vocational education system and is ranked 1st in Indonesia and 64th in the world based on the Times Higher Education Impact Ranking.

“Our shared goal is to support students looking for a career in the maritime sector,” said Mochamad Ashari, Rector of ITS. “Through proactive collaboration, we also intend to drive the development of the Indonesian shipping industry.”

Practical insight

Located on 180-hectares green area, ITS is Indonesia’s second-oldest public technological institute and home to more than 1,000 faculty members and over 20,000 undergraduate and graduate students.

“The combination of academical rigour and practical insight has helped us to play an important and significant role,” Professor Ketut Buda Artana, Marine Engineering Professor of ITS says, adding that work on campus is “mainly focused on designing for LNG terminals, both onshore and offshore, as well as safety assessment of LNG terminals and some other studies.”

By partnering with ExxonMobil, the university aims to develop a range of educational opportunities focused on some of international shipping’s most pressing technical issues, with additional joint activities to be coordinated through the ITS Faculty of Marine Technology (Martech).

At present the ITS has one course dedicated to LNG technology, which takes student through the process of designing a full LNG supply chain, and has plans to expand teaching to focus on a wider range of topics in more depth.

Realistic simulations

Swedish tanker operator Furetank is another firm recognising the importance of collaboration and information sharing for the future of LNG-related training, launching its own maritime educational centre in Donsö outside Gothenburg earlier this year.

The firm used a former office building as the site for the new centre, installing a state-of-the-art ship simulator complex at



Layout of Donsö simulator complex

the facility. Designed in partnership with Finnish engineer manufacturer Wartisla the new simulator holds 14 students at a time and offers physical simulation bridges in combination with virtual, augmented and mixed reality applications.

“We can simulate 50 ship models ranging from pilot boats and cruise ships to tankers and towboats. You can navigate several fairways, going into the ports of Gothenburg, Rotterdam, the Oslo Fjord etc,” Jonas Gunnarsson, personnel manager at Furetank, says. “We can also simulate moving through ice or rough sea. Only our imagination sets the limits for what shipping companies can do in this simulator.”

As well as the high-tech nature of the new facility it is unique in that Furetank and Wartisla plan to open it for use by the entire shipping cluster at Donsö from summer 2023.

“Furetank has ordered a large range of new-built vessels to be delivered in the coming years, and manning these ships is a great challenge. The situation is the same for many of our fellow shipping companies on Donsö. The lack of access to simulator environments has been a bottleneck for us. This easily accessible training centre will be a positive contribution to Swedish shipping,” Gunnarsson adds.

Headquartered in Gothenburg, Sweden, Furetank provides technical, safety, crewing and commercial management to external partners as well

as fully integrated shipping services.

Demand for expertise

The rapid development of simulator technology focused on the LNG sector in recent years has also strengthened ties between academia and training, as many of the latest simulators are also emerging as valuable research tools.

The University of Plymouth recently partnered with Kongsberg Maritime to introduce a new simulator to its Maritime Simulation Laboratory, designed to enable trials of new clean fuel solutions. Based on the Kongsberg K-Sim dynamic positioning (DP) simulator, the new system will be used to simulate, test and optimise marine operations.

Commenting on the new system, Alan Williams, Communications Officer at the university notes that it will “provide key insights into solutions that will increase efficiency, safety and cost effectiveness” and that in addition to the research aspect, “it will also be used to develop training for current and future industry professionals, helping to meet the national and international demand for such expertise”.

Headquartered in southern Norway, Kongsberg Maritime is part of the Kongsberg Gruppen (KOG) and builds systems for positioning, surveying, navigation, and automation to merchant vessels and offshore installations. Its K-Sim Engine simulator platform is used worldwide and provides the basis for a range of in-depth training courses. ■



The Donsö facility will feature state-of-the-art ship simulators

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For the Record

AVENIR LNG, the European small-scale LNG fleet owner, terminals operators and a supplier to off-grid customers, has joined with a Chinese bunkering company to deliver LNG fuel to a ship in Shanghai owned by Israel's ZIM Integrated Shipping Services.

The Chinese fuel company, Shanghai SIPG Energy Services (SSES) a subsidiary of Shanghai International Port Group (SIPG), and Avenir successfully delivered bonded LNG bunker in the Port of Yangshan, part of the Shanghai port authority area, to ZIM's LNG-powered twenty-foot equivalent units (TEU) containership "ZIM Sammy Ofer".

The operation was carried out by SSES's own LNG bunkering vessel, the "Hia Gang Wei Lai", with 20,000 cubic metres of capacity.

"The bunkering operation was completed safely and efficiently, with the support Shanghai Maritime Bureau, Customs and Border Inspection authorities," said the companies.

Zhang Da, general manager of the SSES, noted that in recent years LNG had rapidly become the new trend of "power fuel" for international voyages.

"Since the implementation of the Shanghai Port's bonded LNG bunkering project, it has always been highly valued by the Shanghai Municipal Government and all relevant departments have given immense support," explained Zhang.

"ZIM, one of the world's leading shipping companies, is also a long-term partner of Shanghai Port," he added.

"Under the leadership of SIPG, we will deepen the cooperation with ZIM and explore the sustainable development of green shipping together," he stated.

Peter Mackey, Chief Executive of Avenir said he was delighted to have supported partner SSES in bunkering ZIM's first LNG-fuelled containership in the Port of Shanghai.

"This is significant for Avenir as we continue to expand our global bunkering footprint and support the shipping industry's transition to cleaner fuels," added Mackey.

The Haifa, Israel-based company ZIM is building a fleet 10 LNG-powered vessels being deployed for ZIM's flagship ZIM Container Service Pacific (ZCP)

business covering the Asia-to-US East Coast trade route.

These 10 vessels of 15,000 TEU will be transporting goods from China and South Korea to the US East Coast and the Caribbean.

While ZIM's headquarters are in the Israeli port of Haifa it also has a North American base at Norfolk in Virginia.

BP, the lead developer of the Mauritania-Senegal floating LNG project along with Kosmos Energy of the US and the state energy companies of the two West African nations, has confirmed the development expansion concept for the second phase of the Greater Tortue Ahmeyim (GTA) gas and FLNG ventures.

The partnership comprises BP as operator and Senegal's Petrosen, Mauritania's Société Mauritanienne des Hydrocarbures (SMH) as well as Kosmos, will evaluate a gravity-based structure (GBS) LNG venture as the basis for the venture with total capacity of between 2.5 million tonnes per annum and 3 MTPA.

GBS LNG development have a static connection to the seabed with the structure providing LNG storage and a foundation for liquefaction facilities.

The earliest industry example was the Adriatic LNG import project on line since 2009. It is located offshore the East Coast of Italy and the facility is positioned on concrete caissons shipped to the location and fixed to the ocean floor.

The BP-led project concept design offshore West Africa will also include new wells and subsea equipment, integrating with and expanding on existing GTA infrastructure.

"The partnership will consider powering LNG liquefaction using electricity to help drive operational emissions lower," said a statement.

BP and its partners are now working with contractors to progress the concept towards the pre-front-end engineering stage.

"We aim to build on our strong collaboration with our partners, and the Governments of Mauritania and Senegal, to further develop a long-term, successful energy hub in West Africa. GTA continues to underpin our strategy to develop the most resilient hydrocarbons to help provide energy security today," said Gordon Birrell, BP's executive vice president for operations and production.

The current Mauritania-Senegal FLNG project is located 120 kilometres offshore in water depth of 2,850 metres, one of the deepest subsea developments in Africa.

The Phase 1 of the project is currently under development and will export gas to an Floating Production and Storage and Offloading (FPSO) unit about 40km offshore.

The natural gas will be processed and liquids separated, before exporting gas onward to floating LNG facilities 10km offshore.

It is expected to produce around 2.3 MTPA of LNG per year when operations commence.

Kosmos said in its latest earnings report on February 27 that the GTA venture's first phase hook-up activities were expected to begin in the second half of the year with first gas targeted for the fourth quarter of 2023.

It added that Phase 1 of the GTA was continuing to make good progress, and was around 90 percent complete.

"The FLNG unit is on track for sail away in the second quarter of 2023. Construction and mechanical completion activities continue and commissioning work has begun," stated Kosmos.

Construction is complete for the Hub Terminal and on the subsea side four wells drilled and completed.

Kosmos added that the subsea shallow water gas export pipeline from the FPSO to the hub terminal has been installed and the deep-lay pipeline vessel has arrived to install the deepwater pipeline.

"Flow back of the wells has demonstrated significantly higher rates than required for liquefaction," said Kosmos.

CHART Industries, the US LNG equipment-maker and industrial gases and clean energy company, reported soaring sales and earnings as well as record orders and a vibrant LNG market as it prepared to close the \$4.4 billion take-over of UK engineering company Howden.

Chart achieved record full-year 2022 orders of \$2.77 billion and included its highest ever quarterly levels with the fourth-quarter total being \$525.9 million, an increase of over 14 percent from the same three months of 2021.

"Orders included three 'Big LNG' orders totaling \$620M as well as a total of 12 floating LNG (FLNG), small-scale LNG and hydrogen liquefaction systems and associated equipment," explained Atlanta, Georgia-based Chart in its fourth-quarter and full-year earnings statement.

"Fourth-quarter orders included orders for our IPSMR® process technology and associated equipment for New Fortress Energy's Fast4 and

Fast5 LNG projects," said the company.

"This was the first time in our history that we booked multiple 'Big LNG' projects in the same year, with three consecutive quarters. We anticipate 'Big LNG', small-scale LNG and FLNG demand to continue in 2023," added Chart.

Chart said that to start 2023 it had received an order for \$115M for its IPSMR® liquefaction systems China's Wison Heavy Industry Co. as well as an order for brazed aluminum heat exchangers for a floating LNG application for \$19.5M.

In its corporate expansion activities, Chart had agreed in the fourth quarter to acquire Howden, a leading UK-based global provider air and gas-handling products and services, for a purchase price of \$4.4Bln from affiliates of KPS Capital Partners LP.

"The Howden acquisition is anticipated to close in the next 45 days and is on-track to deliver our year-one synergy and financial commitments," stated Chart.

Howden is a leading global provider of air and gas handling products and services and will complement Chart's leadership in supplying technology for major LNG projects under construction on the US Gulf Coast and providing regasification and LNG transportation equipment around the world, including in Europe and Asia.

Howden manufactures a portfolio of rotating equipment products, including compressors, blowers, fans, rotary heaters and steam turbines.

The UK company is headquartered in Renfrew, Scotland, and employs more than 6,500 people globally in 35 countries, including more than 750 engineers.

"Howden, like Chart, continued to experience strong demand from numerous macro tailwinds in their end markets in the fourth quarter 2022 and into the first quarter of 2023 as well as very strong backlog heading into the year," Chart said in its earnings.

"We are reiterating our view for 12 months 'pro-forma' combined sales of \$4.25Bln and associated adjusted 2023 EBITDA of \$1Bln for the Chart and Howden combined business, inclusive of year-one cost synergies of \$175M," added the US company.

Chart's sales in 2022 had jumped by 23 percent to \$1.61Bln from \$1.31Bln in 2021.

The company's annual net income from continuing operations rose by 35 percent to \$82.6M from \$60.9M in the previous year.

In the fourth quarter, Chart's net operating income came to \$17.4M, up from \$12.4M in the same three months of 2021.

Sales in the quarter came to \$414.4M compared with \$378.9M in the prior-year quarter.

“Not only was 2022 a record year across nearly all financial metrics for our business, we continue to see broad-based demand as we head into 2023 across our full solution offering,” declared Jillian C. Evanko, Chart’s Chief Executive and President.

“We are pleased with the progress of margin improvement, in particular our record adjusted operating income as a percent of sales of 17.0 percent in the fourth quarter and are excited to be progressing on track to closing the acquisition of Howden and the expectation of delivering year-one synergies at or above target,” added the CEO.

“I want to thank our One Chart global team members for their efforts in executing a record year, and most importantly, doing so safely as we had our lowest number of safety incidents and total recordable incident rate to end 2022,” said Evanko.

Chart noted that it had signed agreements or Memoranda of Understanding (MOUs) with 30 different partners in 2022, with a balance between hydrogen (38 percent), LNG and liquefaction (34 percent) and carbon capture, utilization and storage (25 percent) and including 10 new MOUs executed in the fourth quarter 2022 with partners such as China’s Wison.

CHEVRON Corp. has said liquefied natural gas was a key component of the energy transition on land and at sea and plans to upgrade its fleet of 10 LNG carriers at the Singapore shipyard of Sembcorp Marine Ltd.

Chevron through its subsidiary Chevron Shipping Company has signed an agreement with Sembcorp Marine Repairs & Upgrades, a unit of Sembcorp Marine, to help reduce the carbon-intensity of its LNG fleet operations.

“Under the agreement, with Sembcorp Marine’s support, Chevron will install new technologies aboard Chevron vessels to support their energy transition goals,” said a statement.

“The changes are also in alignment with decarbonization targets set by the International Maritime Organization,” Chevron added.

Chevron Shipping operates a fleet of around 30 ships from conventional crude and petroleum product carriers to LNG carriers.

In addition to providing marine transportation for the company, Chevron

Shipping provides technical, commercial and operational support to projects such as the Gorgon LNG and Wheatstone LNG export plants in Western Australia.

Chevron said its LNG fleet plans included installing new technologies such as a reliquefaction system, hull air lubrication and new gas compressors.

The company expects that all these measures together are expected to reduce cargo boil-off, lower fuel consumption and increase volumes of cargo delivered.

“We are excited to work with Sembcorp Marine to help us advance our lower carbon goals,” said Mark Ross, President of Chevron Shipping.

“We believe LNG will be a key component of the global energy transition for years to come and Chevron is focused on continuing its disciplined capital investment in our LNG fleet,” added Ross.

Chevron stated that Sembcorp Marine had significant expertise in complex LNG fleet modifications and a proven track record for lower carbon solutions for the maritime industry.

The Singaporean company will provide Chevron with engineering, procurement, installation and commissioning services and expects to complete the work by mid-2025.

“Sembcorp Marine is committed to advancing environmental sustainability through the development of industry-leading solutions,” said Wong Weng Sun, Sembcorp Marine President and Chief Executive.

“Working with Chevron on its LNG fleet upgrades is an immediate way to accelerate the lowering of the carbon footprint in the maritime industry, to achieve the IMO’s target to reduce emissions from international shipping by at least half,” added Wong.

CLARKSON, the UK-based global shipping services company and maritime consultancy for LNG and other transported hydrocarbons and products, reported a jump in annual revenues of over 36 percent and record profits even as uncertainties remained in the industry from geo-political issues.

Clarkson reported revenues of £603.8 million (\$727M) compared with the £443.3M posted in 2021.

The company logged record underlying profit before tax of £100.9M, up by 45.4 percent from £69.4M in 2021.

“Tankers, specialised products and gas markets, covering LNG, liquefied petroleum gas (LPG) and other petrochemical gases, have had a strong

year and continue to perform well with good market fundamentals for the future,” explained Clarkson.

“The dry bulk market was also strong for much of the year, but freight rates have come off more recently due to short-term factors which we believe will reverse as the year progresses,” added Clarkson.

Overall, segmental profit before taxation from broking was £117.6M, up £44.0M over the year and with a margin of 23.7 percent.

“Whilst there are considerable uncertainties in the geo-political landscape, we are confident that supply-side constraints brought about by years of under-investment and the pressure on shipowners and charterers to decarbonise, will provide significant opportunities for Clarksons long into the future,” said Chairman Laurence Hollingworth in the earnings statement.

The group, listed on the London Stock Exchange and with subsidiaries in ship-broking, finance, research and port services employees over 1,800 people.

“We will continue our strategy of investing in the best people and opportunities across the globe to ensure that we remain at the very forefront of the industry, delivering growth for all stakeholders,” stated Hollingworth.

The company said it was confident on the outlook for Clarkson and the industry.

“It was a record year for Clarksons, and I thank all my colleagues across every area of the business for their hard work, dedication and commitment,” said Andi Case, Chief Executive.

“This performance, driven by our client-focused culture and consistent strategy of investing in the best teams across all global segments, data, intelligence, analytics and the best tools for trade, has enabled us to deliver a 20th consecutive year of dividend growth for our shareholders,” added Case.

“While the global geo-political outlook for 2023 and beyond remains uncertain, the green transition is driving significant activity in our industry. This, coupled with a supply and demand balance that will create meaningful supply-side constraints supporting the market, and our strong forward order book, gives us confidence in the outlook for Clarksons,” stated the CEO.

Case gave an overview of each of the company businesses and on the ship-broking side the CEO said the maritime industry had experienced a “diversity of trends” across its major segments during the year.

“Major global disruption, including the dislocation of trade brought about by the

onset of the Russia-Ukraine conflict and the continued impact from the COovid-19 pandemic, tightened markets and impacted, not only seaborne cargos, but also pipelines,” explained Case.

“This led the ClarkSea index to increase 30 percent to an all-time high, before coming off in Q4 on the back of a slowing world economy, inflation and an easing of Covid-19-related port congestion,” he added.

Case said financial division faced tougher conditions in 2022 with an adverse macro-economic and geo-political environment leading to a pause in capital raising.

“Several transactions which were due to be completed in the second half of 2022 are now expected to close in the first half of 2023, and indeed many have already been completed, or are close to being completed, at the time of writing,” added the CEO.

“Our areas of focus in shipping, metals and mining, offshore oil services and renewables means that our pipeline remains strong,” he added.

Overall, the financial division produced a profit before tax of £7.8M in 2022 compared with £13.3M in 2021.

Regarding the research division, CEO Case said he had seen growth in the sector.

“The performance of the Research division is testament to the depth and quality of Clarksons’ research and the high regard in which it is held by clients,” added Case.

“Its products have seen significant growth from increased breadth and depth, particularly extensive evolution in data and intelligence relating to the green transition in shipping and the overall energy transition,” he said.

The Research division increased profit before tax by 14.8 percent to £7.0m from £6.1M in 2021.

COBRA, a French engineering company and part of France’s VINCI group, and Spanish firm Sener have been awarded the contract for the onshore LNG import terminal being developed at Brunsbüttel on the Elbe River north of Hamburg.

Under the terms of the deal, Cobra’s share of the contract amounts to 62 percent and Sener’s is 38 percent.

Both companies will carry out the engineering, procurement and construction on behalf of development group German LNG Terminal GmbH.

German utility RWE has already set up a floating import terminal at Brunsbüttel using the floating storage and regasification unit (FSRU), the “Höegh

Gannet” which arrived in January 2023, as Germany sought a fast-track solution after the cut-off of Russian pipeline gas on the Nord Stream import system.

However, the onshore German Terminal project at Brunsbüttel will not be completed until 2026.

The future facility will have two 165,000 cubic metres capacity storage tanks and will be able to receive around 6 million tonnes per annum of cargoes with plans in place to expand for an additional 1.5 MTPA of shipments.

“It will be equipped with two jetties, unloading arms, storage tanks, systems for regasification and gas emission, a boil-off gas recovery system, a flare stack, auxiliary systems, and a series of buildings specially designed for the operations,” said a statement.

“The terminal will provide various services: loading and unloading of carriers, storage of LNG, regasification, injection into the German natural gas grid and distribution of LNG via tankers and railway tanker wagons,” it added.

Sener and Cobra said that the German EPC contract was based on the track record of both companies on previous regasification terminals they have completed in Europe.

“These include the design and construction of LNG terminals like Sagunto and Bahía Bizkaia Gas in Spain, Gate terminal in the Netherlands, Dunkerque in France and Zeebrugge in Belgium,” they said.

“There will be a first tranche of preliminary work lasting around nine to 15 months, with some construction work already taking place in parallel over a period of around 42 months,” they explained.

“Under current conditions, it is realistic to expect completion in 2026. However, all parties involved are all working to further accelerate the project in compliance with all licensing and state aid requirements,” they stated.

DAEWOO Engineering and Construction of South Korea has signed an agreement to build natural gas-fired power plants in Libya as the North African nation and former LNG exporter starts to rebuild its natural gas industry infrastructure.

Daewoo E&C said in a statement that the project was in cooperation with a local subsidiary of General Electricity Co. and was worth an initial \$790 million.

The Korean company said the contract was for the construction gas-fired power stations in Libya’s Mellitah

and Misurata regions.

The projects are a result of the Libyan government's additional power plant needs as the country sees increasing electricity demand.

Daewoo E&C noted that it had entered the Libyan market in 1978, even before the establishment of diplomatic relations between Libya and South Korea.

Libya is reviving its natural gas infrastructure with the help of Italian major Eni which in January 2023 signed a major gas fields development contract.

The signatories of that agreement were the Chief Executive of Eni, Claudio Descalzi, and his counterpart at the National Oil Corporation of Libya, Farhat Bengdara.

Libya's hydrocarbon production and exports have been substantially affected by conflict and continuing civil unrest over the past few years while LNG production stopped during the 2011 phase of the civil war.

Libya had been the third country in the world to start LNG production from the Marsa al-Brega LNG plant that came on stream in 1971.

Libya exported most of its 700,000 tonnes per annum of LNG output from the small-scale plant to Spain.

The Marsa al-Brega facility was operated by Shell and had been the subject of an expansion plan in 2007 involving an upgrade and a more than four-fold increase in production to 3 million tonnes per annum, but the proposal was never taken forward.

The new Eni gas venture in Libya is called ‘Structures A&E’ and is the first major gas project in the country since the early 2000s.

It consists of the development of two gas fields, namely Structures ‘A’ and ‘E’, located in the contractual area D offshore Libya.

Under the new Libyan Oil Corp. and Eni natural gas deal signed in January there was no mention of LNG, though exports by pipeline to Europe from Libya are back on the agenda.

The strategic project is aimed at increasing gas production to initially supply the Libyan domestic market and hence the signing of the gas-fired power plants contract with Daewoo E&C.

The combined gas production from the two Libyan offshore fields will start in 2026 and reach a plateau of 750 million standard cubic feet per day.

Eni said that production would be ensured through two main platforms tied-in to the existing treatment facilities at the Mellitah processing complex.

ENAGAS, the Spanish gas grid and LNG terminals operator, has held an event for marketers and the regulatory authorities at its headquarters in Madrid where it revealed plans to launch an open season on March 6 for logistics services at the re-activated El Musel import terminal in Northwest Spain on the Bay of Biscay.

“The process of contracting capacity to provide logistics services at the terminal begins, which is a milestone for the start of commercial operations,” said Enagás

El Musel is part of the Government’s “More Energy Security Plan” and the terminal will play an important role in strengthening Europe’s security of energy supply being becoming an LNG trans-shipment hub for the EU.

“The process will begin with a first non-binding phase in which trading companies will be able to express their interest in the logistics services offered for LNG unloading, storage and loading operations, on an unregulated access basis,” explained Enagás.

“This will be followed by a binding phase in which marketers will bid for the capacity and the process will end with the allocation of long-term logistics services,” it added.

Under the regulated access regime, the El Musel terminal will only offer the essential regasification service for the proper management of the terminal, as well as the tank-loading service.

The El Musel terminal has received approval from the National Markets and Competition Commission for its special economic regime as a logistics facility, a necessary step to begin the process of assigning logistics services.

Enagás has invited regional energy company Reganosa to participate in the process by virtue of a recent agreement whereby Reganosa becomes a 25 percent shareholder in the El Musel terminal and Enagás acquires the entire regional transmission network in the northwest region hitherto owned by Reganosa.

The El Musel terminal in the Port of Gijón could contribute up to 8 billion cubic metres of additional LNG to Europe’s supply.

The terminal has facilities for the berthing of vessels of between 50,000 cubic metres capacity and 266,000 cubic metres capacity and two storage tanks, each with capacity of 150,000 cubic metres.

E.ON, Europe's biggest operator of energy networks and with plans to enter the LNG import business in September with a floating storage and regasification unit delivered to the North Sea port of

Wilhelmshaven, reported an increase in annual net income while also writing off its Nord Stream gas pipeline stake.

E.ON, which is headquartered in the German city of Essen, posted adjusted net income of €2.70 billion (\$2.9Bln) in 2022, an improvement on the previous year’s net income of €2.48Bln.

The German energy giant is teaming up with French peer Engie and a small German company called Tree Energy Solutions to operate an FSRU chartered for a five-year period from Excelerate Energy of the US.

E.ON, Engie and Tree Energy were selected by the German Federal Ministry of Economics and Climate Protection to jointly develop and implement the fifth FSRU to be deployed.

The vessel will supply regasified LNG for the German grid to replace the lost Nord Stream pipeline gas system in which E.ON was a shareholder.

The fifth FSRU is scheduled to be deployed in September and to import cargoes for the 2023-2024 winter gas season.

E.ON, which has over 50 million customers in Europe, has also taken the final step to effectively write-off its stake in the damaged Nord Stream system that delivered pipeline natural gas from Russia to Germany.

The company said that it cut the value of its 15.5 percent Nord Stream stake to zero at the end of 2022, down from around €100M at the end of September.

The E.ON Nord Stream stake's fair value had originally been €1.2 billion.

E.ON is also continuing to operate the Isar 2 nuclear power plant until April 15 to enable it to contribute to a secure energy supply and network stability in Germany.

The company added that it would invest possible income from the plant’s continued operation in projects relating to the energy transition.

E.ON is also a big renewables player and about 15 percent of Europe’s renewables capacity is already connected to E.ON’s networks.

“It was an extremely challenging year for us, for all of Europe, and especially for energy markets,” said E.ON Chief Executive Leonhard Birnbaum.

“Yet, we still managed to achieve a strong result in the crisis year. We delivered on our promises and consistently implemented our strategy focused on sustainability, digitalization and growth,” added Birnbaum.

“At the same time, our long-term and reliable procurement activities enabled

us, amid the crisis, to protect our customers throughout Europe from the at times dramatic price increases on wholesale markets,” he stated.

Birnbaum added that he expected the positive performance to continue, though he said 2023 would still be a crisis year.

“We can’t allow ourselves to be lulled into a false sense of security,” he stated.

“Wholesale prices have fallen, but they remain at a level that we would’ve considered incredibly high before the crisis,” Birnbaum said.

The company forecast 2023 adjusted group gross profits (EBITDA) of €7.8Bln-€8.0Bln and adjusted net income in the coming year of €2.3Bln-€2.5Bln.

EXCELERATE Energy, the leading US provider of floating LNG import terminals, has extended a time-charter agreement with the Dubai Supply Authority for a floating storage and regasification unit deployed in the United Arab Emirates.

Excelerate said that prior to the deal the agreement for the FSRU “Explorer” had a remaining firm charter period of around three years.

Under the terms of the new agreement, the charter period will be extended by an additional five years from the end of the existing contract in the fourth quarter of 2025.

“Reaching an agreement on the extension of our time-charter agreement with DUSUP highlights our ongoing efforts to develop and grow our existing, diversified regasification business,” said Daniel Bustos, Chief Commercial Officer of Excelerate.

“Our current markets are essential to maintaining our solid foundation of revenues and providing new opportunities for downstream growth,” he added.

“We look forward to continuing our partnership with DUSUP and remain committed to providing Dubai with the critical energy security it needs,” stated Bustos.

FSRUs are a preferred option for Middle East nations and there are other floating terminals currently in operation in Kuwait, Jordan and Israel.

Bahrain and Egypt also have the onshore and offshore infrastructure for FSRUs though have no new charter agreements in place.

The FSRU “Explorer” was chartered initially to Dubai in 2015 to complement existing supply sources and support the Emirate of Dubai’s seasonal demand requirements.

The vessel is located at DUSUP’s Jebel Ali port and has become an important part of Dubai’s integrated supply infrastructure.

The UAE entered into its first long-term charter agreement with Excelerate in 2014 for a larger and more efficient FSRU to replace an existing regasification vessel.

Under that agreement, Excelerate customized the “Explorer” in 2015 to meet the DUSUP’s higher supply requirements.

Excelerate had enhanced the vessel with the newest features including new high-pressure vaporizers and pumps installed to increase regasification send-out capacity from 690 million cubic feet per day to 1 billion cubic feet per day.

GASUNIE, the co-owner of the Dutch Rotterdam and Eemshaven LNG import facilities and a stakeholder in the onshore German regasification facility planned for Brunsbüttel, said annual results were impacted by the energy market turmoil caused by Russia’s invasion of Ukraine.

As a consequence, Gasunie saw operational upheavals with the reversal of European Union gas flows, increased revenues and the writing off of the Nord Stream stake held by the company.

“Russia’s aggression triggered resolute action to reduce Europe’s dependence on Russian gas and led to a reversal of the gas flows on the Continent,” said Gasunie Chief Executive Han Fennema in an overview of the year in Gasunie’s annual report.

“In addition to our focus on the gas crisis and our measures to safeguard the security of supply, we also managed to realize our planned investments for the energy transition,” the CEO added.

Gasunie pointed out that it made major efforts to ensure security of supply in 2022, resulting specifically in the completion of the new floating LNG import hub at the Dutch port of Eemshaven and the expansion of the Gate terminal in Rotterdam.

“This doubled the import capacity for LNG in the Netherlands and allowed a sharp reduction in our country’s dependence on Russian gas,” added Fennema.

The loss of the supply of gas from Russia caused a reversal of gas flows throughout Europe.

“Whereas gas previously flowed mainly from East to West, we are now seeing a reversal with gas flowing from northwest Europe to Germany and onwards to Central and Eastern Europe,” explained Gasunie.

Gasunie leases and auctions transport capacity on its networks in the Netherlands and Germany to parties wishing to transport gas from one place on the networks to another.

“The reversal of the gas flows resulted in high additional demand from customers for capacity in Gasunie’s networks in the Netherlands and Germany, bumping revenue up by €872 million to €2.59 billion,” said the utility.

“At the same time, Gasunie also felt the effects of the high energy prices, specifically the energy costs associated with transporting gas and modifying gas to achieve the right quality,” explained the company.

“These costs were almost €300M higher in 2022 than in 2021, bringing the result after taxation to €555M (€311M in 2021),” added Gasunie.

Janneke Hermes, Chief Financial Officer, explained that more than 85 percent of the additional revenue in 2022 fell within the scope of the regulatory powers of the Authority for Consumers and Markets (ACM) in the Netherlands and the Bundesnetzagentur (BNetzA) in Germany.

Under the regulations of these supervisory bodies, much of the additional revenue will be returned to Gasunie network users over the next few years in the form of lower tariffs.

“When the revenue to be offset is deducted from the revenue achieved, the underlying revenue amounts to €1.51Bln (€1.37Bln in 2021),” said CFO Hermes.

Gasunie added that it had fully written off its stake in the Gazprom Nord Stream natural gas pipeline system.

“In July 2022, Gasunie had announced that it would reduce the book value of its 9 percent stake in Nord Stream from €508M to €240M,” said the report.

“In late September, we learned that Nord Stream’s pipelines had been purposely damaged and the two Nord Stream pipelines were no longer being used by Gazprom for gas deliveries to Europe,” added Gasunie.

“In the current geopolitical context, Gasunie does not foresee a resumption of gas deliveries via Nord Stream for the foreseeable future and, as a result, does not expect to receive any more dividends,” it stated.

“So the value of Gasunie’s interest in Nord Stream was reduced to €0 at the end of 2022,” the company added.

“Gasunie is in close contact with the Dutch government and the other western European shareholders in Nord Stream regarding stabilisation of the pipelines to

prevent further environmental damage and to ensure safety,” stated Gasunie.

Gasunie added that CEO Fennema would step down from the top post from September 2023.

“CEO Han Fennema has announced that he will leave Gasunie at his own request as of September. By then, Fennema will have held the position of CEO at Gasunie for nearly 10 years,” said company.

“He informed the Supervisory Board and the shareholders of his intention earlier this year to give Gasunie plenty of time to find a successor,” it added.

ICE, the Intercontinental Exchange and leading global provider of energy trading platforms for futures and options, reported record Open Interest across its global commodity and energy futures and options markets, including European natural gas and with record volumes also seen in oil options.

ICE hit a record 51.1 million Open Interest (OI) contracts across commodities futures and options, up 10 percent since the start of the year, as well as record OI in energy futures and options of 47M.

The firm, headquartered in Atlanta, Georgia, said OI in the European benchmark ICE Dutch Title Transfer Facility (TTF) natural gas futures and options had surged by 29 percent since the start of 2023 to 2 million contracts.

ICE noted that it also saw the first TTF trades in the past week in the Calendar Year 2031 TTF.

Open Interest is the number of contracts that remain open each day and reflects how customers are adding to their positions for a period of time.

The longer-dated positions of OI tend to be held by commercial customers hedging their exposure to price risk.

ICE’s overall OI across ICE’s global natural gas futures and options portfolio is up 9 percent since the start of the year at 30.4M contracts.

It added that OI across North American natural gas futures and options, which includes Henry Hub and US Basis Markets contracts, was up 8 percent at 27.8M contracts.

The Dutch TTF, US Henry Hub, Japan-Korea Marker LNG spot cargo price and UK National Balancing Point futures and options form most of the ICE’s global natural gas complex, alongside the West India Marker (WIM) and the Spark LNG Freight Futures contracts.

Across ICE’s global oil markets, OI is up 18 percent since the start of the year at 11.37M contracts, with OI in North Sea

Brent futures and options up 28 percent at 4.98M.

ICE reported that on March 15, 2023, a record 567,731 oil option contracts traded on ICE, including a record 513,567 Brent options.

Both previous records were last set three years ago on March 9, 2020.

ICE explained that Brent is used to price an estimated 80 percent of oil traded on the global market and is the most liquid crude oil futures and options market in the world.

“The increase in trading activity across ICE’s markets reflects the breadth of ICE’s commodity benchmarks, with customers utilizing our liquidity and transparency to hedge their risk,” said Jeff Barbuto, Global Head of Oil Markets at ICE.

“The resilience of ICE Brent through the shocks the market witnessed last year, and its outperformance this year versus other oil benchmarks, shows how the market depends on its ability to reflect global fundamentals,” stated Barbuto.

Elsewhere in the oil portfolio, ICE reported that Gasoil, where OI is up 19 percent since the start of the year, saw 308,400 tons of diesel headed for delivery to North-West Europe at its most recent expiry, the highest since November 2021.

Other ICE oil benchmarks performing strongly since the start of 2023 include ICE Dubai (Platts) where OI is up 9 percent, with average daily volume (ADV) of 55,000 contracts, up 33 percent year-over-year.

The Abu Dhabi Murban oil OI is up 16 percent at 47,300 contracts, with ADV of 8,400 contracts, up 77 percent.

ICE added that the Texas Midland WTI (HOU) has seen OI grow to 14,000 contracts with ADV of 4,700.

The platform’s Wet Freight, which is used to manage price risk associated with shipping oil, was up 7 percent in OI at 158,100 contracts and ADV was up 27 percent.

JERA Co. Inc, the largest buyer of liquefied natural gas for Japan, has overhauled its senior management structure and appointed co-Chief Executives and removed the positions of Chairman and President.

Under the changes Yukio Kani, currently a Vice President will become Global CEO while Hisahide Okuda, also a Vice President will be the other co-CEO.

Current Chairman Toshihiro Sano will become a director and the current President Satoshi Onoda will also confine his activities to the board room.

JERA, which buys around 35 million

tonnes per annum of LNG, is Japan’s biggest fossil-fuel electricity generator being owned jointly by Tokyo Electric Power Co. (TEPCO) and Chubu Electric, the two largest power companies.

JERA currently oversees the operations and provides fuel for a total of 26 power plants in Japan and imports LNG into 11 of Japan’s network of 37 terminals.

Outgoing Chairman Toshihiro Sano explained the changes which put Global CEO Yukio Kani, a former head of LNG at TEPCO, in a position of greater influence.

Kani is also a graduate of Columbia Business School in New York.

The changes will be effective from April when Toshihiro Sano will resign as Chairman and Satoshi Onoda will cease to be President.

“Since my appointment as Chairman in 2019, I have focused my energies, together with Mr Onoda, on the smooth post-merger integration of our existing thermal power businesses,” explained outgoing Chairman Sano.

“The scale of this integration, bringing 26 thermal power plants and more than 3,000 employees together in a single organization, is unprecedented in the electric power industry,” he said.

“This integration has now been successfully completed and there is no longer any sense internally that it makes a difference which parent organization one came from,” he added.

“Furthermore, JERA has achieved management autonomy, with expanded local hiring at overseas locations, a growing number of employees hired mid-career for their specialized knowledge and experience, and - beginning last April - the arrival of employees hired directly by JERA as new graduates,” said Sano.

“In consultation with Mr Onoda I have reached the conclusion that the role of steering the company should be entrusted to new leadership,” he stated.

Chairman Sano also explained the reasoning for the co-CEO structure.

“The energy environment has changed dramatically since Russia’s invasion of Ukraine, prompting the re-emergence of securing a stable supply of energy as a top priority,” he said.

“At the same time, the need for decarbonization over the medium to long term is only more urgent. To solve such problems, we must consider solutions within both the overseas context of competition for energy resources and the domestic context of ensuring stable supply amid electricity deregulation,” he added.

“We have decided to resolve a variety of

management issues simultaneously, short-term and medium-term to long-term and overseas and domestic,” said Sano.

“To this end, we are implementing a co-CEO structure that establishes a mutually complementary relationship between Mr. Kani and Mr. Okuda and leverages their respective strengths,” the Chairman explained.

“Mr. Kani has a wealth of overseas experience securing resources, developing energy projects, and leading local subsidiaries,” he noted.

“I am confident in his ability to establish a global management structure, taking a global perspective in developing relationships with partners and appropriately linking the intensifying competition for resources with the worldwide decarbonization movement,” stated the Chairman.

The Chairman then went on the explained the role and competences of the other Co-CEO.

“Mr Okuda has a wide range of experience grounded in corporate planning at electric power companies but going beyond the field’s traditional boundaries to include alliances with other companies. I am confident in his ability to lead the debate about reforming the domestic electric power system, ensuring a stable energy supply, and decarbonizing the energy industry,” stated Sano.

“The two have worked closely together for a decade starting with the merger negotiations, each employing different strengths as a key player at the company, and we intend to entrust the company’s helm to them jointly,” concluded the Chairman.

Global CEO Kani pledged to boost JERA’s profile in the LNG business and also in renewables.

“First, we will leverage our world-leading LNG procurement capability to build an LNG value chain - stretching from gas field development, liquefaction, transportation and LNG terminals to gas-fired thermal power - that will function like insurance for Japan, enabling it to respond to unexpected changes both domestic and overseas,” explained Kani.

“From there, we will develop large-scale renewable energy sources including solar, onshore wind, and offshore wind, and move forward in building a hydrogen/ammonia value chain with the aim of a balanced transition to decarbonization,” he added.

“To cultivate the three pillars of LNG, renewables, and hydrogen/ammonia in preparation for an uncertain future, I want us to build as many energy supply

options as possible by 2030,” said Kani.

“I want us to be able to provide cutting-edge solutions by combining multiple options to suit local or national circumstances rather than pushing a single product like LNG or onshore wind,” he declared.

KEPPEL Shipyard in Singapore has started work on the conventional LNG carrier “GasLog Chelsea” to convert the vessel to a floating storage and regasification unit to be deployment as an import terminal in eastern Greece to supply the Balkans region.

The FSRU will be stationed in the north-eastern part of the Aegean Sea and about 17.6 kilometres (11 miles) from the costal Greek town of Alexandroupolis.

The vessel is being renamed “FSRU Alexandroupoli” and will serve as an offshore storage and import facility.

The “FSRU Alexandroupoli” will be linked to a pipeline system of 28km connecting the floating unit to the Greek National Natural Gas Transmission System (NNGTS).

The ship of 155,000 cubic metres capacity was also recently reflagged to the Greek flag.

The project’s owner, Gastrade, leads a consortium of key players in the wider region’s energy market. The group includes Mrs Elmina Copelouzou, the shipping line GasLog, the Public Gas Corporation of Greece (DEGSA), the affiliated Greek company DEPA Commercial, the Hellenic Natural Gas Transmission System Operator and Bulgartransgaz, the Bulgarian natural gas transmission and storage system operator.

“GasLog believed in the ‘FSRU Alexandroupoli’ endeavor from the very beginning and at a time when energy security in Europe was taken for granted,” said Kostas Karathanos GasLog’s Chief Operating Officer.

“We worked patiently and diligently to reach this stage and we are extremely proud to soon offer the first ever FSRU in Greek waters,” added Karathanos.

“Through GasLog’s renowned high standards of safety and reliability, the ‘FSRU Alexandroupolis’ will offer energy diversification and security to the wider region and establish GasLog as an integrated provider of natural gas solutions,” he stated.

GasLog is being backed in the conversion process by the leading European classification society DNV.

Martin Cartwright, Business Director DNV Maritime’s Gas Carriers and FSRUs

division, said the project was moving forward as a result of “an exceptional collaborative” effort.

“This will be our record 9th FSRU conversion project as a classification society and we take great pride in being entrusted with supporting this initiative,” explained Cartwright.

“By choosing DNV and our pioneering REGAS (ES) and ASP notations, the consortium demonstrates that they are focused on delivering an installation that meets the most innovative and rigorous standards in the industry,” he stated.

The investors noted that the “FSRU Alexandroupoli” vessel and the project aim to add a new gateway for natural gas in the Greek and wider Balkan region, improving the region's energy mix and diversifying energy sources to enhance security.

NEW FORTRESS Energy Inc. the US developer of floating LNG production and import terminal and power projects, has signed agreements to provide gas-fired power and natural gas to the US Caribbean territory of Puerto Rico.

NFE said its Puerto Rican subsidiaries, NFE Power PR and NFEnergia, had entered into agreements with the US-based industrial and energy company, Weston Solutions, for the installation and operation of 150 megawatts of additional power generation at the Palo Seco Power Plant in Puerto Rico as well as the supply of natural gas.

“Weston has won a task order to supply the temporary power generation to support the overall mission of the island’s grid stabilization at the Palo Seco Power Plant under its US Army Corps of Engineers Omaha Rapid Disaster Infrastructure contract,” explained NFE.

“The 150 MW of dual-fuel generators are expected to enable maintenance and repair work of Puerto Rico’s power system and grid,” added the New York-based company.

Wes Edens, the Chairman and Chief Executive NFE, said he was pleased to partner with Weston and support this “critical mission” to improve grid stability in Puerto Rico.

“The Federal Government is providing much-needed resources to Puerto Rico’s recovery and this project will help enable the transition to a cleaner, more affordable and reliable energy system,” stated Edens.

NFE on March 7 had reported increased annual revenues and net profits as its array of projects advanced.

The total annual revenues of NFE jumped almost 80 percent to \$2.36

billion, up from \$1.32Bln in 2021.

NFE’s annual net profits amounted to \$185M compared with \$93M in 2021.

The company also completed the Barcarena LNG import terminal in Brazil and expects to deliver first gas to the industrial customer, Norsk Hydro, later in 2023.

NFE said construction of its Fast LNG production units was progressing rapidly with the first FLNG unit expected to achieve mechanical completion in the Spring of 2023 and commence operations by mid-2023, explained NFE.

NFE also closed a \$2Bln transaction to form a joint venture called Energos Infrastructure with US equity fund Apollo Asset Management in which NFE holds long-term charters for 10 LNG vessels.

Then in response to the European energy crisis, the Eems Energy Terminal in The Netherlands commenced operations in September 2022 utilizing NFE's “Energos Igloo” FSRU.

The company also finalized its partnership terms with state-backed energy company Petróleos Mexicanos (Pemex) to jointly develop the Lakach deepwater natural gas field in the Gulf of Mexico and to deploy a “Fast LNG” unit to that location.

PAPUA LNG, the joint venture expansion project in Papua New Guinea involving France’s TotalEnergies, US major ExxonMobil and Australia’s Santos, has launched a full front-end engineering and design (FEED) process to expand the existing PNG LNG plant’s production by up to 6 million tonnes per annum.

After initial engineering studies, the Papua LNG partners have selected a concept using four electric-powered LNG Trains with a combined capacity of 4 MTPA to be developed within the existing PNG LNG plant operated by ExxonMobil and currently producing more than 9 MTPA.

The Papua LNG venture has also secured access to up to 2 MTPA of existing liquefaction capacity from PNG LNG and first production from the expansion is expected by the end of 2027 or early 2028.

TotalEnergies holds a 40.1 percent stake in Papua LNG, ExxonMobil owns 37.1 percent and Adelaide-based Santos has a 22.8 per cent interest.

The State of Papua New Guinea may exercise its rights for up to a 22.5 percent interest at the final investment decision, which is planned by the end of 2023 or early 2024.

Should the State of PNG exercise its full back-in right, the stake of Santos for

example would be reduced to 17.7 percent as would those of the other shareholders on a pro-rata basis.

“Integrating the Papua LNG midstream development within PNG LNG maximises the value of both projects and delivers increased capital efficiency by reducing upfront capital expenditure and maximising integration synergies,” said a statement.

“PNG LNG will receive an access fee, pro-rata sharing of operational expenses and ongoing process tolling revenue that compensates PNG LNG for making the capacity available,” it added.

The Papua joint venture is also seeking a cleaner LNG stamp by using electric power as well as the re-injection of carbon-dioxide into a CO2 storage reservoir.

“The concept selected for Papua LNG maximises value through midstream integration with PNG LNG to deliver increased capital efficiency and lower operating costs, consistent with our disciplined operating model,” explained Santos Chief Executive Kevin Gallagher.

“FEED entry for Papua LNG is a significant step for the project and we are working closely with our partners, the PNG government, communities and local companies to deliver new jobs and help support the local economy,” stated Gallagher.

The Papua LNG partners said that the selected concept was expected to have a lower capital expenditure outcome than the previous concept.

“Costs will be refined during the FEED phase and the project participants intend to explore project finance opportunities for a portion of the project cost,” they added.

Santos also has a 42.5 percent interest in PNG LNG after its acquisition of Oil Search and is now the largest shareholder in the plant.

The Australian company also signed a conditional agreement in September 2022 to sell a 5 percent interest in PNG LNG to local company Kumul Petroleum Holdings Limited with an asset value of US\$1.4 billion.

Completion is subject to customary conditions including necessary regulatory approvals and Kumul securing financing.

PEMBINA Pipeline Corp. and the Haisla First Nation from Kitimat in British Columbia have received environmental approvals to proceed with the near-shore Cedar LNG project on the Douglas Channel and have also signed a feed-gas tolling accord.

Pembina and the Haisla First Nation

have a 50-50 partnership joint venture to develop the floating export plant with liquefaction capacity of 3 million tonnes per annum of LNG.

Feed gas for Cedar FLNG will be sourced from the prolific Montney natural gas resource basin in northeast BC.

Pembina said in a statement that the joint venture with the Haisla has received its Environmental Assessment Certificate from the BC province Environmental Assessment Office.

Calgary, Alberta-based Pembina said the venture had additionally signed a memorandum of understanding with Montney shale-gas player ARC Resources Ltd for a long-term liquefaction services agreement.

ARC is a pure-play Montney producer and one of Canada's largest dividend-paying energy companies and like Pembina is listed on the Toronto Stock Exchange.

A final investment decision for the Cedar project is anticipated in the third quarter of 2023.

“The receipt of our EAC is the culmination of more than a decade of work by the Haisla Nation and marks a significant milestone for the Cedar LNG project and the Haisla Nation's journey towards economic self-determination,” declared Crystal Smith, Chief Councillor for Haisla Nation.

“With Cedar LNG, we are setting a new standard of responsible and sustainable energy development,” Smith added.

“Together with our partner, Pembina, we are committed to advancing an LNG project that protects the environment, respects Haisla Nation values and meets the highest standards of social and environmental responsibility,” she stated.

Scott Burrows, Pembina's President and Chief Executive, said the Cedar LNG project would have widespread benefits.

“Cedar LNG will benefit Pembina and its customers, the Haisla Nation and all of Canada, while meaningfully contributing to the transition to a lower-carbon economy,” explained Burrows.

“Pembina is proud of its long history of safe and reliable operations, and we look forward to contributing our expertise as we work together to bring Canadian LNG to the world,” Burrows stated.

Cedar LNG said it had made several design decisions to minimize the project's emissions with hydro-electric power being provided by BC Hydro.

In addition, the choice of site location allows the project to leverage existing LNG infrastructure, including the Coastal GasLink pipeline, with which

Cedar LNG has a long-term transportation agreement, a deep-water port, roads and other infrastructure.

The Coastal GasLink pipeline is being developed by North American and Canadian-based pipeline giant TC Energy and will firstly link to the Shell-led LNG Canada project also located in the Kitimat area.

Cedar LNG also received its first permit from the BC Energy Regulator for the 8.5-kilometres pipeline that will connect the liquefaction plant to the Coastal GasLink pipeline.

On the ARC Resources agreement, Cedar LNG has entered into an MOU for a 20-year liquefaction services agreement with ARC.

The parties are working towards finalizing a definitive agreement for 1.5 million tonnes of LNG per year, equivalent to around 200 million standard cubic feet per day of natural gas, or roughly half of Cedar LNG's production.

“We are pleased to partner with Cedar LNG on this important infrastructure project for Canada,” said Terry Anderson, President and CEO of ARC.

“This agreement is an important step forward in delivering our low-cost, low-emission natural gas to key demand markets and increasing ARC’s exposure to LNG-linked natural gas prices,” Anderson explained.

Doug Arnell, Cedar LNG’s CEO, said the venture was very pleased to have the ARC accord that has advanced the project.

“We are pleased to have ARC Resources as Cedar LNG's first customer,” added Arnell.

“In the coming months, we will be focused on advancing work across four critical streams - engineering, regulatory, commercial discussions and financing so that we are well positioned to deliver a project the Haisla Nation, Pembina, British Columbia, and the rest of Canada will be proud to showcase,” Arnell stated.

Cedar LNG said it continued to progress commercial discussions with other potential customers, all of whom are investment-grade counterparties for long-term volume commitments.

SAUDI ARAMCO, the largest oil exporter, increased its annual net income to \$161.1 billion on stronger crude oil prices, higher volumes sold, improved margins for refined products and as the company strengthens natural gas production capacity and has built its first underground gas storage.

Aramco’s net income was 46.5 percent

higher than in 2021 when \$110.0Bln was posted and was well above the \$49.1Bln reported in 2020.

The Dhahran-based company, which is managed by the leader of the 23-nation OPEC+ group of oil producers, the Kingdom of Saudi Arabia, reported record cash flow from operating activities of \$186.2Bln, up from \$139.4Bln in 2021.

Aramco sells about 60 percent of its crude shipments to Asia, most of them under long-term contract pricing which is reviewed each month.

China, Japan, South Korea and India are the biggest buyers of Saudi crude and analysts said that the impressive results showed global demand was on an upward curve even amid global economic headwinds.

The Board of Aramco declared a fourth-quarter cash dividend of \$19.5Bln, an increase of 4.0 percent compared with the third quarter.

“Aramco delivered a record financial performance in 2022 as oil prices strengthened due to increased demand around the world,” said Aramco President and Chief Executive Amin H. Nasser.

“We also continued to focus on our long-term strategy, building both capacity and capability across the value chain with the aim of addressing energy security and sustainability,” added Nasser.

“Given that we anticipate oil and gas will remain essential for the foreseeable future, the risks of underinvestment in our industry are real, including contributing to higher energy prices,” declared Nasser.

The CEO stated that to leverage its “unique advantages at scale” and be part of the global solution, Aramco has embarked on the largest capital spending programme in its history, and Capex rose in 2022 by 18.0 percent to reach \$37.6Bln and will increase again to \$55.0Bln in 2023.

“Our focus is not only on expanding oil, gas and chemicals production, but also investing in new lower-carbon technologies with potential to achieve additional emission reductions in our own operations and for end-users of our products,” said Nasser.

Aramco, which held an initial public offering of 1.5 percent of its shares in December 2019 to value the company at \$2 trillion, saw its shares rise to 32.95 Saudi Riyals (\$8.77) after the March 12 earnings release.

Operational highlights showed Aramco’s average hydrocarbon production was 13.6 million barrels of oil equivalent per day, including 11.5 million barrels per day of total liquids.

Aramco said its Upstream division continued to execute its growth plans to promote long-term productivity of Saudi Arabia’s reservoirs.

Compression projects at the Haradh and Hawiyah fields, including associated gas, commenced commissioning activities and full capacity is expected to be reached in 2023.

“Construction at the Hawiyah Unayzah Gas Reservoir Storage, the first underground natural gas storage project in the Kingdom, is at an advanced stage and has commenced injection activities,” stated Aramco.

“The program is designed to provide up to 2.0 billion standard cubic feet per day of natural gas for reintroduction into the Kingdom’s Master Gas System by 2024,” explained the company.

Aramco also decided to invest in developing a major integrated refinery and petrochemical complex in northeast China.

The project presents an opportunity for Aramco to supply up to 210,000 barrels per day of crude oil feedstock to the complex.

“The transaction is subject to certain closing conditions, including regulatory approvals,” said Aramco.

In Saudi oil production, Aramco said construction and engineering activities for the Marjan and Berri crude oil increments continued to progress.

They are expected to add production capacity of 300,000 barrels per day and 250,000 bpd respectively by 2025.

The Zuluf crude oil increment is in the engineering phase and is expected to provide a central facility to process a total of 600,000 bpd of crude oil from the Zuluf field by 2026.

Aramco added that construction activities are additionally continuing on the Dammam development project, which is expected to add 25,000 bpd and 50,000 bpd of crude oil by 2024 and 2027 respectively.

In corporate highlights, Aramco noted that in November, three transactions with Polish refiner and fuel retailer PKN ORLEN were completed, expanding Aramco’s presence in the European downstream sector.

As part of the transaction, the company acquired equity stakes of 30 percent in a 210,000 bpd refinery in the port of Gda sk and 100 percent in an associated wholesale business and 50 percent in a jet fuel marketing joint venture.

Aramco and France’s TotalEnergies also made a final investment decision in December to construct a large petrochemical complex in Saudi Arabia.

SEMPRA, the US utility whose LNG unit Sempra Infrastructure owns Cameron LNG in Louisiana and other projects in Mexico, has taken a positive final investment decision to build the Port Arthur liquefaction and export plant in Texas.

The Sempra Infrastructure subsidiary will proceed in a joint venture with ConocoPhillips for the initial Phase I of the project comprising two mega-Trains in Jefferson County with 13 million tonnes per annum of output.

Total capital expenditure for the Port Arthur Phase 1 project is estimated at \$13 billion.

Sempra explained that it had secured its ConocoPhillips joint venture whereby an affiliate of ConocoPhillips has acquired a 30 percent non-controlling interest in the project and is purchasing 5 MTPA of LNG offtake under a 20-year sale and purchase agreement.

Additionally, ConocoPhillips will be managing the Port Arthur project's overall natural gas supply requirements.

ConocoPhillips will also have certain rights to participate in future expansion projects in both equity and offtake.

“Our strategic LNG partnership with Sempra will help supply growing global demand for natural gas,” said Ryan Lance, ConocoPhillips Chairman and Chief Executive.

“ConocoPhillips has more than 60 years of experience with LNG, and we look forward to continuing to build our LNG portfolio and expanding our role that strengthens US and global energy security,” added Lance.

As well as the positive FID, Sempra Infrastructure announced the closing of the project's \$6.8Bln debt financing and the issuance of the final notice to proceed under the project's engineering, procurement and construction agreement with US LNG plant specialist Bechtel Energy.

Bechtel has been given a final notice to proceed for the project with expected commercial operational dates for Train 1 and Train 2 of 2027 and 2028 respectively.

“We're proud to partner with Sempra to deliver a world-class LNG facility,” said Brendan Bechtel, Chairman and CEO of Bechtel.

“Bechtel has a record of delivering LNG infrastructure on the US Gulf Coast and bringing quality jobs and training opportunities to local communities,” he added.

“The 5,000 construction jobs this project creates will provide outstanding opportunities for craft professionals -

growing a skilled workforce that will benefit the region for years to come,” stated the Bechtel Chairman.

The FID was soundly praised by Texas Governor Greg Abbot as a move that would “cement Texas’s position as the energy capital of the world” and a leader in LNG.

“With a highly skilled workforce and business-friendly climate, and as a national leader in LNG exports, Texas is the prime location to expand LNG operations to unleash the full economic potential of the US in such a critical industry,” stated Abbot.

Sempra has also reserved an indirect stake in Port Arthur LNG for US asset management firm Kohlberg Karvis Roberts (KKR), which is already a stakeholder in Sempra Infrastructure.

“At Sempra, we believe bold, forward-looking partnerships will be central to solving the world's energy security and decarbonization challenges,” said Jeffrey W. Martin, the Sempra group’s Chairman and CEO.

“With strong customers, top-tier equity sponsors in ConocoPhillips and KKR and a world class contractor in Bechtel, this project has the potential to become one of America's most significant energy infrastructure investments over time,” Martin declared.

Sempra Infrastructure is targeting 20 percent to 30 percent of indirect ownership interest in the project, subject to the closing of the KKR project stake sale.

“For illustrative purposes, if Sempra Infrastructure's indirect ownership interest is at the midpoint of the referenced range, or 25 percent, Sempra Infrastructure would expect its share of average adjusted EBITDA after full commercial operations to be approximately \$410 million annually and its equity commitment to be approximately \$1.55 billion,” Sempra explained.

“Sempra's share of the above estimates would be equal to 70 percent of these amounts,” it added.

James Cunningham, a Partner at New York-based KKR, said the firm was pleased to invest in this critical energy infrastructure project and extend its strategic partnership with Sempra.

“Phase 1 will create new jobs, support American economic growth and deliver reliable and cleaner energy during the global energy transition,” Cunningham explained.

“Consistent with KKR Infrastructure's strategy of seeking stable and predictable returns for investors, our investment in Phase 1 is backed by robust cash flows through long-term contracts with high-

quality counter-parties,” he stated.

The Port Arthur project's existing Sales and Purchase Agreements are with companies such as France’s Engie, European chemicals company INEOS, German utility RWE, Polish refiner PKN Orlen as well as US major ConocoPhillips.

SEMPRA reported full-year earnings of \$2.09 billion compared with \$1.25Bln in 2021 as it was preparing an imminent final investment decision on the Port Arthur LNG project in Texas.

Sempra said that on an adjusted basis, fourth-quarter 2022 earnings were \$743 million compared with \$688M in the same three months of 2021.

Sempra said its Californian units, San Diego Gas & Electric Co. (SDG&E) and Southern California Gas Co. (SoCalGas), continued to enhance reliability and to support California's ambitious clean energy goals.

The LNG unit, Sempra Infrastructure, was “competitively positioned on both the Gulf and Pacific Coasts of North America” for natural gas exports to assist global energy security.

Sempra said that throughout 2022, Sempra Infrastructure had revenues boosted by the Cameron LNG plant exceeding original production expectations while unlocking efficiencies and achieving a strong safety record.

The company’s Energía Costa Azul (ECA) LNG project on the Pacific Coast of Mexico made “substantial construction progress” and the LNG subsidiary continued to advance marketing efforts for its various LNG development projects.

In addition, the Cameron LNG Phase 2 development project remains on track for completion of the competitive front-end engineering design process in the summer of this year.

The San Diego-based company was also looking at future LNG investments include ECA LNG Phase 2 and Vista Pacifico LNG, another project on the Mexican Pacific coast.

Sempra noted that in December 2022 the US Department of Energy approved a plan for the company to export US-sourced natural gas in the form of LNG from Mexico to non-Free Trade Agreement countries.

In the California utility business San Diego Gas & Electric is advancing its wildfire mitigation and resiliency solutions to further reinforce community fire safety and electric system hardening efforts in the San Diego region.

“These enhancements include the

completion of the Cleveland National Forest fire hardening and safety project, a \$700 million decade-long collaboration with local, state and federal agencies to improve the fire resistance of electric infrastructure throughout approximately 880 square miles of SDG&E's service territory,” explained Sempra.

Sempra added that the SoCalGas unit received California Public Utilities Commission (CPUC) approval to establish a memorandum account to track the costs of feasibility studies for its Angeles Link green-hydrogen infrastructure proposal.

“The CPUC also directed SoCalGas to include this green hydrogen infrastructure system proposal as part of California's application to the US DoE for Hydrogen Hub federal funding,” it said.

Sempra’s Texan electric utility Oncor advanced its operations in 2022 by constructing new projects to support growth and to increase reliability for the Electric Reliability Council of Texas (ERCOT) market.

“The utility placed more than \$1Bln of transmission projects into service in 2022, including the placement of 13 new substations and 18 new switching stations into service and approximately 340 miles of new or upgraded high-voltage transmission lines,” Sempra added.

“Oncor experienced a 53 percent increase in active generation and retail transmission interconnection requests. This strong momentum is driven by continued high demand for renewable energy and business growth across Oncor's service territory,” stated Sempra.

SONELGAZ, the national electricity and natural gas company of Algeria, has been put in charge by Minister of Energy and Mines Mohamed Arkab of helping to manage “a gradual and responsible” energy transition backed by gas while noting Sonelgaz has run renewable integrated energy projects since the 1980s.

During a speech at Algeria’s 27th Energy Day held on March 4 with an event at the National Polytechnic School of Algiers, the Minister outlined the North African nation’s approach to complement its domestic energy needs while exporting more LNG and pipeline gas to Europe.

“Algeria's energy policy aims to move forward resolutely towards the realization of a progressive and responsible energy transition,” said Arkab.

“This requires the adoption of a diversified energy mix taking into consideration all the energies available, the least expensive and the cleanest while

benefiting from the achievements of improving energy capacity and working to control energy consumption and to preserve natural resources for future generations,” explained Arkab.

In this regard, Arkab recalled that Algeria has worked since the 1980s, through Sonelgaz, to integrate renewable energies, by supplying 20 villages with solar energy in the South of the country with the creation of solar power stations with a total power of 344 megawatts (MW) and the launch of hybrid projects with capacity of 50 MW.

As part of the development of the use of electric vehicles in Algeria, the Minister said that Sonelgaz would carry out experimental projects with a view to setting up 1,000 charging stations for electric vehicles.

Arkab added that natural gas flaring in Algeria was targeted to reach zero and that was the responsibility of oil and gas company Sonatrach.

The Minister also explained that similarly, Sonatrach was working with the Algerian Space Agency and in collaboration with the World Bank to carry out scientific and technological research with a view to measuring and definitively limiting methane gas emissions.

The Minister said that Algeria’s Energy Day was an important opportunity to debate and exchange views between experts, economic operators and sectors concerned with energy, scientific research and the environment.

This was an opportunity for energy experts to lead several conferences, and engineering students to present presentations on themes related to energy resources and the project of an efficient energy model by 2035 and 2050. .

Sonatrach already plans to invest more than \$30 billion in the exploration and production of hydrocarbons and to upgrade facilities to improve its position in global markets for LNG as well as pipeline gas for Europe.

As part of Sonatrach's five-year investment plan (2023-2027) the sum of \$40Bln has been set aside and more than \$30Bln will be allocated to exploration and production with the objective of increasing production in the short and medium term.

Nearly \$1Bln will be devoted to Sonatrach’s projects aimed at the company's contribution to the energy transition. These include flared gas recovery projects at production sites and the LNG plants at Skikda and Arzew.

Sonatrach signed a contract in 2022 with two Chinese engineering companies,

Sinopec Luoyang Engineering and Sinopec International Petroleum Services Corp., for improvement work at the Skikda LNG plant.

The contracts include the dismantling of two 20-year-old storage tanks and the construction of a new tank of 150,000 cubic metres capacity and the modernization of the jetty and loading facilities to accommodate larger vessels.

S&P GLOBAL Commodity Insights, the energy pricing and reports unit of US-based ratings and analysis firm S&P Global Inc., has acquired UK-based technology firm Tradenet and its vessel-tracking platform Market Intelligence Network (MINT) for an undisclosed sum.

Analysts said the acquisition by S&P Global Commodity Insights of the ship-tracking data firm will enable closer competition with rival firms such as the new data analytics companies like Refinitiv, Kpler and Vortexa.

“The acquisition adds powerful new capabilities to our cargo, vessel tracking and freight analytics portfolio and further strengthens our shipping offering,” said Rahul Kapoor, Global Head of Shipping Analytics & Research at S&P Global Commodity Insights.

“MINT, a live vessel-tracking platform, has been sold exclusively through S&P Global for years,” he added.

S&P Global Commodity Insights is one of a whole host of firms that competes in the crowded energy and commodities pricing and reporting arena

One of the S&P Global Commodity products is the Japan-Korea Marker price for North Asian Spot LNG cargoes.

It also gives shipping and other energy data, including the West India Marker (WIM).

The WIM is price assessments for spot delivered ex-ship (DES) LNG cargoes market for India and the Middle East.

In LNG price assessment S&P Global Commodity Insights and others now have competition from the European Commission through the European Union’s own LNG cargo assessment.

The EU cargo pricing is issued by the European Union Agency for the Cooperation of Energy Regulators. The agency issues its own DES spot LNG cargo prices for Northwest Europe and South Europe.

S&P Global also organizes conferences and events live or on line.

Its latest live conference and its most high profile was the five-day CERAWEEK gathering last month in Houston, Texas.

The parent company previously called S&P Global Platts, just over a year ago completed a \$140 billion merger, based on the enterprise value, with IHS Markit to create an even bigger corporate ratings and information services provider.

S&P Global, listed on the New York Stock Exchange, said at the time that the mega-deal would enhance value for its global customer base across data and analytics, ratings, benchmarks, indices, commodities and energy, transportation, and engineering.

At the same time S&P Global sold off IHS Markit's OPIS, Coal, Metals and Mining, and PetrochemWire businesses to News Corp.

SUBSEA 7 SA, the Oslo-listed oil and gas field services company, was awarded a large contract by Azul Energy in the framework of the Agogo Integrated West Hub Development Project offshore Angola in southwest Africa.

The contract scope includes the transport and installation of around 98 kilometres of flexible pipes, 30km of umbilicals and associated subsea structures in water depths of around 1,700 metres.

UK major BP and Italian energy company Eni agreed to form the 50-50 joint venture company Azul Energy a year ago in early March 2022 in the LNG-producing African state.

Azul Energy was set up as the new holding entity for the Angolan assets of both BP and Eni.

“Project management and engineering have commenced and will be managed from Subsea 7's offices in Angola, France, UK and Portugal,” said Subsea 7.

Fabrication will take place at the Sonamet yard in Lobito, Angola, and offshore operations are planned between the fourth quarter 2024 and the fourth quarter of 2025.

“We are pleased to have our first contract with Azul Energy and to continue supporting the development of the Angolan offshore energy industry,” said Franck Louvety, Subsea 7 Vice President for Africa, the Middle East and Caspian regions.

Subsea7 noted that it had been working for over 40 years in Angola and has an important track record in-country.

The company also said it defined a “large contract” as being between \$300 million and U\$500M.

Since its formation Azul has become Angola’s largest producer, holding stakes in 16 licences, as well as participating in the Angola LNG joint venture.

The European energy companies have

embarked on giving Azul a strong pipeline of new projects starting up over the next few years, including the new Agogo project awarded to Subsea 7.

Azul is also leading the development of the New Gas Consortium (NGC), the first non-associated gas project in the country, which will support the energy needs of Angola’s growing economy, its decarbonization path and strengthen its role as a global LNG player.

Angola is already the second-largest oil producer in Sub-Saharan Africa and uses associated gas to produce LNG sourced at its liquefaction plant, operated by the main shareholder, the US major Chevron Corp.

Eni and BP are also shareholders in Angola LNG along with France’s TotalEnergies and the Angolan state energy company Sonangol.

The Angola LNG plant is located 350 kilometres north of the capital Luanda in Soyo, at the mouth of the Congo River, and is one of the world’s most modern LNG processing facilities.

A pipeline network of over 500 kilometres delivers gas from offshore oil fields to the Soyo plant designed to process 1.1 billion cubic feet of natural gas per day and produce 5.2 million tonnes per annum of LNG.

TAIWAN is expected to be seeking more LNG cargoes through 2023 as one of its nuclear power plants was retired this week, though the government said two new coal-fired power plants would help offset most of the power losses.

The two Taiwanese onshore LNG import terminals, Yung-An and Tai-Chung, are already importing at close to their maximum capacity as Taiwan awaits more regasification expansions to start up in the next year.

National energy company CPC Corp. is also leading the development of the new Taoyuan LNG import terminal in the Guantang Industrial Area to be fully operating by 2025.

The Taiwanese had voted in a referendum in December 2021 to retain the site of the nation’s third LNG terminal at Taoyuan, though will extend the LNG carrier jetty slightly further out to sea away from a sensitive reef area.

In the week through March 19, Taiwan is scheduled to import seven shipments of LNG after previously receiving 20 cargoes in the month since mid-February, according to shipping data.

Taiwan's Ministry of Economic Affairs has said LNG supply is currently about 70 percent covered by long-term contracts and

30 percent comes from the spot market.

The Taiwanese have managed to diversify their LNG sources to 14 countries, with Australia and Qatar being the main suppliers.

The Ministry issued a statement on March 13 to say that power supplies would rely on the two new coal-fired power plant to replace the Guosheng Nuclear Power Plant's No. 2 reactor after it was retired on March 13, having reached its service lifetime of 40 years.

Analysts said that the loss of the nuclear reactor in New Taipei City’s Wanli District had raised concerns about possible blackouts and power supply interruptions.

“To handle the shutdown of the No. 2 reactor, Taiwan Power Co (Taipower) is adding two new coal-powered generators, which together can provide a combined capacity of 1,300 megawatts, surpassing the 935-megawatt capacity from the No. 2 nuclear reactor,” explained Minister of Economic Affairs Wang Mei-Hua in a statement.

“There should be no power storage problem this year,” she declared.

“The new coal-fired Datan Power Plant in Taoyuan is expected to be connected to the grid next month, and run at its full capacity of 1,120 megawatts in July or August,” Wang said.

“A smaller coal-fired generator in Miaoli’s Tongsiao Township was connected to Taipower’s grid in January,” she added.

“Renewable energy is also to increase its share to the grid this year,” Wang said.

The Minister noted that solar energy is to contribute about 500 MW during the day, while the Deji Reservoir in central Taiwan was expected to provide about 1,147 MW of hydroelectric power at night.

Taiwan was seeking additional spot LNG cargoes anyway over the last year as its five-year contract for volumes from the Russian Sakhalin II export facility terminated at the end of March 2022.

Russian LNG shipments had already dropped to 1.89 million tonnes from 2.10MT in the previous year, according to data from the Taiwan Bureau of Energy.

Taiwan’s overall LNG imports are currently running at a level of about 19.50MT versus 17.75MT in the previous year.

Australia is the largest supplier shipping just over 6 million tonnes per annum to the Taiwanese.

The second-largest supplier to Taiwan is Qatar with almost 5 MTPA of cargoes. In July 2021 CPC signed a new LNG supply agreement with QatarEnergy for 1.25 MTPA of cargoes. ■



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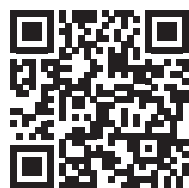
- Andrea Stegher, IGU Vice President, elected as IGU President for 2025-2028
- Filimon Antonopoulos, Managing Director of Tallon Commodities
- Michal Bella, Central European Gas Hub (CEGH)
- Marijan Krpan, MSc., Management Board President of the Croatian Hydrocarbon Agency
- Alan Vranjković, DSc., INA-Industrija nafte d.d.
- Aleksandar Karre, Plinacro d.o.o.
- Marko Babić, Siemens Energy d.o.o.
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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 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
	Jiangsu Binhai LNG	CNOOC	2022	4	880,000
	Ningbo, Zhejiang	CNOOC, Zhejiang Energy	2012	3	480,000
	Pinghu LNG	Z. H. Clean Energy	2022	2	160,000
	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 - Midorihama	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

LNG Import Terminals (continued)

Country	Location (Project)	Owners	Start up	Tanks	Storage Capacity
Japan (continued)	Sakai	Kansai Electric, Cosmo Oil	2006	3	420,000
	Mizushima	Nippon Oil, Chugoku Electric	2006	2	320,000
	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
	Jeju	Kogas	2019	2	90,000
Kuwait	Al Zour LNG	KIPIC	2021	8	1,800,000
Malaysia	Pengerang Johor	Petronas Gas	2017	2	400,000
Mexico	Altamira	Vopak, Enagas	2006	2	300,000
	Energia Costa Azul	Sempre 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	Tanks	Storage 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	2021	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	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
	Porto Sergipe FSRU	Golar LNG/Stonepeak	2020
	Porto do Acu FSRU	GNA	2020
China	Tianjin FSRU	CNOOC, Hoegh, various	2013
Croatia	Hrvatska LNG	Hrvatska Elektroprivreda Plc, Plinacro Ltd	2021
Colombia	Cartagena FSRU	Promigas, Sociedad Portuaria El Cayao	2016
Egypt	Ain Sokhna, Suez	EGAS, BW Gas	2015
Finland	Inkoo FSRU	Gasgrid Finland	2022
Germany	Wilhelmshaven FSRU	Uniper	2022
Germany	Lubmin FSRU	Deutsche ReGas	2022
Ghana	Tema LNG	Helios/GNPC	2021
Greece	Revithoussa FSU	DESFA	2022
Indonesia	Lampung	Hoegh LNG, PGN LNG	2014
	Nusantara (Jakarta Bay)	Golar LNG, Pertamina	2012
	Benoa LNG	PT Pertagas Niaga	2016
	Amurang	Karadeniz	2020
	Jawa Satu FSRU	Pertamina	2021
Israel	Hadera Gateway	Israel Electric	2013
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 Mediterrana	ElectroGas	2016
Myanmar	Thanlyin	CNTIC Vpower	2020
Pakistan	Port Qasim	Excelerate, Engro Corp	2015
	Port Qasim	BW-Mitsui, PGP Consortium	2017
Russia	Kaliningrad FSRU	Gazprom	2020
Turkey	Aliaga FSRU, Turquoise FLNG	Etki LNG	2016
	Dortyol FSRU Terminal	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
INDONESIA	Sengkang LNG	Energy World Corp.	2021+	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
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	Arctic LNG II Siberia	Novatek, Total	2023	3	19.8
	Portovaya LNG	Gazprom	2022	2	1.5
	Sakhalin II expansion	Gazprom, Shell, Mitsui, Mitsubishi	2021	studies	
	Vladisvostok LNG	Gazprom, Itochu, various	2023+	2	10.0
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	TBC
	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
AUSTRALIA	Karratha	NWS Woodside, Shell, BHP	1989	2	5.0	4	260,000
		(BP, Chevron	1992	1	2.5	1	130,000
		(Mitsubishi/Mitsui)	2004	1	4.4	1	130,000
		NWS partners	2008	1	4.4	1	130,000
		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	2015	2	7.8	2	280,000
		Santos, Petronas, Total, Kogas	2016	3	15.6	2	360,000
		Gorgon LNG	2016	3	15.6	2	360,000
		Pluto LNG	2012	1	4.8	2	240,000
		Woodside, Tokyo Gas, Kansei	2012	1	4.8	2	240,000
		QCLNG	2014	2	8.0	2	280,000
		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	2018	2	8.9	2	330,000
	Prelude FLNG	Inpex Corp., Total	2018	2	8.9	2	330,000
		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		
MOZAMBIQUE	Coral Sul FLNG	Eni-led consortium	2022	1	3.4	1	174000+
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					
		Oman Govt., Oman LNG Union Fenosa, Osaka Gas, & Itochu	2006	1	3.7	2	240,000
PAPUA NEW GUINEA	PNG LNG	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	3	15.0	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
	Calcasieu Pass LNG	Venture Global	2022	18	11	2	400,000
YEMEN	Bal-Haf	Yemen LNG, Total, Yemen Gas, Hunt Oil, SK Group, Hyundai	2009	2	6.7	2	320,000

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World LNG Carrier Fleet

LNG Carrier	Capacity m³	Registered Owner	Builder	Delivery	Flag	Power Plant	Cargo System	No. of Tanks	Original Project	Hull Number
Aamira	268,000	Nakilat SHI 1753 Inc.	Samsung	Apr-10	M. Islnds.	Diesel	TZ Mk. III	10	Qatargas IV	1753
Abadi	135,000	Tost Two (NBD) Sendirian Berhad	Mitsubishi	May-02	Brunei	Steam	Moss	5	Lumut	2163
Adam LNG	162,000	Oman Shipping Co.	HHI	Jul-14	Malta	Diesel	TZ Mk. III Flex	4	Oman LNG	2584
Adamastos	170,800	Shin Doun Kisen Co. Ltd.	HHI	Aug-21	Malta	X-DF	TZ Mk. III Flex	4	Portfolio	3109
Adriano Knutsen	180,000	Knutsen OAS Shipping	HHI	Jul-19	Spain	ME-GI	TZ Mk. III Flex	4	Corpus Christi	2963
Al Aamriya	210,168	J5 Nakilat No.1 Ltd.	Daewoo	May-08	M. Islnds.	Diesel	GT NO 96	5	RasGas III	2249
Al Areesh	148,786	Al Areesh LLC	Daewoo	Jan-07	Bahamas	Steam	GT NO 96	4	RasGas II	2239
Al Bahiya	210,100	Nakilat DSME 2286 Inc.	Daewoo	Dec-09	M. Islnds.	Diesel	GT NO 96	5	Qatargas IV	1726
Al Bidda	137,339	Mitsui O.S.K. Lines	Kawasaki	Nov-99	Japan	Steam	Moss	5	Qatargas I	1470
Al Daayen	148,853	Seaspirit Leasing	Daewoo	Mar-07	Bahamas	Steam	GT NO 96	4	RasGas II	2240
Al Dafna	268,000	Nakilat SHI 1726 Inc.	Samsung	Oct-09	M. Islnds.	Diesel	TZ Mk. III	10	RasGas	1726
Al Deebel	145,000	Peninsula LNG Transport No. 3	Samsung	Nov-05	Bahamas	Steam	TZ Mk. III	4	RasGas II	1442
Al Gattara	216,200	Overseas LNG H1 Corp.	HHI	Nov-07	M. Islnds.	Diesel	TZ Mk. III	4	Qatargas II	1791
Al Ghariya	210,150	Neptora Schiffsbetriebsgesellschaft mbH & Company ts Julia KG	Daewoo	Dec-07	Bahamas	Diesel	GT NO 96	4	Qatargas II	2248
Al Gharrafa	216,200	Overseas LNG H2 Corp.	HHI	Jan-08	M. Islnds.	Diesel	TZ Mk. III	5	Qatargas II	1792
Al Ghashamiya	217,591	Nakilat SHI 1696 Inc.	Samsung	Apr-09	M. Islnds.	Diesel	TZ Mk. III	10	Qatargas III	1696
Al Ghuwairiya	263,300	Nakilat Al Ghuwairiya Inc.	Daewoo	Dec-08	M. Islnds.	Diesel	GT NO 96	5	Qatargas II	2255
Al Hamla	216,200	Overseas LNG S2 Corp.	Samsung	Feb-08	M. Islnds.	Diesel	TZ Mk. III	4	Qatargas II	1606
Al Hamra	137,000	Al Hamra Ltd.	STX	Nov-96	Liberia	Steam	Moss	4	Das Island	1332
Al Huwaila	217,000	Al Huwaila Inc.	Samsung	May-08	Bahamas	Diesel	TZ Mk. III	10	RasGas III	1643
Al Jasra	137,227	Mitsui O.S.K. Lines	Mitsubishi	Jun-00	Japan	Steam	Moss	5	Qatargas I	2117
Al Jassasiya	145,700	Venice Maritime Inc.	Daewoo	May-07	Bermuda	Steam	GT NO 96	4	RasGas II	2243
Al Karaana	210,100	Nakilat DSME 2284 Inc.	Daewoo	Oct-09	M. Islnds.	Diesel	GT NO 96	4	Qatargas III	2284
Al Kharaitiyat	216,300	Nakilat HHI 1909 Inc.	HHI	Jun-09	M. Islnds.	Diesel	TZ Mk. III	4	Qatargas III	1909
Al Kharsaah	217,000	Al Kharsaah Inc.	Samsung	Jun-08	Bahamas	Diesel	TZ Mk. III	10	RasGas III	1644
Al Khattiya	210,150	Nakilat DSME 2283 Inc.	Daewoo	Jul-09	M. Islnds.	Diesel	GT NO 96	4	Qatargas IV	2283
Al Khaznah	135,496	Al Khaznah Inc.	Mitsui E&S	Jul-94	Liberia	Steam	Moss	5	Das Island	1390
Al Khor	137,354	Mitsui O.S.K. Lines	Mitsubishi	Nov-96	Japan	Steam	Moss	5	Qatargas I	2089
Al Khuwair	217,000	Al Khuwair Inc.	Samsung	Jun-08	Bahamas	Diesel	TZ Mk. III	10	RasGas III	1646
Al Mafyar	266,000	Nakilat SHI 1697 Inc.	Samsung	Apr-09	M. Islnds.	Diesel	TZ Mk. III	5	Qatargas III	1697
Al Marrouna	149,539	Seaspirit Leasing	Daewoo	Sep-06	Bahamas	Steam	GT NO 96	4	RasGas II	2238
Al Mayeda	266,000	Nakilat SHI 1694 Inc.	Samsung	Jan-09	M. Islnds.	Diesel	TZ Mk. III	5	Qatargas III	1694
Al Nuaman	210,100	Nakilat DSME 2285 Inc.	Daewoo	Dec-09	M. Islnds.	Diesel	GT NO 96	4	Qatargas III	2286
Al Oraiq	210,200	J5 Nakilat No.3 Ltd.	Daewoo	Jun-08	M. Islnds.	Diesel	GT NO 96	18	RasGas III	2250
Al Rayyan	137,420	Mitsui O.S.K. Lines	Kawasaki	Mar-97	Japan	Steam	Moss	5	Qatargas I	1445
Al Rekayyat	216,293	Nakilat HHI 1910 Inc.	HHI	Jun-09	M. Islnds.	Diesel	TZ Mk. III	4	Qatargas III	1910
Al Ruwais	210,150	Neptana Schiffsbetriebsgesellschaft mbH & Company ts Alexandra KG	Daewoo	Aug-07	Bahamas	Diesel	GT NO 96	4	Qatargas II	2245
Al Sadd	210,200	Nakilat DSME 2265 Inc.	Daewoo	Mar-09	M. Islnds.	Diesel	GT NO 96	12	Qatargas III	2265
Al Safliya	210,150	Nausola Schiffsbetriebsgesellschaft mbH & Company ts Britta KG	Daewoo	Sep-07	Bahamas	Diesel	GT NO 96	5	Qatargas II	2246
Al Sahla	216,200	J5 Nakilat No.5 Ltd.	HHI	Jun-08	M. Islnds.	Diesel	TZ Mk. III	4	RasGas III	1863
Al Samriya	263,300	Nakilat Al Samriya Inc.	Daewoo	Feb-09	M. Islnds.	Diesel	GT NO 96	5	Qatargas II	2257
Al Shamal	217,000	Al Shamal Inc.	Samsung	Apr-08	Bahamas	Diesel	TZ Mk. III	10	RasGas III	1645
Al Sheehaniya	210,100	Nakilat DSME 2264 Inc.	Daewoo	Feb-09	M. Islnds.	Diesel	GT NO 96	12	Qatargas III	2264
Al Thakhira	145,000	Peninsula LNG Transport No. 2	Samsung	Aug-05	Bahamas	Steam	TZ Mk. III	4	RasGas II	1441
Al Thumama	216,200	J5 Nakilat No.2 Ltd.	HHI	Feb-08	M. Islnds.	Diesel	TZ Mk. III	4	RasGas III	1862
Al Utouriya	215,000	J5 Nakilat No.8 Ltd.	HHI	Sep-08	M. Islnds.	Diesel	TZ Mk. III	4	RasGas III	1875
Al Wajbah	137,308	Mitsui O.S.K. Lines	Mitsubishi	Jun-97	Japan	Steam	Moss	5	Qatargas I	2090
Al Wakrah	137,371	Mitsui O.S.K. Lines	Kawasaki	Nov-98	Japan	Steam	Moss	5	Qatargas I	1446
Al Zubarah	137,573	Mitsui O.S.K. Lines	Mitsui E&S	Nov-96	Japan	Steam	Moss	5	Qatargas I	1411
Alexandroupoli	153,000	Gas-Fifteen Ltd.	Hanjin (Busan)	Jun-10	Bermuda	TFDE	TZ Mk. III	4	–	193
Alicante Knutsen	174,000	Millenaire Financement 18 SASU	Hyundai Samho	Nov-22	France	X-DF	TZ Mk. III Flex+	4	Portfolio	8093
Alto Acrux	147,798	Bahamas LNG Shipping	Mitsubishi	Mar-08	Bahamas	Steam	Moss	4	Darwin LNG	2219
Amadi	154,800	Brunei Gas Carriers	HHI	Jul-15	Brunei	Steam	TZ Mk. III	4	Lumut	2607
Amali	148,000	BGC SPV NBD	Daewoo	Aug-11	Brunei	Steam	GT NO 96	4	Lumut	2277
Amani	154,800	Brunei Gas Carriers	HHI	Oct-14	Brunei	Steam	TZ Mk. III	4	Lumut	H2606
Amberjack LNG	174,000	LNGShips	HHI	Apr-20	Malta	X-DF	TZ MK. III Flex	–	Portfolio	3021
Amur River	149,700	Seacrown Maritime	HHI	Nov-07	M. Islnds.	Steam	TZ Mk. III	4	Sakhalin II	1734
Arctic Aurora	155,000	Fareastern Shipping	HHI	Jul-14	M. Islnds.	Diesel/Gas-Electric	TZ Mk. III	4	Snøhvit LNG	2580

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Arctic Discoverer	142,612	Northern LNG Transport II Company S.A.	Mitsui E&S	Feb-06	Bahamas	–	Moss	4	Hammerfest	1564
Arctic Lady	147,200	Leif Hoegh (UK) Ltd.	Mitsubishi	Apr-06	Norway	Steam	Moss	4	Hammerfest	2185
Arctic Princess	147,200	R.B. Quadrangle Leasing	Mitsubishi	Jan-06	Norway	Steam	Moss	4	Hammerfest	2184
Arctic Voyager	142,759	Lloyds TSB Equipment Leasing (No.1)	Kawasaki	Jul-06	Bahamas	Steam	Moss	4	Hammerfest	1532
Aristarchos	174,000	Dias Gas Carrier Corp.	HHI	Jun-21	Malta	X-DF	TZ Mk. III Flex	4	Portfolio	3107
Aristidis I	174,000	Atrotos Gas Carrier Corp.	HHI	Jan-21	Malta	X-DF	TZ Mk. III Flex	4	Portfolio	3106
Aristos I	174,000	Xiang Ch25 HK International	HHI	Nov-20	Malta	X-DF	TZ Mk. III Flex	4	Portfolio	3105
Arkat	148,000	BGC SPV NBD	Daewoo	Feb-11	Brunei	–	GT NO 96	4	Lumut	2273
Aseem	155,003	India LNG Transport Company No.3 S.A.	Samsung	Nov-09	Malta	Diesel	TZ Mk. III	4	RasGas	1686
Asia Endeavour	154,948	Chevron Global Technology Services Co.	Samsung	Jun-15	Bahamas	Diesel/Gas-Electric	TZ MK. III	4	Gorgon	1942
Asia Energy	154,948	Chevron Global Technology Services Co.	Samsung	Oct-14	Bahamas	Diesel/Gas-Electric	TZ MK. III	4	Gorgon	1921
Asia Excellence	154,948	Chevron Global Technology Services Co.	Samsung	Jan-15	Bahamas	Diesel/Gas-Electric	TZ MK. III	4	Gorgon	1941
Asia Integrity	154,948	Chevron Global Technology Services Co.	Samsung	Feb-17	Bahamas	Diesel/Gas-Electric	TZ Mk. III	4	Wheatstone	2069
Asia Venture	154,948	Chevron Global Technology Services Co.	Samsung	Jul-17	Bahamas	Diesel/Gas-Electric	TZ Mk. III	4	Wheatstone	2070
Asia Vision	154,948	Chevron Global Technology Services Co.	Samsung	Jul-14	Bahamas	Diesel/Gas-Electric	TZ MK. III	4	Gorgon	1920
Asklipios	170,816	Sea 199 Leasing Co Ltd.	HHI	Sep-21	Malta	X-DF	TZ Mk. III Flex	4	Portfolio	3110
Asterix I	174,000	Sea 335 Leasing Co Ltd	HHI	Feb-23	Malta	X-DF	TZ Mk. III Flex	4	Portfolio	3111
Attalos	170,800	Sea 200 Leasing Co. Ltd.	HHI	Aug-21	Malta	X-DF	TZ Mk. III Flex	4	–	3108
Barcelona Knutsen	173,400	Norspan LNG V AS	Daewoo	Jan-10	Spain	Diesel/Gas-Electric	GT NO 96	4	Portfolio	2267
Beidou Star	172,000	Mitsui O.S.K. Lines	Hudong Zhonghua	Sep-15	H.K., China	Diesel	GT NO 96	4	PNG LNG	H1672A
Berge Arzew	138,088	Sonatrach Berge Arzew Corp.	Daewoo	Jul-04	Norway	Steam	GT NO 96	4	Arzew	2217
Bilbao Knutsen	138,000	Norspan LNG AS	Izar	Jan-04	Spain	Steam	GT NO 96	4	Portfolio	321
Bishu Maru	164,700	"K" Line - Kawasaki Kisen Kaisha	Kawasaki	Dec-17	Panama	TFDE	Moss	4	Wheatstone	1713
Bonito LNG	174,000	LNGShips	HHI	May-20	Malta	X-DF	TZ MK. III Flex	4	–	3022
Boris Davydov	172,410	Arctic LNG 4 Ltd.	Daewoo	Dec-18	Cyprus	TFDE - Azipod	GT NO 96 GW	4	Yamal	2428
Boris Vilkitsky	172,410	Arctic LNG 1 Ltd.	Daewoo	Jun-17	Cyprus	TFDE - Azipod	GT NO 96 GW	4	Yamal	2421
British Achiever	173,644	BP	Daewoo	Nov-18	Isle of Man	ME-GI	GT NO 96 GW	4	Freeport	2442
British Contributor	173,644	BP	Daewoo	Dec-18	Isle of Man	ME-GI	GT NO 96 GW	4	Freeport	2443
British Listener	173,644	BP	Daewoo	Jan-19	Isle of Man	ME-GI	GT NO 96 GW	4	Freeport	2444
British Mentor	173,644	BP	Daewoo	Mar-19	Isle of Man	ME-GI	GT NO 96 GW	4	Freeport	2445
British Partner	173,400	BP	Daewoo	Jun-18	Isle of Man	ME-GI	GT NO 96 GW	4	Freeport	2441
British Sapphire	155,000	RBSSAF (19) Ltd.	HHI	Jun-08	Isle of Man	Diesel/Gas-Electric	TZ Mk. III	4	Portfolio	1779
British Sponsor	173,644	BP	Daewoo	May-19	Isle of Man	ME-GI	GT NO 96 GW	4	Freeport	2446
Broog	137,529	Mitsui O.S.K. Lines	Mitsui E&S	Apr-98	Japan	Steam	Moss	5	Qatargas I	1412
Bu Samra	266,000	Nakilat Bu Samra Inc.	Samsung	Dec-08	M. Islnds.	–	TZ Mk. III	5	Qatargas II	1677
Bushu Maru	180,000	Mitsui O.S.K. Lines	Mitsubishi	Jul-19	Bahamas	Reheat Steam Turbine	TZ MK. III Flex	4	Sabine Pass	2327
BW Boston	138,059	Partrederiet BW Gas GDF Suez EMT DA	Daewoo	Jan-03	Norway	Steam	GT NO 96	4	Atlantic LNG	2207
BW Brussels	162,400	Ines LNG	Daewoo	Aug-09	Bermuda	Diesel/Gas-Electric	GT NO 96	4	Balhaf	2259
BW Cassia	174,000	MP-SGP Pte Ltd	Daewoo	Oct-22	Bermuda	ME-GI	–	4	–	2510
BW Enn Snow Lotus	174,000	BW LNG II Pte Ltd	Daewoo	Sep-22	Singapore	ME-GI	–	4	–	2509
BW Everett	138,028	BW Gas SLNG	Daewoo	Jun-03	Norway	Steam	GT NO 96	4	Atlantic LNG	2212
BW Helios	174,000	Selene Navigation Pte Ltd.	Daewoo	May-21	Bermuda	ME-GI	GT NO 96 GW	4	–	2497
BW Lesmes	174,000	BW Gas AS	Daewoo	Mar-21	Bermuda	ME-GI	GT NO 96 GW	4	–	2496
BW Lilac	173,400	BW Maritime	Daewoo	Mar-18	Isle of Man	ME-GI	GT NO 96 GW	4	–	2436
BW Magna	173,000	BW Group	Daewoo	Mar-19	Singapore	ME-GI	GT NO 96	4	–	2488
BW Magnolia	173,400	Helen Navigation Pte Ltd.	Daewoo	Feb-20	Singapore	ME-GI	GT NO 96 GW	–	–	2490
BW Paris	162,400	SNC Elias	Daewoo	Jul-09	Bermuda	Diesel/Gas-Electric	GT NO 96	4	Balhaf	2258
BW Pavilion Aranda	173,400	BW Group	Daewoo	Sep-19	Singapore	ME-GI	GT NO 96 GW	4	Portfolio	2489
BW Pavilion Aranthara	173,400	BW Diamond LNG Pte Ltd.	Daewoo	Jul-20	Singapore	ME-GI	GT NO 96 GW	4	Portfolio	2491
BW Pavilion Leeara	158,629	BW LPG FPSOI	HHI	Jun-15	Singapore	Diesel/Gas-Electric	TZ Mk. III Flex	4	Portfolio	2572
BW Pavilion Vanda	155,000	BW LPG FPSOI	HHI	Feb-15	Singapore	DFDS	TZ Mk. III Flex	4	Portfolio	2571
BW Tatiana	135,269	Shell Tankers Singapore	Mitsubishi	Dec-02	Singapore	Steam	Moss	5	Atlantic LNG	2173
BW Tulip	173,400	BW Maritime	Daewoo	Dec-17	Singapore	ME-GI	GT NO 96 GW	4	–	2435
Cadiz Knutsen	138,826	Norspan LNG II AS	Navantia	Apr-04	Spain	Steam	GT NO 96	4	Portfolio	103
Cape Ann	145,130	SRV Joint Gas Two Ltd.	Samsung	Apr-10	Norway	Diesel/Gas-Electric	TZ Mk. III	4	Jaigarh LNG	1689
Castillo de Caldelas	176,300	Empresa Naviera Elcano	Imabari Shipbuilding	Jun-18	Malta	ME-GI	TZ Mk. III Flex	–	Portfolio	8188
Castillo De Merida	176,300	Empresa Naviera Elcano	Imabari Shipbuilding	Mar-18	Spain	ME-GI	TZ MK. III Flex	4	Portfolio	8177
Castillo de Santisteban	170,000	Naviera Trans Gas AIE	STX	Jun-10	Malta	Diesel Electric	GT NO 96	4	Portfolio	3008
Castillo de Villalba	138,000	Empresa Naviera Elcano	Navantia Cadiz	Sep-03	Spain	Steam	GT NO 96	4	Portfolio	87

CARRIER FLEET

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Catalunya Spirit	138,000	Teekay Shipping Spain S.L.	Izar	Jun-03	Spain	Steam	GT NO 96	4	Atlantic LNG	319
Celsius Canberra	180,000	Xiang CH27 HK International	Samsung	Jan-21	Marshall Isl.	X-DF	TZ Mk. III Flex	4	US Portfolio	2298
Celsius Carolina	180,000	Oriental Fleet LNG 03 Ltd.	Samsung	Aug-21	Marshall Isl.	X-DF	TZ Mk. III Flex	4	US Portfolio	2314
Celsius Charlotte	180,000	Xiang CH28 HK International	Samsung	Jun-21	Marshall Isl.	X-DF	TZ Mk. III Flex	4	US Portfolio	2313
Celsius Copenhagen	180,000	Greenheart Gas Shipco I LLC	Samsung	Nov-20	Bermuda	X-DF	TZ Mk. III Flex	4	Portfolio	2297
CESI Beihai	174,000	COSCO Shipping Energy Transportation Co.	Hudong Zhonghua	Jun-17	H.K., China	DFDS	GT NO 96	4	APLNG	1717A
CESI Gladstone	174,000	China Shipping Co.	Hudong Zhonghua	Oct-16	H.K., China	–	GT NO 96	4	APLNG	1715A
CESI LianYungAng	174,000	COSCO Shipping Energy Transportation Co.	Hudong Zhonghua	Jun-18	H.K., China	Diesel-Electric	GT NO 96	4	APLNG	1720A
CESI Qingdao	174,000	China Shipping Co.	Hudong Zhonghua	Feb-17	H.K., China	DFDS	GT NO 96	4	APLNG	1716A
CESI Tianjin	174,000	COSCO Shipping Energy Transportation Co.	Hudong Zhonghua	Jul-17	China	TFDE	GT NO 96	4	APLNG	1718A
CESI Wenzhou	174,000	COSCO Shipping Energy Transportation Co.	Hudong Zhonghua	Feb-18	China	Diesel-Electric	GT NO 96	4	APLNG	1719A
Cheikh Bouamama	75,558	Skikda LNG Transport Corp.	Universal SB	Jul-08	Liberia	Steam	TZ Mk. III	4	Arzew/Skikda	88
Cheikh el Mokrani	75,759	Mediterranean LNG Transport Corp.	Japan Marine United	Jun-07	Liberia	Steam	TZ Mk. III	4	Skikda	55
Christophe De Margerie	170,000	DY Shipping Limited	Daewoo	Nov-16	Russia	Diesel/Gas-Electric	GT NO 96 GW	–	Yamal	2418
Clean Cajun	180,000	Platia Shipping Ltd.	HHI	May-22	Panama	X-DF	Membrane	4	–	3137
Clean Copano	180,000	Psili Shipping Ltd	HHI	Jul-22	Panama	X-DF	Membrane	4	–	3138
Clean Energy	149,700	Pegasus Shipholding	HHI	Mar-07	M. Islnds.	Steam	TZ Mk. III	4	Portfolio	1748
Clean Horizon	162,000	Dynagas	HHI	Apr-15	Malta	Diesel/Gas-Electric	TZ Mk. III Flex	4	Portfolio	2566
Clean Ocean	162,000	Dynagas	HHI	May-14	M. Islnds.	Diesel/Gas-Electric	TZ Mk. III Flex	4	Sabine Pass	2558
Clean Planet	162,000	Dynacom Tankers Management	HHI	Aug-14	M. Islnds.	Diesel Electric	TZ Mk. III Flex	4	Yamal	H2565
Clean Vision	162,000	Olinda	HHI	Aug-15	Malta	Diesel/Gas-Electric	TZ Mk. III Flex	4	Portfolio	2567
CNTIC VPower Energy	127,500	Shell Tankers Australia	Mitsubishi	Jan-92	Bermuda	Steam	Moss	4	North West Shelf	2041
Cobia LNG	174,000	Cardiff LNG ETA Owning LLC	HHI	Feb-21	Malta	X-DF	TZ Mk. III Flex	4	–	3038
Cool Discoverer	174,000	Serendipity Maritime Ltd.	HHI	Sep-20	Greece	X-DF	TZ MK. III Flex	4	Portfolio	S970
Cool Explorer	160,000	Thenamaris Ships Management Inc.	Samsung	Jan-15	Malta	DFDS	TZ Mk. III Flex	4	Spot	2049
Cool Racer	174,000	Eloquent Shipping Ltd.	HHI	Feb-21	Malta	X-DF	TZ Mk. III Flex	4	Portfolio	3126
Cool Rider	155,000	RBSSAF (19) Ltd.	HHI	May-07	Malta	–	TZ Mk. III	4	Portfolio	1777
Cool Runner	160,000	Thenamaris Ships Management Inc.	Samsung	Mar-14	Malta	Diesel Electric	TZ Mk. III Flex	4	Wheatstone	H2046
Cool Voyager	160,000	Energy Shipping & Trading	Samsung	Oct-13	Malta	TFDE	TZ Mk. III Flex	4	Wheatstone	–
Corcovado LNG	160,162	Drytank	Daewoo	Apr-14	Malta	Diesel Electric	GT NO 96 L03	4	Spot	H2297
Cubal	160,276	Mint LNG IV	Samsung	Jan-12	Bahamas	–	TZ Mk. III	4	Soyo	1813
Cygnus Passage	145,400	Cygnus LNG Shipping	Mitsubishi	Jan-09	Panama	Steam	Moss	4	Sakhalin II	2235
Dapeng Moon	147,200	Yue Gang LNG Ship Management Co.	Hudong Zhonghua	Jul-08	H.K., China	Steam	GT NO 96	4	Pluto	1309
Dapeng Princess	79,960	–	Hudong Zhonghua	Feb-23	Singapore	DFDE	GTT 96	4	–	H1837A
Dapeng Star	147,210	Yue Peng LNG Shipping Co.	Hudong Zhonghua	Nov-09	H.K., China	Steam	GT NO 96	4	Pluto	1379
Dapeng Sun	147,200	Yue Peng LNG Shipping Co.	Hudong Zhonghua	Apr-08	H.K., China	Steam	GT NO 96	4	North West Shelf	1308
Diamond Gas Crystal	174,000	Diamond LNG Shipping 5 Pte Ltd.	Hyundai Samho	Jun-21	Singapore	X-DF	TZ Mk. III Flex	4	–	8030
Diamond Gas Metropolis	174,000	Diamond LNG Shipping 4 Ltd.	HHI	Nov-20	Bahamas	X-DF	TZ Mk. III Flex	4	Portfolio	8029
Diamond Gas Orchid	165,000	NYK Line	Mitsubishi	Jun-18	Japan	STaGE	Sayaringo	4	Cameron	2325
Diamond Gas Rose	165,000	NYK Line	Mitsubishi	Aug-18	Bahamas	STaGE	Sayaringo	4	Cameron	2325
Diamond Gas Sakura	165,000	Tokyo Gas	Japan Marine United	May-19	Panama	STaGE	Sayaringo	4	Cameron	2332
Diamond Gas Victoria	174,000	Diamond LNG Shipping 6 Pte Ltd.	Hyundai Samho	Jun-21	Bahamas	X-DF	TZ MK. III Flex	4	–	8031
Disha	136,025	India LNG Transport Company No.1 Ltd.	Daewoo	Dec-03	Malta	Gas Turbine	GT NO 96	4	RasGas	2210
Doha	137,262	Mitsui O.S.K. Lines	Mitsubishi	Jun-99	Japan	Steam	Moss	5	Qatargas I	2091
Dorado LNG	174,000	Hai Kuo Shipping 2052G Ltd.	Samsung	Dec-20	Malta	X-DF	TZ Mk. III Flex	4	Portfolio	2276
Duhail	210,150	Nauranto Schiffsbetriebsgesellschaft mbH & Company ts Gabriela KG	Daewoo	Dec-07	Bahamas	Diesel	GT NO 96	4	Qatargas II	2247
Dukhan	137,661	Qatar LNG Transport	Mitsui E&S	Sep-04	Liberia	Steam	Moss	5	Qatargas II	1561
East Energy	122,255	Bonny Gas Transport	STX	Aug-82	Bermuda	Steam	Membrane	4	NLNG	26B
Eduard Toll	172,410	Teekay Corp.	Daewoo	Sep-17	Bahamas	TFDE - Azipod	GT NO 96 GW	4	Yamal	2423
Ejnan	145,000	Peninsula LNG Transport No. 3	Samsung	Jan-07	Bahamas	Steam	TZ Mk. III	4	RasGas II	1594
Ekaputra 1	136,400	Cometco Shipping Inc.	Mitsubishi	Jan-89	Liberia	Steam	Moss	5	Bontang	2011
Elisa Aquila	174,000	Caroline 82 SASU	Hyundai Samho	04/03/2022	France	X-DF	TZ Mk. III Flex	4	Portfolio	S917
Elisa Larus	174,000	Caroline 77 SASU	Hyundai Samho	May-20	France	X-DF	TZ Mk. III Flex	4	Portfolio	S970
Energos Grand	145,700	Golar Grand Corp.	Daewoo	Jan-06	M. Islnds.	Steam	GT NO 96	4	Gorgon	2226
Energy Advance	147,624	Tokyo LNG Tanker Co. & Toho LNG Shipping Co.	Kawasaki	Mar-05	Japan	Steam	Moss	4	Portfolio	1521
Energy Atlantic	156,000	Alpha Tankers	STX	Sep-15	Greece	TFDE	GT NO 96 L03	4	Sabine Pass	1670
Energy Confidence	153,000	Tokyo LNG Tanker Co. & NYK	Kawasaki	Apr-09	Japan	Steam	Moss	4	Darwin LNG	1611
Energy Endeavour	173,400	Rossini Navigation SA	Daewoo	Jan-21	M. Islnds.	ME-GI	GT NO 96 GW	–	–	2484
Energy Frontier	147,599	Tokyo LNG Tanker Co.	Kawasaki	Sep-03	Japan	Steam	Moss	4	Sakhalin II	1520
Energy Glory	165,000	NYK Line	Japan Marine United	Mar-19	Japan	TFDE	TZ Mk. III Flex+	4	Cove Point	5071

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Energy Horizon	177,000	Tokyo LNG Tanker Co. & NYK	Kawasaki	Aug-11	Japan	Steam	Moss	4	Pluto	1664
Energy Innovator	165,000	Tokyo Gas	Japan Marine United	Jun-19	Panama	TFDE	TZ Mk. III Flex+	4	Cove Point	5072
Energy Integrity	173,400	Mozart Navigation SA	Daewoo	May-21	M. Islnds.	ME-GI	GT NO 96 GW	4	–	2485
Energy Intelligence	173,400	Strauss Navigation SA	Daewoo	Jun-21	M. Islnds.	ME-GI	GT NO 96 GW	4	–	2500
Energy Liberty	165,000	Mitsui O.S.K. Lines	Japan Marine United	Oct-18	Japan	TFDE	TZ Mk. III Flex+	4	Cove Point	5070
Energy Navigator	145,000	Tokyo LNG Tanker Co.	Kawasaki	May-08	Japan	Steam	Moss	4	Sakhalin II	1600
Energy Pacific	173,400	Ravel Navigation SA	Daewoo	Aug-20	M. Islnds.	ME-GI	GT NO 96 GW	4	Portfolio	2483
Energy Progress	147,558	Jovial Shipping Navigation	Kawasaki	Nov-06	Bahamas	Steam	Moss	4	Darwin LNG	1540
Energy Spirit	74,100	GDF Armateur 2	STX	Jan-04	France	Diesel/Gas-Electric	CS1	4	Portfolio	32M
Energy Universe	166,571	Tokyo LNG Tanker Co.	Japan Marine United	Aug-19	Panama	TFDE	TZ Mk. III Flex	4	Cove Point	5073
Enshu Maru	164,700	Mitsui O.S.K. Lines	Kawasaki	Aug-18	Panama	Reheat Steam Turbine	Moss	4	Wheatstone	1720
Esshu Maru	153,000	Mitsui O.S.K. Lines	Mitsubishi	Dec-14	Bahamas	–	Sayaendo	4	Portfolio	–
Etyfa Prometheas	135,269	Shell Bermuda (Overseas) Ltd.	Mitsubishi	Oct-02	Singapore	Steam	Moss	5	Peru LNG	2172
Excalibur	138,034	Exmar Excalibur Shipping Co.	Daewoo	May-02	Belgium	Steam	GT NO 96	4	Portfolio	2206
Extremadura Knutsen	174,000	Caroline 86 SASU	Hyundai Samho	Feb-23	France	X-DF	Mark III Flex	4	Portfolio	8096
Fedor Litke	172,410	Arctic LNG 2 Ltd.	Daewoo	May-17	Cyprus	TFDE - Azipod	GT NO 96 GW	4	Yamal	2422
Ferrol Knutsen	174,000	Caroline 85 SASU	Hyundai Samho	Jan-23	Panama	X-DF	Mark III Flex	4	Portfolio	8095
Flex Amber	174,000	Bund 10 Holding Ltd.	HHI	Oct-20	M. Islnds.	X-DF	TZ Mk. III Flex	4	Portfolio	8011
Flex Artemis	174,000	Flex LNG Rreliance Ltd.	Daewoo	Aug-20	M. Islnds.	ME-GI	NO-96-GW+FRS	4	Portfolio	2479
Flex Aurora	174,000	Flex LNG Aurora Ltd.	HHI	Jun-20	M. Islnds.	X-DF	TZ Mk. III Flex	4	Portfolio	8010
Flex Constellation	173,400	Frontline	Daewoo	Jun-19	M. Islnds.	ME-GI	NO-96-GW+PRS	4	Portfolio	H2470
Flex Courageous	173,400	Frontline	Daewoo	Aug-19	M. Islnds.	ME-GI	NO-96-GW+PRS	4	–	2471
Flex Endeavour	172,400	Flex LNG	Daewoo	Jan-18	U.K.	ME-GI	NO-96-GW+PRS	4	–	2447
Flex Enterprise	172,400	Flex LNG	Daewoo	Jan-18	U.K.	ME-GI	NO-96-GW+PRS	4	Portfolio	2448
Flex Freedom	173,400	Flex Freedom Ltd.	Daewoo	Jan-21	M. Islnds.	ME-GI	NO-96-GW+FRS	4	Portfolio	2492
Flex Rainbow	174,000	Flex LNG	Samsung	Jun-18	Isle of Man	ME-GI	TZ Mk. III Flex	4	–	2108
Flex Ranger	174,101	Flex LNG	Samsung	Jun-18	Isle of Man	ME-GI	TZ Mk. III Flex	4	–	2107
Flex Resolute	173,400	Flex LNG Resolute Ltd.	HHI	Sep-20	M. Islnds.	ME-GI	NO-96-GW+FRS	4	Portfolio	2480
Flex Vigilant	174,000	Flex Vigilant Ltd.	HHI	May-21	Liberia	X-DF	TZ Mk. III Flex	4	Portfolio	8013
Flex Volunteer	174,000	Flex Volunteer Ltd.	HHI	Jan-21	M. Islnds.	X-DF	TZ Mk. III Flex	4	–	8012
Fraiha	210,100	J5 Nakilat No.6 Ltd.	Daewoo	Aug-08	M. Islnds.	Diesel	GT NO 96	18	RasGas III	2252
Fuji LNG	149,172	Aletheia Owning Co.	Kawasaki	Mar-04	Malta	Steam	Moss	4	Sabine Pass	1527
Fuwairit	138,200	Camartina Shipping Co.	Samsung	Jan-04	Bahamas	Steam	TZ Mk. III	4	RasGas II	1406
Gail Bhuwan	180,000	Primavera Montana SA	Daewoo	Feb-21	M. Islnds.	X-DF	GT NO 96 GW	4	Portfolio	2499
GasLog Galveston	174,000	Gas-Thirty Three Ltd.	Samsung	Jan-21	Bermuda	X-DF	TZ Mk. III Flex+	4	US Portfolio	2301
GasLog Geneva	174,000	GasLog	Samsung	Oct-16	Bermuda	TFDE	TZ Mk. III Flex	4	Portfolio	2102
GasLog Genoa	174,000	GasLog	Samsung	Mar-18	Bermuda	X-DF	TZ Mk. III Flex	4	Portfolio	2130
GasLog Georgetown	174,000	Gas-Thirty Two Ltd.	Samsung	Nov-20	Bermuda	–	TZ Mk. III Flex+	4	Portfolio	2300
GasLog Gibraltar	174,000	Gas-Fourteen Ltd.	Samsung	Nov-16	Bermuda	TFDE	TZ Mk. III Flex	4	Portfolio	2103
GasLog Gladstone	174,000	GasLog	Samsung	Mar-19	Bermuda	X-DF	TZ Mk. III Flex+	4	Portfolio	2131
GasLog Glasgow	174,000	GasLog	Samsung	Jul-16	Bermuda	TFDE	TZ Mk. III Flex	4	Portfolio	2073
GasLog Greece	174,000	GasLog	Samsung	Mar-16	Bermuda	TFDE	TZ Mk. III Flex	4	Portfolio	2072
GasLog Hong Kong	174,000	GasLog	HHI	Mar-18	Bermuda	X-DF	TZ Mk. III Flex	4	Portfolio	2801
GasLog Houston	174,000	GasLog	HHI	Dec-18	Bermuda	X-DF	TZ Mk. III Flex	4	GoM	2800
GasLog Salem	155,000	GasLog	Samsung	May-15	Bermuda	TFDE	TZ Mk. III	4	Portfolio	2044
GasLog Santiago	155,000	Gas-Four Ltd.	Samsung	Mar-13	Bermuda	TFDE	TZ Mk. III	4	Portfolio	1947
GasLog Saratoga	155,000	GasLog	Samsung	Dec-14	Bermuda	TFDE	TZ Mk. III	4	Spot	2043
GasLog Savannah	155,000	Gas-One Ltd.	Samsung	May-10	Liberia	TFDE	TZ Mk. III	4	Portfolio	1641
GasLog Seattle	155,000	Gas-Seven Ltd.	Samsung	Oct-13	Bermuda	TFDE	TZ Mk. III	4	Portfolio	2041
GasLog Shanghai	155,000	Gas-Three Ltd.	Samsung	Feb-13	Bermuda	TFDE	TZ Mk. III	4	Portfolio	1946
GasLog Singapore	155,000	Gas-Two Ltd.	Samsung	Aug-10	Liberia	TFDE	TZ Mk. III	4	Portfolio	1642
GasLog Skagen	155,000	Gas-Six Ltd.	Samsung	Aug-13	Bermuda	TFDE	TZ Mk. III	4	Portfolio	2017
GasLog Sydney	155,000	Gas-Five Ltd.	Samsung	Jun-13	Bermuda	–	TZ Mk. III	4	Portfolio	2016
GasLog Wales	180,000	GasLog	Samsung	May-20	Bermuda	X-DF	TZ Mk. III Flex+	4	Portfolio	2274
GasLog Warsaw	180,000	GasLog	Samsung	Jul-19	Bermuda	X-DF	TZ Mk. III Flex+	4	Portfolio	2212
GasLog Wellington	176,400	GAS-Thirty Four Ltd.	Samsung	Jun-21	Bermuda	X-DF	TZ Mk. III Flex+	4	US Portfolio	2311
GasLog Westminster	180,000	Gas-Thirty Ltd.	Samsung	Jul-20	MAIta	X-DF	TZ Mk. III Flex	4	Portfolio	2262
GasLog Winchester	176,400	Gas-Thirty Five Ltd.	Samsung	Aug-21	Bermuda	X-DF	TZ Mk. III Flex+	4	US Portfolio	2312
GasLog Windsor	180,000	GasLog	Samsung	Apr-20	Bermuda	X-DF	TZ Mk. III Flex	4	Portfolio	2213
Georgiy Brusilov	172,410	Arctic LNG 3 Ltd.	Daewoo	Nov-18	Cyprus	TFDE - Azipod	GT NO 96 GW	4	Yamal	2427
Georgiy Ushakov	172,652	Teekay Corp.	Daewoo	Sep-19	Bahamas	ME-GI	GT NO 96 GW	4	Yamal	2433
Ghasha	137,000	Ghasha Inc.	Mitsui E&S	Jun-95	Liberia	Steam	Moss	5	Das Island	1392
Gigira Laitebo	177,419	Cleopatra LNG Shipping Co.	HHI	Feb-10	Bahamas	–	TZ Mk. III	4	RasGas	1876
Global Energy	173,400		Daewoo	May-20	Greece	ME-GI	GT NO 96 GW	4	Portfolio	2478
Global Sea Spirit	169,932	Global Sea Spirit Inc	Daewoo	Oct-21	Greece	ME-GI	–	4	US Portfolio	2502

CARRIER FLEET

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Value from maritime data



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Global Sealine	174,000	Jackar Shiptrade SA	Daewoo	Dec_21	M. Islns.	ME-GI	–	–	US Portfolio	2503
Global Star	173,400	Hai Kuo Shipping 2119G Ltd.	Daewoo	Jan-21	M. Islns.	ME-GI	GT NO 96 GW	4	Portfolio	2487
Golar Arctic	140,648	Golar LNG 2216 Corp.	Daewoo	Oct-03	Singapore	Steam	GT NO 96	4	Jamaica LNG	2216
Golar Bear	160,000	Golar LNG	Samsung	Sep-14	M. Islns.	Diesel/Gas-Electric	TZ Mk. III Flex	4	Spot	2027
Golar Celsius	160,000	Golar Hull M2026 Corp.	Samsung	Oct-13	M. Islns.	Diesel/Gas-Electric	TZ Mk. III Flex	4	Spot	2026
Golar Crystal	159,800	Golar LNG	Samsung	Sep-14	M. Islns.	–	TZ Mk. III Flex	4	Spot	2022
Golar Glacier	162,000	Golar LNG	Hyundai Samho	Nov-14	M. Islns.	TFDE	TZ Mk. III Flex	4	Spot	–
Golar Ice	160,000	Golar LNG	Samsung	Jan-15	Bermuda	Diesel Electric	TZ Mk. III Flex	4	Spot	2048
Golar Kelvin	162,000	Golar LNG	Hyundai Samho	Jan-15	M. Islns.	DFDS	TZ Mk. III Flex	4	Spot	S659
Golar Maria	145,700	Golar LNG 2234 LLC	Daewoo	Jun-06	M. Islns.	Steam	GT NO 96	4	Spot	2234
Golar Penguin	160,000	Golar LNG	Samsung	Sep-14	M. Islns.	–	TZ Mk. III Flex	4	Spot	2023
Golar Seal	160,000	Golar Hull M2021 Corp.	Samsung	Sep-13	M. Islns.	Diesel/Gas-Electric	TZ Mk. III Flex	4	Spot	2021
Golar Snow	160,000	Golar LNG	Samsung	Jan-15	Bermuda	Diesel/Gas-Electric	TZ Mk. III Flex	4	Spot	2047
Grace Acacia	149,700	Algawin Shipping Inc.	HHI	Feb-07	Bahamas	Steam	TZ Mk. III	4	Spot	1728
Grace Barleria	149,700	NYK LNG Shipmanagement	HHI	Apr-07	Bahamas	–	TZ Mk. III	4	Portfolio	1729
Grace Cosmos	150,000	Algahunt Shipping Inc.	HHI	Feb-08	Bahamas	Steam	TZ Mk. III	4	Portfolio	1730
Grace Dahlia	177,000	NYK Line	Kawasaki	Sep-13	Japan	Steam	Moss	4	Spot	1665
Grace Emilia	174,000	Akizuki Maritima SA	Hyundai Samho	Oct-21	Bahamas	X-DF	–	4	Portfolio	8032
Grace Freesia	174,000	Okusankichi Maritima SA	Hyundai Samho	Mar-22	Bahamas	X-DF	–	4	Portfolio	8033
Grand Aniva	145,000	NYK-SCF LNG Shipping No. 1	Mitsubishi	Jan-08	Cyprus	Steam	Moss	4	Sakhalin II	2230
Grand Elena	145,580	NYK-SCF LNG Shipping No. 1	Mitsubishi	Oct-07	Cyprus	Steam	Moss	4	Sakhalin II	2229
Grand Mereya	147,000	Ice Gas LNG Shipping Co.	Mitsui E&S	Mar-08	Cyprus	Steam	Moss	4	Sakhalin II	1681
Gui Ying	170,701	Fortune Power Shipping Ltd.	Hudong Zhonghua	Oct-21	Singapore	X-DF	GT NO 96 L03+	4	Portfolio	H1828A
Hanjin Muscat	138,366	Pluto Lease Corp.	Hanjin (Busan)	Jul-99	Panama	Steam	GT NO 96	4	Oman LNG	54
Hanjin Pyeongtaek	130,636	Hanjin Shipping Co.	Hanjin (Busan)	Sep-95	Panama	Steam	GT NO 96	4	Bontang	16
Hanjin Ras Laffan	138,214	KSH International	Hanjin (Busan)	Jul-00	Panama	Steam	GT NO 96	4	RasGas I	62
Hanjin Sur	138,333	KSG International	Hanjin (Busan)	Feb-00	Panama	Steam	GT NO 96	4	Oman LNG	61
Hellas Athina	170,520	Kronos Shipping LLC	Hyundai Samho	Sep-21	Malta	X-DF	TZ Mk. III Flex	4	Portfolio	8040
Hellas Diana	174,000	Zeus Shipping LLC	Hyundai Samho	Mar-21	Malta	X-DF	TZ Mk. III Flex	4	Portfolio	8039
HongKong Energy	138,000	Chevron LNG Shipping Co.	Daewoo	Feb-04	Australia	Steam	GT NO 96	4	North West Shelf	2214
Huelva Knutsen	174,000	Sea 201 Leasing Co Ltd	Hyundai Samho	Oct-22	Norway	X-DF	TZ Mk. III Flex+	4	Portfolio	8094
Hyundai Aquapia	137,415	H&S Shipping	HHI	May-00	Panama	Steam	Moss	4	Oman LNG	1156
Hyundai Cosmopia	137,415	H&B Shipping	HHI	Feb-00	Panama	Steam	Moss	4	RasGas I	1074
Hyundai Ecopia	149,745	KLT 1 International	HHI	Nov-08	Panama	–	TZ Mk. III	4	Balhaf	1903
Hyundai Greenpia	125,000	Hyundai Merchant Marine	HHI	May-96	Panama	Steam	Moss	4	MLNG	853
Hyundai Oceanpia	135,000	H&T Shipping	HHI	Jun-00	Panama	Steam	Moss	4	Oman LNG	1157
Hyundai Peacepia	174,000	Hyundai LNG Shipping	Daewoo	Jun-17	Panama	ME-GI	GT NO 96 GW	4	Sabine Pass	2452
Hyundai Princepia	174,000	Hyundai LNG Shipping	Daewoo	May-17	Panama	ME-GI	GT NO 96 GW	4	Sabine Pass	2451
Hyundai Technopia	137,415	H&K Shipping	HHI	Jul-99	Panama	Steam	Moss	4	RasGas I	1073
Hyundai Utopia	125,182	Hyundai Merchant Marine	HHI	Jun-94	Panama	Steam	Moss	4	Donggi Senoro	760
Iberica Knutsen	138,000	Norspan LNG III AS	Daewoo	Aug-06	Norway	Ultra Steam Turbine	GT NO 96	4	Portfolio	2236
Ibra LNG	147,000	SNC Corentin	Samsung	Jul-06	Panama	Steam	TZ Mk. III	4	Oman LNG	1573
Ibri LNG	147,569	Dune LNG Carrier	Mitsubishi	Jul-06	Panama	Steam	Moss	4	Oman LNG	2215
Isabella	169,932	Kasimia Marine Co.	Daewoo	Jul-21	Greece	ME-GI	GT NO 96 GW	4	–	2495
Ish	137,000	Ish Inc.	Mitsubishi	Nov-95	Liberia	Steam	Moss	5	Das Island	2067
John A. Angelicoussis	174,000	Varta Shipping Ltd	Daewoo	Mar-22	Greece	ME-GI	–	4	–	2508
K. Acacia	138,017	Horizon Maritime Shipholding	Daewoo	Dec-99	Panama	Steam	GT NO 96	4	Oman LNG	2203
K. Freesia	138,015	Meridian Maritime Shipholding	Daewoo	Aug-00	Panama	Steam	GT NO 96	4	RasGas I	2204
K. Jasmine	145,878	Kolt JV No. 1	Daewoo	May-08	Panama	Steam	GT NO 96	4	Sakhalin II	2260
K. Mugungwha	151,812	Kolt JV No. 2	Daewoo	Nov-08	Panama	Steam	GT NO 96	4	Oman LNG	2261
KARMOL LNGT Powership Asia	127,500	BHP Consortium	Kawasaki	Jan-91	Bermuda	Steam	Moss	4	North West Shelf	1410
Kinisis	173,400	Chandris Group	Daewoo	Oct-18	Greece	ME-GI	GT NO 96 GW	4	Portfolio	2464
Kita LNG	147,895	Cardiff LNG	Daewoo	May-14	Malta	Diesel Electric	GT NO 96 L03	4	Spot	H2298
Kmarin Diamond	155,000	RBSSAF (19) Ltd.	Hyundai Samho	Jul-08	Isle of Man	Diesel/Gas-Electric	TZ Mk. III	4	Portfolio	S297
Kool Baltic	170,200	Sovcomflot	STX	Jan-15	Liberia	Diesel Electric	GT NO 96 GW	4	Portfolio	1912
Kool Boreas	170,200	Sovcomflot	STX	Apr-15	Liberia	Diesel Electric	GT NO 96 GW	4	Portfolio	1913
Kool Firn	174,000	Heliconia Maritime SA	HHI	Sep-20	Liberia	DFDS	TZ Mk. III Flex	4	Portfolio	8007
Kool Frost	160,000	Golar LNG	Samsung	Oct-14	M. Islns.	Diesel/Gas-Electric	TZ Mk. III Flex	4	Portfolio	2055
Kool Orca	174,000	Headliner Maritime SA	HHI	Jan-21	Liberia	X-DF	NO-96-GW+PRS	4	Portfolio	8008
Kumul	170,000	Mitsui O.S.K. Lines	Hudong Zhonghua	Dec-15	H.K., China	Diesel	GT NO 96	4	PNG LNG	1673A
La Mancha Knutsen	176,300	Norspan LNG IX	HHI	Sep-16	Spain	ME-GI	TZ Mk. III Flex	4	Portfolio	2733
La Seine	174,000	Xiang CH16 HK International	HHI	Feb-20	Malta	X-DF	TZ MK. III Flex	4	Portfolio	3020
Lagenda Serenity	79,960	Kawasaki Kisen Kaisha	Hudong Zhonghua	Jun-22	Panama	LP-DF	–	3	Malaysia LNG	H1789A
Lagenda Suria	79,960	Silk LNG Transport No 1 Pte Ltd	Hudong Zhonghua	May-22	Singapore	LP-DF	–	3	Malaysia LNG	H1788A

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Lalla Fatma N'Soumer	145,000	Algerian Nippon Gas Transport Corp.	Kawasaki	Oct-04	Bahamas	Steam	Moss	4	Arzew	1534
Lech Kaczynski	174,000	SNC Martin	HHI	Dec-22	France	X-DF	–	4	Portfolio	3243
Lena River	155,000	Solana Holdings	HHI	Sep-13	M. Islnds.	–	TZ Mk. III	4	Portfolio	H2557
Lijmiliya	263,300	Nakilat Lijmiliya Inc.	Daewoo	Dec-08	M. Islnds.	Diesel	GT NO 96	5	Qatargas II	2256
LNG Abalamabie	162,000	Bonny Gas Transport	Samsung	Jul-16	Bermuda	DFDS	TZ Mk. III Flex	4	NLNG	2079
LNG Abuja II	162,000	Bonny Gas Transport	Samsung	Mar-16	Bermuda	–	TZ Mk. III Flex	4	NLNG	2078
LNG Adamawa	141,000	Bonny Gas Transport	HHI	Apr-05	Bermuda	Steam	Moss	4	NLNG	1470
LNG Adventure	174,000	Diderot Financement 28 SNC	Samsung	Mar-21	M. Islnds.	X-DF	TZ Mk. III Flex	4	Portfolio	2302
LNG Akwa Ibom	141,000	Bonny Gas Transport	HHI	Oct-04	Bermuda	Steam	Moss	4	NLNG	1469
LNG Alliance	154,472	NYK Armateur	STX	Mar-07	France	Diesel/Gas-Electric	CS1	4	Portfolio	32P
LNG Aquarius	126,300	P.T. Hanochem Shipping	General Dynamics	Jan-77	Indonesia	Steam	Moss	5	Bontang	41
LNG Barka	155,982	Lloyd's TSB General Leasing (No. 3)	Kawasaki	Dec-08	Bahamas	Steam	Moss	4	Oman LNG	1591
LNG Bayelsa	137,500	Bonny Gas Transport	HHI	Mar-03	Bermuda	–	Moss	4	NLNG	1429
LNG Benue	145,952	BW Gas LNG Carriers	Daewoo	Apr-06	Bermuda	Steam	GT NO 96	4	NLNG	2224
LNG Bonny II	174,000	Nigeria LNG	HHI	Dec-15	Bermuda	Diesel/Gas-Electric	TZ Mk. III Flex	4	NLNG	2636
LNG Borno	149,600	Okra Shipping No. 1	Samsung	Aug-07	Bermuda	Steam	TZ Mk. III	4	NLNG	1563
LNG Cross River	141,000	Bonny Gas Transport	HHI	Aug-05	Bermuda	Steam	Moss	4	NLNG	1471
LNG Dream	145,000	Osaka Gas Consortium	Kawasaki	Sep-06	Bahamas	Steam	Moss	4	North West Shelf	1545
LNG Dubhe	174,000	Mitsui O.S.K. Lines	Hudong Zhonghua	Nov-19	Panama	ME-GI	GT NO 96 L03+	4	Yamal	1810A
LNG Ebisu	147,546	LNG Ebisu Shipping Corp.	Kawasaki	Jul-08	Bahamas	–	Moss	4	Pluto	1588
LNG Endeavour	170,520	Fortune Great Shipping Ltd.	Samsung	Oct-21	France	X-DF	TZ Mk. III Flex	4	Portfolio	2355
LNG Endurance	170,520	DuPlessis Bail SNC	Samsung	Dec-21	France	X-DF	TZ Mk. III Flex	4	Portfolio	2307
LNG Enterprise	170,520	Hanovre Financement 20 SASU	Samsung	Oct-21	France	X-DF	TZ Mk. III Flex	4	Portfolio	2360
LNG Enugu	145,926	BW Gas LNG Carriers	Daewoo	Oct-05	Bermuda	Steam	GT NO 96	4	NLNG	2222
LNG Finima II	162,000	Bonny Gas Transport	Samsung	Dec-15	Bermuda	–	TZ Mk. III Flex	4	NLNG	2076
LNG Fukurokuju	164,700	Mitsui O.S.K. Lines	Kawasaki	Jul-16	Panama	Steam	Moss	4	APLNG	1712
LNG Imo	148,452	Bergesen LNG XI Ltd.	Daewoo	Jun-08	Bermuda	–	GT NO 96	4	NLNG	2232
LNG Jamal	135,333	Osaka Gas Consortium	Mitsubishi	Oct-00	Japan	Steam	Moss	5	Oman LNG	2157
LNG Juno	180,000	Mitsui O.S.K. Lines	Mitsubishi	Oct-18	Japan	STaGE	Moss	–	Freeport	2323
LNG Jupiter	153,000	Osaka Gas Consortium	Kawasaki	Jul-09	Panama	Steam	Moss	4	PNG LNG	1592
LNG Jurojin	160,000	LNG Jurojin Shipping Corp.	Mitsubishi	Nov-15	Bahamas	Steam	Moss	4	Portfolio	2299
LNG Kano	148,565	Bergesen LNG IX Ltd.	Daewoo	Jan-07	Bermuda	Steam	GT NO 96	4	NLNG	2230
LNG Kolt	153,595	KLT 5 International	Hanjin (Busan)	Dec-08	Panama	Steam	TZ Mk. III	4	Portfolio	192
LNG Lagos II	174,000	Nigeria LNG	HHI	Jan-16	Bermuda	DFDS	TZ Mk. III Flex	4	NLNG	2637
LNG Lerici	65,000	LNG Shipping S.p.A.	Sestri Ponente	Apr-98	Italy	Steam	GT NO 96	4	Portfolio	5911
LNG Lokoja	148,471	Bergesen LNG VIII Ltd.	Daewoo	Nov-06	Bermuda	Steam	GT NO 96	4	NLNG	2229
LNG Maleo	127,544	Mitsui O.S.K. Lines	Mitsui E&S	Jan-89	Japan	Steam	Moss	4	North West Shelf	1351
LNG Mars	155,693	Osaka Gas Consortium	Mitsubishi	Oct-16	Japan	Steam	Moss	4	PNG LNG	2296
LNG Megrez	174,000	Mitsui O.S.K. Lines	Hudong Zhonghua	Nov-20	Panama	ME-GI	GT NO 96 L03+	4	Yamal	1813A
LNG Merak	174,000	Mitsui O.S.K. Lines	Hudong Zhonghua	Jan-20	Panama	ME-GI	GT NO 96 L03+	4	Yamal	1811A
LNG Ogun	149,000	Okra Shipping No. 1	Samsung	Jul-07	Bermuda	Steam	TZ Mk. III	4	NLNG	1564
LNG Ondo	148,478	Bergesen LNG X Ltd.	Daewoo	Sep-07	Bermuda	Steam	GT NO 96	4	NLNG	2231
LNG Oyo	145,842	BW Gas LNG Carriers	Daewoo	Jan-06	Bermuda	Steam	GT NO 96	4	NLNG	2223
LNG Phecda	174,000	Mitsui O.S.K. Lines	Hudong Zhonghua	Sep-20	Panama	ME-GI	GT NO 96 L03+	4	Yamal	1812A
LNG Port Harcourt II	162,000	Bonny Gas Transport	Samsung	Dec-15	Bermuda	–	TZ Mk. III Flex	4	NLNG	2077
LNG Prima Carrier	137,000	Pacific Eurus Shipping	Mitsubishi	Mar-06	Bahamas	Steam	Moss	4	Das Island	2187
LNG Prosperity	174,000	Hai Kuo Shipping 2001G Ltd (c/o Oceanix Services)	HHI	Jan-23	Liberia	X-DF	TZ Mk. III Flex+	4	Portfolio	3188
LNG River Niger	141,000	Bonny Gas Transport	HHI	Jul-06	Bermuda	Steam	Moss	4	NLNG	1472
LNG River Orashi	145,914	BW Gas LNG Carriers	Daewoo	Nov-04	Bermuda	Steam	GT NO 96	4	NLNG	2221
LNG Rivers	137,200	Bonny Gas Transport	HHI	Jun-02	Bermuda	–	Moss	4	NLNG	1295
LNG Rosenrot	176,523	Fair Wind Navigation SA	Daewoo	Jan-21	M. Islnds.	X-DF	GT NO 96 GW	4	Portfolio	2498
LNG Sakura	177,000	Mitsui O.S.K. Lines	Kawasaki	Feb-18	Bahamas	TFDE	Moss	–	Freeport	1731
LNG Saturn	155,300	Mitsui O.S.K. Lines	Mitsubishi	Feb-16	Bahamas	Ultra Steam Turbine	Moss	4	Gorgon	2311
LNG Schneeweisschen	180,000	Mitsui O.S.K. Lines	Daewoo	Sep-18	Bermuda	TFDE	GT NO 96 GW	–	Freeport	2462
LNG Sokoto	137,425	Bonny Gas Transport	HHI	Sep-02	Bermuda	–	Moss	4	NLNG	1296
LNG Unity	154,472	GDF Armateur 2	STX	Nov-06	France	Diesel/Gas-Electric	CS1	4	Portfolio	32N
LNG Venus	153,000	Mitsui O.S.K. Lines	Mitsubishi	Nov-14	Japan	–	Sayaendo	4	North West Shelf	2295
LNG Vesta	127,386	Tokyo LNG Tanker Co.	Mitsubishi	Jun-94	Japan	Steam	Moss	4	–	2061
LNGShips Athena	170,618	Cardiff LNG Iota Owning LLC	HHI	Mar-21	Malta	X-DF	TZ Mk. III Flex	4	–	112
LNGShips Empress	174,000	Cardiff LNG Kappa Owning LLC	Samsung	Mar-21	Malta	X-DF	TZ Mk. III Flex	4	QCLNG	2380
LNGShips Manhattan	174,000	Cardiff LNG Theta Owning LLC	HHI	May-21	Malta	X-DF-HPSCR	NO-96-GW+PRS	4	QCLNG	3039
Lobito	160,276	Mint LNG III	Samsung	Nov-11	Bahamas	–	TZ Mk. III	4	Soyo	1812
Lusail	145,000	Peninsula LNG Transport No. 1	Samsung	May-05	Bermuda	–	TZ Mk. III	4	RasGas II	1440

CARRIER FLEET

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Value from maritime data



- Meets the IMO MEPC76 regulations requirements
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- 100% engine power remains accessible if needed

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Macoma	145,400	Teekay LNG Partners	Daewoo	Sep-17	Bahamas	ME-GI	GT NO 96 GW	4	Portfolio	2417
Magdala	173,400	Teekay Corp.	Daewoo	Feb-18	Bahamas	ME-GI	GT NO 96 GW	4	Portfolio	2453
Malaga Knutsen	174,000	Millenaire Financement 17 SASU	Hyundai Samho	Jul-22	France	X-DF	TZ Mk. III Flex+	4	Portfolio	8092
Malanje	160,276	Mint LNG II	Samsung	Oct-11	Bahamas	–	TZ Mk. III	4	Soyo	1811
Maran Gas Achilles	174,000	Maran Gas Maritime	Hyundai Samho	Jan-16	Greece	DFDS	TZ Mk. III Flex	4	Portfolio	S689
Maran Gas Agamemnon	174,000	Maran Gas Maritime	Hyundai Samho	May-16	Greece	DFDS	TZ Mk. III Flex	4	Portfolio	S690
Maran Gas Amorgos	169,932	Vero Maritime Inc	Daewoo	19/11/2021	Greece	ME-GI	GT NO 96	4	–	2506
Maran Gas Alexandria	161,870	Maran Gas Maritime	Hyundai Samho	Oct-15	Greece	–	TZ Mk. III Flex	4	QCLNG	S627
Maran Gas Amphipolis	174,000	Maran Gas Maritime	Daewoo	Aug-16	Greece	–	GT NO 96 L03	4	Portfolio	2412
Maran Gas Andros	173,400	Maran Gas Maritime	Daewoo	Nov-19	Greece	ME-GI	GT NO 96 GW	4	Freeport	2467
Maran Gas Apollonia	161,870	Maran Gas Maritime	Hyundai Samho	Jan-14	Greece	Diesel Electric	TZ Mk. III Flex	4	Punta Europa	S624
Maran Gas Asclepius	145,000	Sea Satin Corp.	Daewoo	Jul-05	Greece	Steam	GT NO 96	4	RasGas II	H2227
Maran Gas Chios	170,000	Maran Gas Maritime	Daewoo	Mar-19	Greece	ME-GI	GT NO 96 GW	4	–	2456
Maran Gas Coronis	145,700	Jopica Shipping Company	Daewoo	Jul-07	Greece	Steam	GT NO 96	4	RasGas II	2244
Maran Gas Delphi	159,800	Maran Gas Maritime	Daewoo	Feb-14	Greece	Diesel Electric	GT NO 96 L03	4	Portfolio	2296
Maran Gas Efessos	159,800	Maran Gas Maritime	Daewoo	Jun-14	Greece	–	GT NO 96 L03	4	Portfolio	H-2291
Maran Gas Hector	174,000	Maran Gas Maritime	Hyundai Samho	Nov-16	Greece	Diesel/Gas-Electric	TZ Mk. III Flex	–	Portfolio	S691
Maran Gas Hydra	173,400	Maran Gas Maritime	Daewoo	Feb-19	Greece	ME-GI	GT NO 96 GW	4	Sabine Pass	2459
Maran Gas Ithaca	174,000	Arona Maritime Inc.	Daewoo	Oct-21	Greece	X-DF	TZ Mk. III Flex	4	Portfolio	2507
Maran Gas Kalymnos	169,932	Hai Kuo Shipping 2028G Ltd	Daewoo	Sep-21	Greece	ME-GI	Membrane	4	–	2504
Maran Gas Leto	174,000	Maran Gas Maritime	Hyundai Samho	Mar-16	Greece	DFDS	TZ Mk. III	4	Portfolio	S688
Maran Gas Lindos	161,870	Maran Gas Maritime	Daewoo	Jul-15	Greece	DFDS	GT NO 96 L03	4	Punta Europa	2292
Maran Gas Mystras	155,900	Maran Gas Maritime	Daewoo	Aug-15	Greece	DFDS	GT NO 96 L03	4	QCLNG	2405
Maran Gas Olympias	174,000	Maran Gas Maritime	Daewoo	Feb-17	Greece	ME-GI	GT NO 96 L03	–	Portfolio	2415
Maran Gas Pericles	173,400	Maran Gas Maritime	Hyundai Samho	Aug-16	Greece	DFDS	TZ Mk. III Flex	4	Portfolio	S734
Maran Gas Posidonia	161,870	Maran Gas Maritime	Hyundai Samho	May-14	Greece	–	TZ Mk. III Flex	4	Punta Europa	S625
Maran Gas Psara	173,595	Highseas Shiptrade Co.	Daewoo	May-20	Greece	ME-GI	GT NO 96 GW	4	Portfolio	2469
Maran Gas Roxana	174,000	Maran Gas Maritime	Daewoo	Jan-17	Greece	ME-GI	GT NO 96 L03	4	Portfolio	2413
Maran Gas Sparta	159,800	Maran Gas Maritime	Hyundai Samho	Apr-15	Greece	–	TZ Mk. III Flex	4	QCLNG	S626
Maran Gas Spetses	173,400	Maran Gas Maritime	Daewoo	Jul-18	Greece	ME-GI	GT NO 96 GW	4	GoM	2458
Maran Gas Troy	155,000	Maran Gas Maritime	Daewoo	Sep-15	Greece	DFDS	GT NO 96 L03	4	–	2406
Maran Gas Ulysses	173,400	Maran Gas Maritime	Hyundai Samho	Jan-17	Greece	Diesel/Gas-Electric	TZ Mk. III Flex	–	Portfolio	S735
Maran Gas Vergina	174,000	Santa Lucia Enterprises Inc.	Daewoo	Dec-16	Greece	ME-GI	GT NO 96	–	Portfolio	2414
Maria Energy	174,000	Tsakos Energy Navigation	HHI	Sep-16	Greece	Diesel/Gas-Electric	TZ Mk. III Flex	4	–	2612
Marshal Vasilevskiy	170,000	Gazprom	HHI	Jan-19	Russia	Diesel/Gas-Electric	TZ Mk. III Flex	4	Kaliningrad LNG	2854
Marvel Crane	177,000	NYK Line	Mitsubishi	Mar-19	Japan	STaGE	Moss	–	Cameron	2321
Marvel Eagle	155,000	Mitsui O.S.K. Lines	Kawasaki	Oct-18	Panama	Reheat Steam Turbine	Moss	–	Cameron	1728
Marvel Falcon	174,000	Mitsui O.S.K. Lines	Samsung	Apr-18	Singapore	TFDE	TZ Mk. III Flex	4	Cameron	2148
Marvel Hawk	177,000	Mitsui O.S.K. Lines	Samsung	Dec-18	Japan	TFDE	TZ Mk. III Flex	4	Cameron	2149
Marvel Heron	177,000	Mitsui O.S.K. Lines	Mitsubishi	Sep-19	Japan	STaGE	Moss	–	Cameron	2322
Marvel Kite	177,000	Mitsui O.S.K. Lines	Samsung	Jan-19	Japan	TFDE	TZ Mk. III	4	Cameron	2150
Marvel Pelican	156,265	Mitsui O.S.K. Lines	Kawasaki	Dec-19	Panama	Reheat Steam Turbine	Moss	4	Cameron	1729
Marvel Swan	174,000	MIF I NO 20 K/S	Samsung	Apr-21	Denmark	X-DF	TZ MK. III Flex	4	–	2310
Megara	173,400	Teekay LNG Partners	Daewoo	Jul-18	Bahamas	ME-GI	GT NO 96 GW	4	Portfolio	2455
Mekaines	266,000	Nakilat SHI 1695 Inc.	Samsung	Apr-09	M. Islnds.	–	TZ Mk. III	5	Qatargas III	1695
Merchant	138,000	Sea Breeze Leasing	Samsung	Jul-03	Isle of Man	Steam	TZ Mk. III	4	Portfolio	1381
Mesaimeer	216,312	Nakilat HHI 1908 Inc.	HHI	Mar-09	M. Islnds.	Diesel	TZ Mk. III	4	Qatargas III	1908
Methane Alison Victoria	145,000	Lloyds TSB Leasing No.8 Ltd.	Samsung	Apr-07	Bahamas	Steam	TZ Mk. III	4	Punta Europa	1587
Methane Becki Anne	170,000	Methane Services (Shell)	Samsung	Sep-10	Bermuda	–	TZ Mk. III	4	Singapore	1858
Methane Heather Sally	145,000	Lloyds TSB Leasing No.8 Ltd.	Samsung	Jan-07	Bahamas	Steam	TZ Mk. III	4	Punta Europa	1586
Methane Jane Elizabeth	145,000	British Gas Asia Pacific	Samsung	Jun-06	Bermuda	Steam	TZ Mk. III	4	Idku	1554
Methane Julia Louise	170,000	Methane Services (Shell)	Samsung	Apr-10	Bermuda	–	TZ Mk. III	9	Singapore	1745
Methane Lydon Volney	145,000	BG Group	Samsung	Aug-06	Bermuda	Steam	TZ Mk. III	4	Idku	1555
Methane Mickie Harper	170,000	Methane Services (Shell)	Samsung	Dec-10	Bermuda	Diesel/Gas-Electric	TZ Mk. III	4	Singapore	1859
Methane Nile Eagle	145,000	Egypt LNG Shipping	Samsung	Dec-07	Bermuda	Steam	TZ Mk. III	4	Idku	1588
Methane Patricia Camila	170,000	Methane Services (Shell)	Samsung	Oct-10	Bermuda	–	TZ Mk. III	4	Singapore	1746
Methane Princess	138,000	Golar LNG	Daewoo	Aug-03	U.K.	Steam	GT NO 96	4	Portfolio	2215
Methane Rita Andrea	145,000	British Gas Asia Pacific	Samsung	Apr-06	Bermuda	Steam	TZ Mk. III	4	Idku	1553
Methane Shirley Elisabeth	145,000	Lloyds TSB Leasing No.8 Ltd.	Samsung	Feb-07	Bermuda	Steam	TZ Mk. III	4	Punta Europa	1585
Milaha Qatar	145,500	Qatar Shipping Co.	Samsung	Apr-06	Malta	Steam	TZ Mk. III	4	RasGas II	1562
Milaha Ras Laffan	138,270	Milaha Ras Laffan GmbH & Co. KG	Samsung	Apr-04	Malta	Steam	TZ Mk. III	4	RasGas II	1425
Min Lu	147,100	Minlu LNG Shipping Co.	Hudong Zhonghua	Aug-09	H.K., China	–	GT NO 96	4	Tangguh	1378
Min Rong	145,000	Min Rong LNG Shipping Co.	Hudong Zhonghua	Feb-09	H.K., China	–	GT NO 96	4	Tangguh	1320
Minerva Amorgos	170,520	Vitamin Shipping SA	Samsung	Sep-22	Greece	X-DF	–	4	–	2332
Minerva Chios	170,520	Peninsula Shipping SA	Samsung	Aug-21	Greece	X-DF	TZ Mk. III Flex+	4	–	2305

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Minerva Kalymnos	174,000	Koje Shipping SA	Samsung	Feb-21	Malta	X-DF	GT NO 96 GW	4	–	2304
Minerva Limnos	173,400	Roland Shipping SA	Daewoo	Jun-21	Greece	ME-GI	GT NO 96 GW	4	Portfolio	2482
Minerva Psara	173,400	Wimbledon Shipping SA	Daewoo	Jan-21	Malta	–	GT NO 96 GW	4	–	2481
MOL Hestia	173,400	LNG Harmonia Shipping Corp	Daewoo	Jul-21	M. Islnds.	X-DF	GT NO 96 GW	4	–	2505
Mozah	266,000	Nakilat Haloul Inc.	Samsung	Aug-09	M. Islnds.	Diesel	TZ Mk. III	5	Qatargas II	1675
Mraweh	137,000	Mraweh Ltd.	STX	Apr-96	Liberia	Steam	Moss	4	Das Island	1331
Mu Lan	174,400	Fortune Great Shipping Ltd.	Hudong Zhonghua	Aug-21	Liberia	X-DF	GT NO 96 L03+	4	Portfolio	1827A
Mubaraz	137,000	Mubaraz Ltd.	STX	Dec-95	Liberia	Steam	Moss	4	Das Island	1330
Murex	173,400	Teekay LNG Partners	Daewoo	Jul-17	Bahamas	ME-GI	GT NO 96 GW	4	Portfolio	2416
Murwab	210,100	J5 Nakilat No. 4 Ltd.	Daewoo	Jun-08	M. Islnds.	Diesel	GT NO 96	18	RasGas III	251
Myrina	173,400	Teekay Corp.	Daewoo	May-18	Bahamas	ME-GI	GT NO 96 GW	4	Portfolio	2454
Neo Energy	150,000	Sea Optima	HHI	Jan-07	Liberia	Steam	TZ Mk. III	4	Portfolio	1754
Neptune	145,130	SRV Joint Gas Ltd.	Samsung	Nov-09	Norway	–	TZ Mk. III	4	Portfolio	1688
New Apex	174,000	POS Maritime AF SA	Samsung	Jan-23	–	X-DF	–	4	Portfolio	2426
Nikolay Urvantsev	172,658	China Shipping Development Co.	Daewoo	Jul-19	H.K., China	ME-GI	GT NO 96 GW	4	Yamal	2432
Nikolay Yevgenov	172,410	Teekay Corp.	Daewoo	Apr-19	Bahamas	ME-GI	GT NO 96 GW	4	Yamal	2430
Nikolay Zubov	172,410	Arctic LNG 5 Ltd.	Daewoo	Nov-18	Cyprus	TFDE - Azipod	GT NO 96 GW	4	Yamal	2429
Nizwa LNG	147,684	Oryx LNG Carrier	Kawasaki	Dec-05	Panama	Steam	Moss	4	Oman LNG	1562
Nohshu Maru	180,000	Mitsui O.S.K. Lines	Mitsubishi	Feb-19	Bahamas	Reheat Steam Turbine	Moss	4	–	2326
Northwest Sanderling	127,525	Shell Tankers Australia	Mitsubishi	Jan-89	Australia	Steam	Moss	4	North West Shelf	1996
Northwest Sandpiper	125,042	Shell Tankers Australia	Mitsui E&S	Jan-93	Australia	Steam	Moss	4	North West Shelf	1370
Northwest Snipe	127,500	International Gas Transportation Co., Ltd.	Mitsui E&S	Jan-90	Australia	Steam	Moss	4	North West Shelf	1352
Northwest Stormpetrel	127,500	Shell Tankers Australia	Mitsubishi	Dec-94	Australia	Steam	Moss	4	North West Shelf	2074
Ob River	149,700	Lance Shipping	HHI	May-07	M. Islnds.	Steam	TZ Mk. III	4	Sakhalin II	1719
Oceanic Breeze	155,300	"K" Line - Kawasaki Kisen Kaisha	Mitsubishi	Apr-18	Japan	Reheat Steam Turbine	Moss	4	Ichthys	2310
Onaiza	210,150	Nakilat DSME 2266 Inc.	Daewoo	Apr-09	M. Islnds.	Diesel	GT NO 96	12	Qatargas III	2266
Orion Bohemia	174,000	SNC Cantica Lease	HHI	Nov-22	–	X-DF	TZ Mk. III Flex+	4	Portfolio	3187
Orion Monet	174,000	Jupiter 3 Ltd	Samsung	Apr-22	Liberia	–	–	4	–	2319
Orion Sea	170,852	Meridian 23 Ltd.	Samsung	Jan-22	Liberia	X-DF	TZ Mk. III	4	Portfolio	2336
Orion Sun	174,000	Meridian 24 Ltd.	Samsung	Jul-22	Liberia	X-DF	–	4	Portfolio	2337
Ougarta	170,000	Hyproc Shipping Co.	HHI	Mar-17	Algeria	DFDS	TZ Mk. III Flex	4	Arzew	2814
Pacific Arcadia	145,400	Bahamas LNG Shipping	Mitsubishi	Oct-14	Bahamas	–	Moss	4	PNG LNG	MHISB 2289
Pacific Breeze	180,000	"K" Line - Kawasaki Kisen Kaisha	Kawasaki	Mar-18	Japan	TFDE	Moss	4	Ichthys	1718
Pacific Enlighten	145,400	Pacific Hope Shipping	Mitsubishi	Mar-09	Panama	Steam	Moss	4	North West Shelf	2236
Pacific Mimosa	155,300	NYK Line	Mitsubishi	Mar-18	Japan	Reheat Steam Turbine	Moss	–	Wheatstone	2316
Pacific Notus	137,006	Pacific LNG Shipping	Mitsubishi	Sep-03	Bahamas	Steam	Moss	5	Darwin LNG	2176
Palu LNG	159,800	Cardiff LNG	Daewoo	Nov-14	Malta	TFDE	GT NO 96 L03	4	Spot	2400
Pan Africa	174,000	Teekay LNG Partners	Hudong Zhonghua	Jan-19	H.K., China	TFDE	GT NO 96	4	QCLNG	1666A
Pan Americas	174,000	Teekay LNG Partners	Hudong Zhonghua	Jan-18	H.K., China	TFDE	GT NO 96	4	QCLNG	H1664A
Pan Asia	174,000	Teekay LNG Partners	Hudong Zhonghua	Sep-17	H.K., China	TFDE	GT NO 96	4	QCLNG	1663A
Pan Europe	174,000	Teekay LNG Partners	Hudong Zhonghua	Jul-18	H.K., China	TFDE	GT NO 96	4	QCLNG	H1665A
Papua	170,000	Mitsui O.S.K. Lines	Hudong Zhonghua	Nov-14	H.K., China	–	GT NO 96	4	PNG LNG	H1670A
Patris	174,000	Chandris Group	Daewoo	Jan-18	Liberia	ME-GI	GT NO 96 GW	4	Freeport	2460
Pearl LNG	174,000	Cardiff LNG Delta Owning LLC	Samsung	Aug-20	Malta	X-DF	NO-96-GW+PRS	4	Portfolio	2275
Pioneer Spirit	138,121	M & S Shipping 3 S.A.	Daewoo	Jul-05	Bahamas	Steam	GT NO 96	4	Das Island	2219
Point Fortin	154,200	Los Halillos Shipping Co.	Koyo Dockyard	Jan-10	Panama	Steam	TZ Mk. III	4	Portfolio	2263
Portovenere	65,000	LNG Shipping S.p.A.	Sestri Ponente	Apr-97	Italy	Steam	GT NO 96	4	Portfolio	5910
Portovyy	138,107	Monteriggioni Inc.	Daewoo	Aug-03	Belgium	Steam	GT NO 96	4	Portfolio	2213
Prachi	162,000	India LNG Transport Company No. 4 Ltd.	HHI	Nov-16	Singapore	Diesel/Gas-Electric	TZ Mk. III Flex	–	Gorgon	2633
Prima Concord	138,267	BG Group	Samsung	May-04	Bermuda	Steam	TZ Mk. III	4	Singapore	1428
Prism Agility	180,000	SK Shipping	HHI	May-19	Panama	X-DF	TZ Mk. III Flex	4	Portfolio	2937
Prism Brilliance	180,000	SK Shipping	HHI	May-19	Panama	X-DF	TZ Mk. III Flex	4	Portfolio	2938
Prism Courage	176,462	Millenaire Financement 12 SASU	HHI	Oct-21	Panama	X-DF	TZ Mk. III Flex	4	Portfolio	2939
Prism Diversity	176,400	HHIENS4 Shipholding SA	HHI	Jun-22	M. Islnds.	X-DF	–	4	–	3145
Pskov	170,200	Sovcomflot	STX	Sep-14	Liberia	–	GT NO 96	4	Portfolio	1911
Puteri Delima	130,400	Puteri Delima S.Bhd.	STX	Jan-95	Malaysia	Steam	GT NO 96	4	MLNG II	30F
Puteri Delima Satu	137,100	MISC	Mitsui E&S	Oct-02	Malaysia	Steam	GT NO 96	4	MLNG III	1506
Puteri Firus Satu	137,100	Puteri Firus S.Bhd.	Mitsubishi	Aug-04	Malaysia	Steam	GT NO 96	4	MLNG III	2177
Puteri Intan	137,100	Puteri Intan S.Bhd.	STX	Aug-94	Malaysia	Steam	GT NO 96	4	MLNG II	30E
Puteri Mutiara Satu	137,100	MISC	Mitsui E&S	Apr-05	Malaysia	Steam	GT NO 96	4	MLNG III	1562
Puteri Nilam	130,400	Puteri Nilam S.Bhd.	STX	Jul-95	Malaysia	Steam	GT NO 96	4	MLNG II	30G
Puteri Nilam Satu	137,100	Puteri Nilam S.Bhd.	Mitsubishi	Jul-03	Malaysia	Steam	GT NO 96	4	MLNG III	2169
Puteri Zamrud	130,400	Puteri Zamrud S.Bhd.	STX	Jun-96	Malaysia	Steam	GT NO 96	4	MLNG II	30H

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Puteri Zamrud Satu	137,100	MISC	Mitsui E&S	Feb-04	Malaysia	–	GT NO 96	4	MLNG III	1507
Qogir	174,000	LNGShips	Samsung	Jun-20	Malta	X-DF	TZ Mk. III Flex	–	Portfolio	2271
Raahi	138,076	India LNG Transport Company No.2 Ltd.	Daewoo	Oct-04	Malta	Steam	GT NO 96	4	RasGas	2211
Rasheeda	266,000	Nakilat SHI 1754 Inc.	Samsung	Aug-10	M. Islnds.	Diesel	TZ Mk. III	10	Qatargas IV	1754
Rias Baixas Knutsen	180,000	Knutsen OAS Shipping	HHI	Sep-19	Norway	ME-GI	TZ Mk. III Flex	4	Corpus Christi	2964
Ribera del Duero Knutsen	173,400	Norspan LNG VIII AS	Daewoo	Dec-10	Norway	–	GT NO 96	4	Portfolio	2275
Rioja Knutsen	170,000	Norspan LNG X	HHI	Dec-16	Norway	ME-GI	TZ Mk. III Flex	4	Portfolio	2734
Rudolf Samoylovich	172,410	Teekay Corp.	Daewoo	Aug-18	Bahamas	ME-GI	GT NO 96 GW	4	Yamal	2425
Salalah LNG	147,000	Tiwi LNG Carrier S.A.	Samsung	Dec-05	Panama	Steam	TZ Mk. III	4	Oman LNG	1536
Santander Knutsen	174,000	Sea 194 Leasing Co Ltd.	Hyundai Samho	Jun-22	Norway	X-DF	TZ Mk. III Flex+	4	Portfolio	8091
SCF La Perouse	174,000	Albus Shipping Ltd.	HHI	Feb-20	Liberia	X-DF	NO-96-GW+PRS	4	Portfolio	8006
Seapeak Arctic	89,800	Artic Spirit LLC	Ishikawajima	Dec-93	Liberia	Steam	IHI SPB	4	Atlantic LNG	3016
Seapeak Arwa	165,500	Membrane Shipping	Samsung	Aug-08	M. Islnds.	Diesel/Gas-Electric	TZ Mk. III	4	Balhaf	1625
Seapeak Catalunya	138,000	Teekay Shipping Spain S.L.	Izar	Jun-03	Spain	Steam	GT NO 96	4	Atlantic LNG	319
Seapeak Creole	173,400	Teekay LNG Partners	Daewoo	Feb-16	Bahamas	ME-GI	GT NO 96 GW	–	Sabine Pass	2407
Seapeak Galicia	140,624	Teekay Gas II	Daewoo	Jul-07	Liberia	Steam	GT NO 96	4	Portfolio	2209
Seapeak Glasgow	174,162	Teekay LNG Partners	Hyundai Samho	Dec-18	Bermuda	ME-GI	TZ Mk. III Flex	–	Freeport	S856
Seapeak Hispania	145,500	Teekay Gas Naviera SL	Daewoo	Aug-02	Spain	Steam	GT NO 96	4	Peru LNG	2205
Seapeak Madrid	138,000	Teekay Shipping Spain S.L.	Navantia	Dec-04	Spain	Steam	GT NO 96	4	Atlantic LNG	105
Seapeak Magellan	165,500	Magellan Spirit ApS	Samsung	Apr-09	Denmark	Diesel/Gas-Electric	TZ Mk. III	4	Portfolio	1626
Seapeak Marib	165,500	Membrane Shipping	Samsung	Apr-08	M. Islnds.	Diesel/Gas-Electric	TZ Mk. III	4	Balhaf	1608
Seapeak Meridian	165,500	Meridian Spirit Aps	Samsung	Jan-10	Denmark	Diesel/Gas-Electric	TZ Mk. III	4	Portfolio	1633
Seapeak Methane	165,500	Malt Singapore Pvt. Ltd.	Samsung	Feb-08	M. Islnds.	Diesel/Gas-Electric	TZ Mk. III	4	Atlantic LNG	1607
Seapeak Oak	173,400	Teekay LNG Partners	Daewoo	Mar-16	Bahamas	ME-GI	GT NO 96 GW	–	Sabine Pass	2408
Seapeak Polar	89,800	Polar Spirit LLC	Ishikawajima	Jun-93	Liberia	Steam	IHI SPB	4	Atlantic LNG	3015
Seapeak Vancouver	173,400	Teekay LNG Partners	Daewoo	Nov-16	Bahamas	ME-GI	GT NO 96 GW	–	Portfolio	2411
Seapeak Yamal	174,000	Teekay LNG Partners	Hyundai Samho	Jan-19	Bermuda	ME-GI	TZ Mk. III Flex	–	Freeport	S857
Seishu Maru	138,000	Mitsui O.S.K. Lines	Mitsubishi	Sep-14	Bahamas	–	Moss	4	PNG LNG	2297
Seri Alam	145,572	MISC	Samsung	Jul-05	Malaysia	–	TZ Mk. III	4	Bintulu	1502
Seri Amanah	145,709	MISC	Samsung	Mar-06	Malaysia	Steam	TZ Mk. III	4	Bintulu	1503
Seri Anggun	145,731	MISC	Samsung	Oct-06	Malaysia	Steam	TZ Mk. III	4	North West Shelf	1589
Seri Angkasa	145,130	MISC	Samsung	Dec-06	Malaysia	Steam	TZ Mk. III	4	Bintulu	1590
Seri Ayu	145,894	MISC	Samsung	Oct-07	Malaysia	Steam	TZ Mk. III	4	Bintulu	1591
Seri Bakti	152,944	MISC	Mitsubishi	Apr-07	Malaysia	Steam	GT NO 96	4	Gladstone	2220
Seri Balhaf	152,000	MISC	Mitsubishi	Jan-09	Malaysia	Steam	GT NO 96	4	Bontang	2223
Seri Balqis	152,000	MISC	Mitsubishi	Mar-09	Malaysia	Steam	GT NO 96	4	NLNG	2224
Seri Begawan	152,900	MISC	Mitsubishi	Nov-07	Malaysia	Steam	GT NO 96	4	Bintulu	2221
Seri Bijaksana	152,300	MISC	Mitsubishi	Apr-08	Malaysia	Steam	GT NO 96	4	Bintulu	2222
Seri Camar	150,000	MISC	HHI	Feb-18	Malaysia	Ultra Steam Turbine	Moss	4	Pacific Northwest	2732
Seri Camellia	159,800	MISC	HHI	Sep-16	Malaysia	Ultra Steam Turbine	TZ Mk. III Flex	4	Pacific Northwest	2729
Seri Cemara	150,200	MISC	HHI	Apr-18	Malaysia	Ultra Steam Turbine	Moss	4	Portfolio	2735
Seri Cempaka	162,000	MISC	HHI	Aug-17	Malaysia	Ultra Steam Turbine	TZ Mk. III Flex	4	Pacific Northwest	2731
Seri Cenderawasih	162,000	MISC	HHI	Feb-17	Malaysia	Ultra Steam Turbine	Moss	4	Pacific Northwest	2730
Seri Demai	174,000	Polaris LNG One Pte Ltd	Samsung	0Feb-23	Singapore	X-DF	Mark III Flex Plus	4	Portfolio	2364
Sestao Knutsen	136,947	Norspan LNG IV AS	Navantia Cadiz	Oct-07	Spain	Steam	GT NO 96	4	Portfolio	331
Sevilla Knutsen	173,400	Norspan LNG VI AS	Daewoo	May-10	Spain	Diesel/Gas-Electric	GT NO 96	4	Portfolio	2269
Shagra	268,000	Nakilat SHI 1751 Inc.	Samsung	Nov-09	M. Islnds.	Diesel	TZ Mk. III	10	Qatargas IV	1751
Shahamah	135,496	Shahamah Inc.	Kawasaki	Oct-94	Liberia	Steam	Moss	5	Das Island	1438
Shandong Juniper	135,269	Shell Bermuda (Overseas) Ltd.	Mitsubishi	Feb-04	Singapore	Steam	Moss	5	Peru LNG	2183
Shaolin	174,400	United Prosperity LNG Shipping Co Ltd	Hudong Zhonghua	Oct-22	H.K., China	X-DF	–	4	Portfolio	H1831A
Shen Hai	147,200	Shanghai LNG Shipping Co.	Hudong Zhonghua	Dec-12	H.K., China	Steam	GT NO 96	4	Bintulu	H1621A
Shinshu Maru	180,000	Mitsui O.S.K. Lines	Kawasaki	Feb-19	Japan	DERST (aka STaGE)	Moss	4	Freeport	1734
Simaisma	145,889	Greenwell Corporation	Daewoo	Jul-06	Bermuda	Steam	GT NO 96	8	RasGas II	2235
Singapore Energy	138,000	Sea Breeze Leasing	Samsung	Feb-03	Isle of Man	Steam	TZ Mk. III	4	Portfolio	1416
SK Audace	174,000	Milestone LNG Transport	Samsung	Aug-17	Panama	X-DF	TZ Mk. III Flex	4	Portfolio	2080
SK Resolute	180,000	Milestone LNG Transport	Samsung	Nov-17	Panama	X-DF	TZ Mk. III Flex	4	Ichthys	2081
SK Serenity	174,000	SK Shipping	Samsung	Feb-18	South Korea	TFDE	KC-1	4	Sabine Pass	2153
SK Spica	174,117	SK Shipping	Samsung	Mar-18	South Korea	TFDE	KC-1	–	Sabine Pass	2154
SK Splendor	138,370	Optima Leasing	Samsung	May-00	Panama	Steam	TZ Mk. III	4	Oman LNG	1258
SK Stellar	138,375	Stellar Shipholding	Samsung	Dec-00	Panama	Steam	TZ Mk. III	4	RasGas I	1259
SK Summit	138,003	Omnia Enterprises	Daewoo	Aug-99	Panama	Steam	GT NO 96	4	RasGas I	2202
SK Sunrise	138,306	Methane Navigation S.A.	Samsung	Aug-03	Panama	Steam	TZ Mk. III	4	RasGas II	1405
SK Supreme	138,225	Celeste Maritime	Samsung	Feb-00	Panama	Steam	TZ Mk. III	4	RasGas I	1207
SM Albatross	174,000	SMKLC LNG3 SA	HHI	Jul-22	Panama	X-DF	TZ Mk. III Flex+	4	Portfolio	3185

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SM Bluebird	174,000	SMKLC LNG4 SA	HHI	Sep-22	Panama	X-DF	TZ Mk. III Flex+	4	Portfolio	3186
SM Eagle	174,000	Korea Line Corp.	Daewoo	May-17	Panama	ME-GI	GT NO 96 GW	4	Sabine Pass	2449
SM Seahawk	174,000	Korea Line Corp.	Daewoo	Jun-17	Panama	ME-GI	GT NO 96 GW	4	Sabine Pass	2450
Sohar LNG	137,248	Energy Spring LNG Carriers	Mitsubishi	Oct-01	Malta	Steam	Moss	5	Oman LNG	2162
Sohshu Maru	177,000	Mitsui O.S.K. Lines	Kawasaki	Jul-19	Japan	DERST (aka STaGE)	Moss	4	Freeport	1735
Solaris	155,000	GasLog	Samsung	Jul-14	Bermuda	Diesel/Gas-Electric	TZ Mk. III	4	Portfolio	2042
Sonangol Benguela	160,500	Sonangol Benguela Ltd.	Daewoo	Dec-11	Bahamas	–	GT NO 96	4	Soyo	2282
Sonangol Etosha	160,500	Sonangol Etosha Ltd.	Daewoo	Sep-11	Bahamas	–	GT NO 96	4	Soyo	2281
Sonangol Sambizanga	160,500	Sonangol Sambizanga Ltd.	Daewoo	Aug-11	Bahamas	–	GT NO 96	4	Soyo	2280
Southern Cross	172,000	Mitsui O.S.K. Lines	Hudong Zhonghua	Jul-15	H.K., China	ME-GI	GT NO 96	4	PNG LNG	H1671A
Soyo	160,276	Mint LNG I	Samsung	Aug-11	Bahamas	–	TZ Mk. III	4	Soyo	1810
Spirit of Hela	177,000	Nefertiti LNG Shipping Co.	Hyundai Samho	Nov-10	Bahamas	Diesel Electric	TZ Mk. III	4	PNG LNG	S324
Stena Blue Sky	145,700	Blue Sky LNG	Daewoo	Aug-06	Panama	Steam	GT NO 96	4	Spot	2233
Stena Clear Sky	171,800	Clear Sky LNG Shipping	Daewoo	May-11	U.K.	Diesel/Gas-Electric	GT NO 96	4	Portfolio	2278
Stena Crystal Sky	171,800	Stena Drilling Cyprus	Daewoo	May-11	U.K.	Diesel/Gas-Electric	GT NO 96	4	Portfolio	2268
Symphonic Breeze	145,394	Reborn Maritime	Kawasaki	Dec-07	Bahamas	Steam	Moss	4	Portfolio	H1587
Taitar No 1	145,000	NiMic No 1 S.A.	Mitsubishi	Oct-09	Panama	–	Moss	4	RasGas	2241
Taitar No 2	145,000	NiMic No 2 S.A.	Kawasaki	Dec-09	Panama	–	Moss	4	RasGas	1625
Taitar No 3	145,000	NiMic No 3 S.A.	Mitsubishi	Dec-09	Panama	–	Moss	4	RasGas	2242
Taitar No 4	147,000	NiMic No 4 S.A.	Kawasaki	Aug-10	Panama	–	Moss	4	RasGas	1626
Tangguh Batur	145,700	LNG North-South Shipping Co.	Daewoo	Dec-08	Singapore	Steam	GT NO 96	4	Tangguh	2242
Tangguh Foja	155,000	Ocean 1919 Shipping No. 1	Samsung	Nov-08	Panama	–	TZ Mk. III	4	Tangguh	1619
Tangguh Hiri	155,000	Tangguh Hiri Finance Ltd.	HHI	Dec-08	Isle of Man	–	TZ Mk. III	4	Tangguh	1780
Tangguh Jaya	155,000	Ocean 1919 Shipping No. 2	Samsung	Dec-08	Panama	–	TZ Mk. III	4	Tangguh	1620
Tangguh Palung	155,000	Ocean 1919 Shipping No. 3	Samsung	Mar-09	Panama	–	TZ Mk. III	4	Tangguh	1634
Tangguh Sago	155,000	Teekay Shipping (Canada) Limited	Hyundai Samho	Dec-08	Bahamas	Diesel/Gas-Electric	TZ Mk. III	4	Tangguh	S298
Tangguh Towuti	145,700	LNG East-West Shipping Co.	Daewoo	Oct-08	Singapore	Steam	GT NO 96	4	Tangguh	2241
Tembek	216,200	Overseas LNG S1 Corp.	Samsung	Nov-07	M. Islnds.	Diesel	TZ Mk. III	4	Qatargas II	1605
Tenergy	170,520	Briety Shipping Inc	HHI	Jan-22	Greece	X-DF	TZ Mk. III	4	Portfolio	3157
Tessala	170,000	Hyproc Shipping Co.	HHI	Feb-17	Algeria	Diesel/Gas-Electric	TZ Mk. III Flex	–	Arzew	2813
Trader II	138,000	K Line LNG Shipping (UK) Ltd.	Samsung	Nov-02	Isle of Man	Steam	TZ Mk. III	4	Portfolio	1380
Trader III	137,100	MISC	Mitsubishi	Aug-02	Malaysia	Steam	GT NO 96	4	MLNG III	2165
Traiano Knutsen	180,000	Hai Kuo Shipping 1901 G Ltd.	HHI	Jul-20	Belgium	ME-GI	TZ Mk. III Flex	4	Portfolio	3086
Trinity Arrow	154,982	Luster Maritime S.A. & Cypress Maritime Panama & Los Halillos Shipping Co.	Koyo Dockyard	Feb-08	Panama	Steam	TZ Mk. III	4	Portfolio	2258
Trinity Glory	154,000	Cypress Maritime Consortium	Koyo Dockyard	Nov-08	Panama	Steam	TZ Mk. III	4	Bontang	2260
Tristar Ruby	155,000	RBSSAF (19) Ltd.	HHI	Apr-08	Isle of Man	Diesel/Gas-Electric	TZ Mk. III	4	Portfolio	1778
Umm Al Amad	210,200	J5 Nakilat No. 7 Ltd.	Daewoo	Sep-08	M. Islnds.	Diesel	GT NO 96	18	RasGas III	2253
Umm Al Ashtan	137,000	Umm Al Ashtan Ltd.	STX	May-97	Liberia	Steam	Moss	4	Das Island	1333
Umm Bab	145,000	Sea Trade International Inc.	Daewoo	Nov-05	Greece	Steam	GT NO 96	4	RasGas II	2228
Umm Slal	266,000	Nakilat Umm Slal Inc.	Samsung	Nov-08	M. Islnds.	–	TZ Mk. III	5	Qatargas II	1676
Valencia Knutsen	173,400	Norspan LNG VII AS	Daewoo	Sep-10	Spain	–	GT NO 96	4	Portfolio	2274
Velikiy Novgorod	170,200	Sovcomflot	STX	Dec-13	Liberia	–	GT NO 96	4	Portfolio	1910
Vivit Americas LNG	174,000	Cardiff LNG Zeta Owning LLC	HHI	Oct-20	Malta	X-DF	TZ Mk. III Flex	4	Portfolio	3037
Vivit Arabia LNG	174,000	Kaiser 2 SA	Hyundai Samho	Jun-22	Liberia	X-DF	TZ Mk. III Flex	4	Portfolio	8026
Vivit City LNG	174,103	Kaiser SA	Hyundai Samho	Dec-21	Liberia	X-DF	TZ Mk. III Flex	4	Portfolio	8025
Vladimir Rusanov	174,000	Mitsui O.S.K. Lines	Daewoo	Jan-18	Bahamas	ME-GI	GT NO 96 GW	4	Yamal	2424
Vladimir Vize	172,000	China Shipping Development Co.	Daewoo	Sep-18	H.K., China	ME-GI	GT NO 96 GW	4	Yamal	2426
Vladimir Voronin	172,652	Teekay Corp.	Daewoo	Jul-19	Bahamas	ME-GI	GT NO 96 GW	4	Yamal	2431
WilForce	155,900	Wilforce LLC	Daewoo	Sep-13	Norway	–	GT NO 96	4	–	H2289
WilPride	155,900	Wilpride LLC	Daewoo	Nov-13	Norway	–	GT NO 96	4	–	H2290
Woodside Chaney	174,000	Maran Gas Maritime	Daewoo	Jul-19	Greece	ME-GI	GT NO 96 GW	4	Portfolio	2457
Woodside Charles Allen	173,400	Hai Kuo Shipping 2027G Ltd.	Daewoo	Oct-20	Greece	ME-GI	GT NO 96 GW	4	Portfolio	2486
Woodside Donaldson	165,500	Malt Singapore Pvt. Ltd.	Samsung	Oct-09	Singapore	Diesel/Gas-Electric	TZ Mk. III	4	Pluto	1632
Woodside Goode	159,800	Armour Company Ltd.	Daewoo	Nov-13	Greece	Diesel Electric	GT NO 96 GW	4	RasGas	H2295
Woodside Rees Withers	173,400	Maran Gas Maritime	Daewoo	Oct-19	Greece	ME-GI	GT NO 96 GW	4	–	2466
Woodside Rogers	159,800	Margie Seaway Corp.	Daewoo	Jul-13	Greece	Diesel/Gas-Electric	GT NO 96 GW	4	Pluto	H2288
Wudang	174,400	United Glory LNG Shipping Co Ltd	Hudong Zhonghua	Oct-22	–	X-DF	–	4	Portfolio	H1832A
Yakov Gakkel	172,658	DSME Hull No.2434 LLC	Daewoo	Nov-19	Bahamas	ME-GI	GT NO 96 GW	4	Yamal	2434
Yari LNG	159,800	Cardiff LNG	Daewoo	Nov-14	Malta	TFDE	GT NO 96 L03	4	Spot	2401
Yenisei River	155,000	Navajo Marine	HHI	Jul-13	M. Islnds.	–	TZ Mk. III	4	Yamal	2556
Yiannis	169,932	Onerato Marine SA	Daewoo	Sep-21	Greece	ME-GI	GT NO 96 GW	4	Portfolio	2501
YK Sovereign	127,125	SK Shipping	HHI	Dec-94	Panama	Steam	Moss	4	MLNG	761
Zarga	268,000	Nakilat SHI 1752 Inc.	Samsung	Jan-10	M. Islnds.	–	TZ Mk. III	5	Qatargas IV	1752
Zekreet	137,482	Mitsui O.S.K. Lines	Mitsui E&S	Dec-98	Japan	Steam	Moss	5	Qatargas I	1432

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Fleet – LNG Bunkering

Name	Built	Capacity	Registered Owner	Builder	Flag	Engine Type	Cargo System	No. of tanks	Project
Seagas	Sep-74	170	Linde Gas AB	Havyard Leirvik	Sweden	Diesel	Cylinder	1	Stockholm Viking Line
Coral Methane	Apr-09	7,551	Coral Methane Shipping BV	AVIC Dingheng	Netherlands	Gas-Diesel	Cylinder	4	Portfolio
Oizmendi	Jul-09	600	Itsas Gas Bunker Supply SL	Astilleros Zamakona	Spain	Diesel	Cylinder	2	Huelva
Green Zeebrugge	Feb-17	5,000	LNG Link Investment AS	Hanjin Heavy Industries	Belgium	Diesel/Gas-Electric	Cylinder	2	Zeebrugge
Cardissa	Jun-17	6,500	Shell Western LNG BV	STX	Netherlands	Diesel/Gas-Electric	Cylinder	1	Portfolio
Coralius	Aug-17	5,800	Sirius Veder Gas AB	Bodewes Shipyards	Sweden	DFDE	Cylinder	4	Portfolio
Kairos	Oct-18	7,500	Uranos Vermögensverwaltung	Hyundai Mipo	Cyprus	Gas-Diesel	Type C	4	Portfolio
Bunker Breeze	Oct-18	6,050	Molucas Naviera AIE	Astilleros Zamakona	Spain	Gas-Diesel	Cylinder	4	Algeciras
LNG London	Apr-19	3,000	LNG Shipping S.A.	Severnav S.A.	Belgium	LNGPac	Cylinder	6	ARA
SM Jeju LNG 1	Sep-19	7,500	Jeju LNG 1 S.A.	Samsung	Panama	Diesel/Gas-Electric	KC-1	1	Portfolio
SM Jeju LNG 2	Jan-20	7,500	Jeju LNG 2 S.A.	Samsung	Panama	Diesel/Gas-Electric	KC-1	1	Portfolio
Gas Agility	Apr-20	18,600	Emerald Green Maritime Ltd.	Hudong Zhonghua	Malta	DFDE	TZ Mk III Flex	2	Rotterdam
Kaguya	Sep-20	3,469	Central LNG Shipping Japan	Kawasaki	Japan	Gas-Diesel	Cylinder	1	JERA TPS
Avenir Advantage	Oct-20	7,500	Avenir L Pte Ltd.	Keppel Nantong	Malta	Gas-Diesel	Type C	2	Portfolio
Avenir Accolade	Nov-20	7,500	Stolt-Nielsen Gas Ltd.	Keppel Nantong	Malta	Gas-Diesel	Type C	2	Portfolio
FueLNG Bellina	Nov-20	7,500	FueLNG Pte Ltd.	Kappel Nantong	Singapore	Diesel/Gas-Electric	Cylinder	2	Portfolio
Dalian No. 1	Dec-20	8,330	Xinao Marine Shipping Co. Ltd.	Dalian Yard	China	Gas-Diesel	Cylinder	2	Portfolio
Marine Vicky	Jan-20	9,900	Sinanju Tankers Pte. Ltd.	Keppel Nantong	Singapore	Gas-Diesel	TBC	TBC	Portfolio
Imperial Gas 92	Oct-17	3,800	Imperial Logistics International BV & Co. KG	Centromost	Germany	Diesel	Cylinder	TBC	Portfolio
Imperial Gas 93	Nov-17	3,800	Imperial Logistics International BV & Co. KG	Centromost	Germany	Diesel	Cylinder	TBC	Portfolio

Fleet – Small-scale/Multipurpose

Name	Built	Capacity	Registered Owner	Builder	Flag	Engine Type	Cargo System	No. of tanks	Project
Akebono Maru	Jun-11	3,500	Chuo Kaiun K.K.	Higaki	Japan	Diesel	Cylinders	2	Japan coastal trade
Aman Sendai	May-97	18,928	Asia LNG Transport	NKK	Malaysia	Steam	TZ Mk. III	3	Malaysia LNG
Coral Acropora	Dec-12	6,573	Coral Acropora Shipping	AVIC Dingheng	Netherlands	Gas-Diesel	Cylinders	4	Portfolio
Coral Actinia	Jan-13	6,573	Coral Actinia Shipping	AVIC Dingheng	Netherlands	Gas-Diesel	Cylinders	4	Portfolio
Coral Alicia	Dec-12	6,573	Coral Alicia Shipping	AVIC Dingheng	Netherlands	Gas-Diesel	Cylinders	4	Portfolio
Coral Anthelia	May-13	6,500	Coral Anthelia Shipping	AVIC Dingheng	Netherlands	Gas-Diesel	Cylinders	4	Portfolio
Coral Energice	Feb-18	18,000	Anthony Veder Chartering	Neptun Werft	Netherlands	Gas-Diesel	TZ MK. III Flex	2	Portfolio
Coral Energy	Dec-12	15,600	Anthony Veder Rederijzaken	Meyer Werft	Netherlands	Gas-Diesel	IMO Type C	3	Portfolio
Coral Favia	Jul-10	10,000	Somargas II Pvt. Ltd.	Wuzhou Shipbuilding	Singapore	Diesel	Cylinders	2	Baltic portfolio
Coral Fraseri	Jan-10	10,000	Innovation Shipping Co.	Wuzhou Shipbuilding	Singapore	Diesel	Cylinders	2	Portfolio
Coral Fungia	Jan-11	10,000	Somargas II Pvt. Ltd.	Wuzhou Shipbuilding	Singapore	Diesel	Cylinders	2	Baltic portfolio
Coral Furcata	Nov-11	10,000	Conception Shipping Company	Wuzhou Shipbuilding	Singapore	Diesel	Cylinders	2	Portfolio
Hai Yang Shi You 301	Apr-15	30,000	COSL	Jiangnan Shipyard	China	Gas-Diesel	Membrane	4	Hainan LNG shuttle
Kakurei Maru	Nov-08	2,536	Tsurumi Sunmarine Co.	Higaki	Japan	Diesel	Cylinders	2	Japan coastal trade
Kakuyu Maru	Nov-13	2,538	Tsurumi Sunmarine Co.	Kawasaki	Japan	Diesel	Cylinders	1	Japan coastal trade
Lucia Ambition	Dec-93	18,927	Asia LNG Transport	NKK	Malaysia	Steam	TZ Mk. III	3	Malaysia-Hainan
North Pioneer	Nov-05	2,500	Japan Liquid & Gas Transport Co. & Japan Railway Agency	Shin Kurushima	Japan	Diesel	Cylinders	2	Japan coastal trade
Pioneer Knutsen	Mar-04	1,100	Knutsen Kyst LNG K/S	Bijlsma Lemmer B.V. Scheepswerf	Norway	LNG-Diesel	Cylinders	2	Norway coastal trade
Ravenna Knutsen	Feb-21	30,000	Norspan LNG 14 AS	Hyundai Mipo	Spain	X-DF	Cylinders	3	Italy coastal trade
Seoul Gas	Jul-98	4,365	Chemgas Schiffahrts GmbH & Co. mt Oste KG	Severnav Shipbuilding	Liberia	Diesel	Cylinders	2	S. Korea-China
Shinju Maru No. 1	Aug-03	2,538	JRTT & NS United Coastal Tankers	Kawasaki	Japan	Diesel	Cylinders	2	Japan coastal trade
Shinju Maru No. 2	Oct-08	2,536	Chuo Kaiun K.K.	Higaki	Japan	Diesel	Cylinders	2	Japan coastal trade
Sun Arrows	Sep-07	19,531	Maple LNG Transport Inc.	Kawasaki	Bahamas	Diesel	Moss	3	Malaysia LNG
Surya Aki	Feb-96	19,538	MCGC International Limited & Hiroshima Gas Co.	Kawasaki	Bahamas	Steam	Moss	3	Thanlyin LNG
Triputra	Dec-00	23,097	Nusantara Shipping	NKK	Indonesia	Steam	TZ Mk. III	3	Pertamina Portfolio
Unikum Spirit	Jun-11	12,000	DHJS Hull No.2007-001 LLC	AVIC Dingheng	Singapore	Diesel	Cylinders	2	Kuantan
Vision Spirit	Sep-11	12,000	I.M. Skaugen Marine Services	AVIC Dingheng	Singapore	Diesel	Cylinders	2	Portfolio

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



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A handwritten signature in blue ink, likely belonging to Jill Evanko.

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