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Muddling through – challenges to Russia's LNG economy

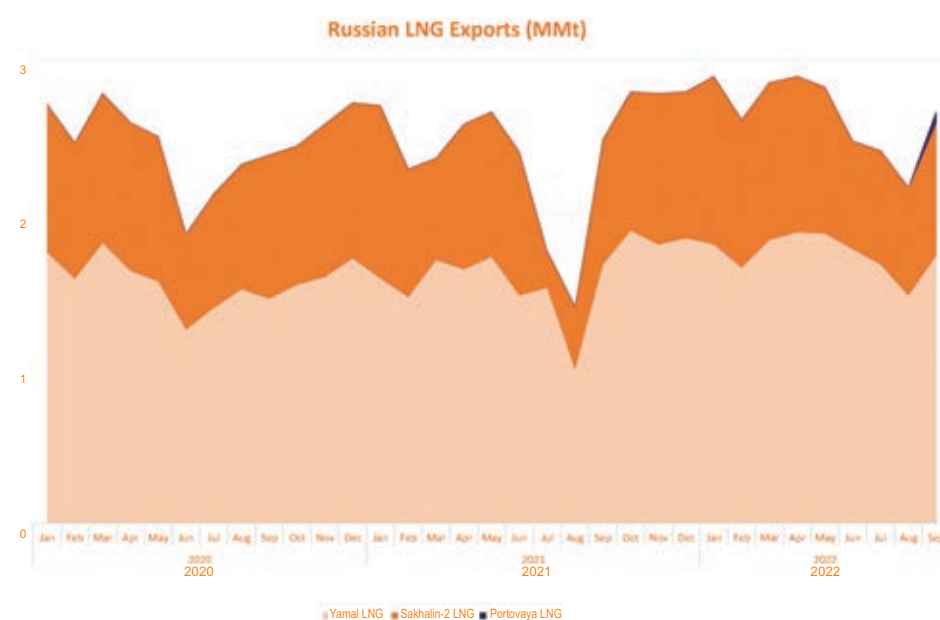
Russia's LNG economy has taken several hurdles since the Ukraine invasion but the going is likely to get tougher, our Markets Editor Alexander Wilk writes.

With serious damage to Nord Stream and suspicions of sabotage, Russia has lost a major gas pathway into Europe it cannot easily replace, even if sanctions were lifted immediately. However, the country's LNG exports still offer bright spots in a wider energy market that has toughened considerably for Russia.

Importantly, Russian LNG from Yamal has continued to flow into Europe. Volumes even climbed to new heights between March and May this year until China drew cargoes away during the summer. Even at their lowest level Yamal exports to Europe were almost double what they had been at the same time in 2021, and they have now begun to increase again.

LNG cargoes are also among the few energy exports not currently captured by an EU-mandated stop to energy imports from Russia. The only sanctions imposed on LNG were by Russia after the German government took over Gazprom's German assets. As a result, German government-controlled Gazprom Marketing & Trading (GM&T) has been denied access to its contracted supply from Yamal LNG – amounting to 2.9 million tonnes per annum (mtpa) – after the German government appointed the Bundesnetzagentur, an independent German regulatory authority, as fiduciary for GM&T's parent Gazprom Germania GmbH (now renamed to SEFE) in early April.

Originally, the Bundesnetzagentur was to remain in control of SEFE as trustee with 'full directorial powers' until the end of September. Germany's Federal Ministry for Economic Affairs and Climate Action initially justified the move with SEFE's attempt to transfer 'the company's shares to a company based abroad' without regulatory approval. However, with an impending gas crunch, the German government decided in June



to extend that trusteeship 'beyond September 2022' for reasons of energy security. Apart from owning GM&T, SEFE is also instrumental to the wider German gas economy, owning operating stakes in 'large natural gas storage facilities in Germany and Austria' and two 'German transmission system operators', according to a notice issued by the Bundesnetzagentur.

New Baltic LNG Outlet

As part of the increase in flows to Europe, Russia exported Portovaya LNG's maiden cargo to Greece earlier this month, which marks the first full-scale LNG cargo lifting from an LNG outlet in the Baltic. Our data show the LNG carrier Pskov lifted 0.07mmt from the Portovyy FSU on 13 September and delivered it to the Revithoussa terminal in Greece at the beginning of October. Shortly after, the Velkiy Novgorod lifted another 0.06mmt. At the time of writing, the Pskov was preparing for Portovaya's third cargo loading.

Portovaya LNG is designed to produce 1.5mtpa and sources feedgas via the Gryazovets-Vyborg trunkline – which had

previously been supplying Nord Stream's Line 1 – from Gazprom fields in Western Siberia and the Yamal Peninsula. The Portovaya plant uses Linde's LIMUM technology to cool down its feedgas. The plant's market entry had been subject to repeated, but unspecified, delays since 2018.

The FSU Portovyy – formerly known as the LNG carrier Excel (2003-built) and converted by Gazprom – anchored off the Portovaya LNG plant in the wider Leningrad region close to Finland's Baltic coast on 19th August, our data show. The 138,000 cu.m. vessel is serving as the floating storage unit for the plant. Part of the FSU conversion was 'ice-proofing' the ship to help it withstand harsh winter conditions, including a specialised ice-belt on its hull.

But a trickle...

Of course, LNG flows from Portovaya – roughly two cargoes per month – are but a trickle compared to what would have been exported via the Nordstream trunklines. The Nordstream 2 consortium did not manage to have the second trunkline along the Baltic seabed

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Maritime Content Ltd

2 Prospect Road
St Albans AL1 2AX
United Kingdom
www.LNGjournal.com
+44 (0)20 7253 2700

Publisher

Stuart Fryer

Markets & Commissioning Editor

Anja Karl
anja@lngjournal.com

Markets Editor

Alexander Wilk
alexander@lngjournal.com

Technical Editor

Ian Cochran
Iancochran74@gmail.com

Fuelling Editor

Malcolm Ramsay
malcolmramsay@gmail.com

Advertising

David Jeffries, Only Media Ltd
Tel: +44 (0) 208 150 5293
djeffries@lngjournal.com

Subscriptions Sales Manager

Stephan Venter
venter@lngjournal.com

Subscriptions Renewals Manager & Customer Care

Gabi Weck
gabi@lngjournal.com

Production

Vivian Chee
chee@btconnect.com

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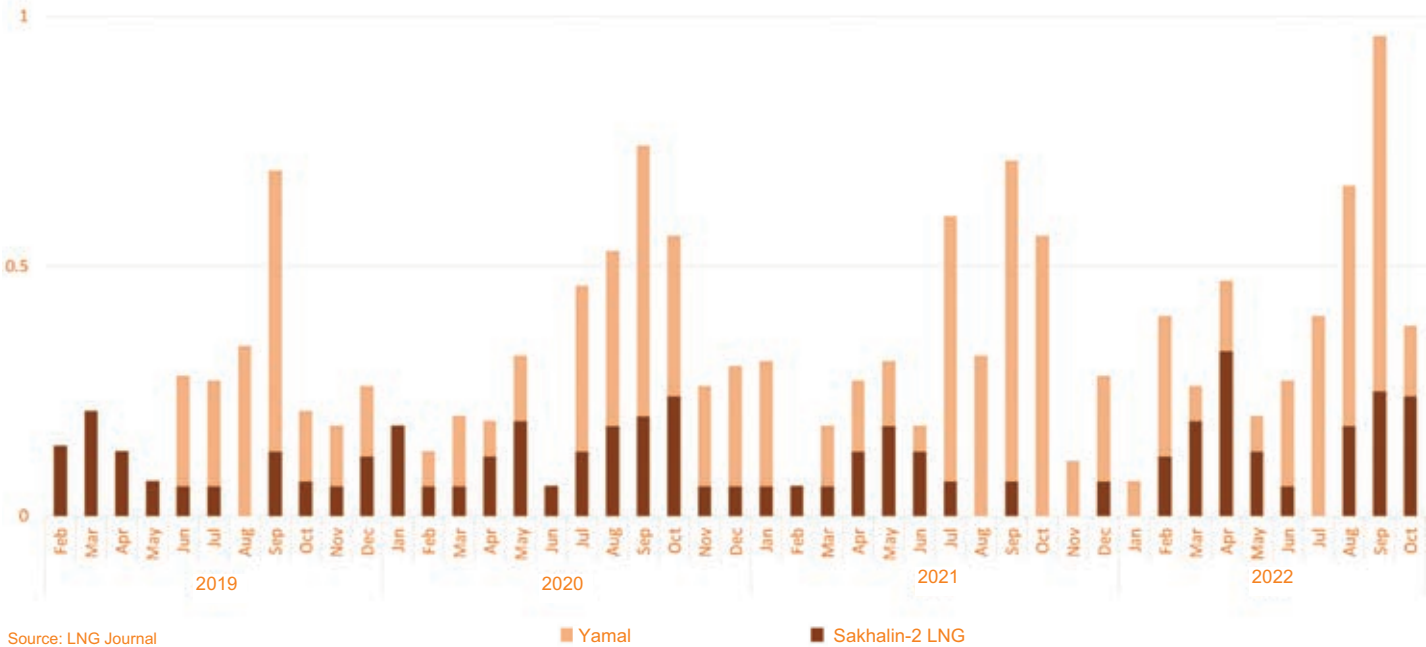
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Russian LNG Exports to China (MMt)



approved for commercial operations in 2021 whilst Russia's invasion of Ukraine in February 2022 has resulted in both EU and Russian sanctions and restrictions that resulted in a full stop of Russian pipeline gas exports to Western Europe.

Long-term plan

Russia's global LNG market share hovered close to 9 percent in 2019 and 2020, our data show. That market share narrowed to around 5 percent in August 2021 due to maintenance at Sakhalin-2 LNG. It rose back to 8.28 percent in September 2021 but had remained broadly flat at 8.55 percent in September this year, our data show. Previously, the Russian government had launched a long-term strategy for expanding its LNG industry. The aim was to monetise the country's abundant gas supply to increase LNG market share to 20 percent and diversify its customer base by 2035.

Far Eastern Gains

Exports from the relatively small Portovaya outlet have added to export growth totalling 3.07mmt (15 percent) from Yamal LNG in the Atlantic Basin and Sakhalin-2 LNG in the Pacific, our data show. As a result, both plants frequently produce at or beyond their annualised nameplate capacities. These flows have mainly been underpinned by exports to Japan, France and China. China in particular has ramped up its imports of liquefied natural gas from Russia to record levels in September despite a decline in overall LNG imports, our data show. Russia's LNG exports to China from both Yamal LNG and

Sakhalin-2 LNG increased by 0.30mmt (45 percent) month-on-month and were up by 0.25mmt (35 percent) year-on-year in September. Although pro rata October shipments were still trailing their 2021 counterparts by roughly two cargoes or 0.18mmt (32 percent) at the time of writing, for the year to date they were up by 0.57mmt (16 percent).

These increases occurred despite weaker Chinese demand in 2022 compared to 2021 due to the country's ongoing zero-COVID policy and high spot prices. Our data show China's LNG demand was down by 22 percent year-on-year at the time of writing. Liang Wannian, Head of the National Health Commission's expert group on epidemic control, reiterated in mid-October the central government would maintain that policy, or "dynamic clearing", until further notice.

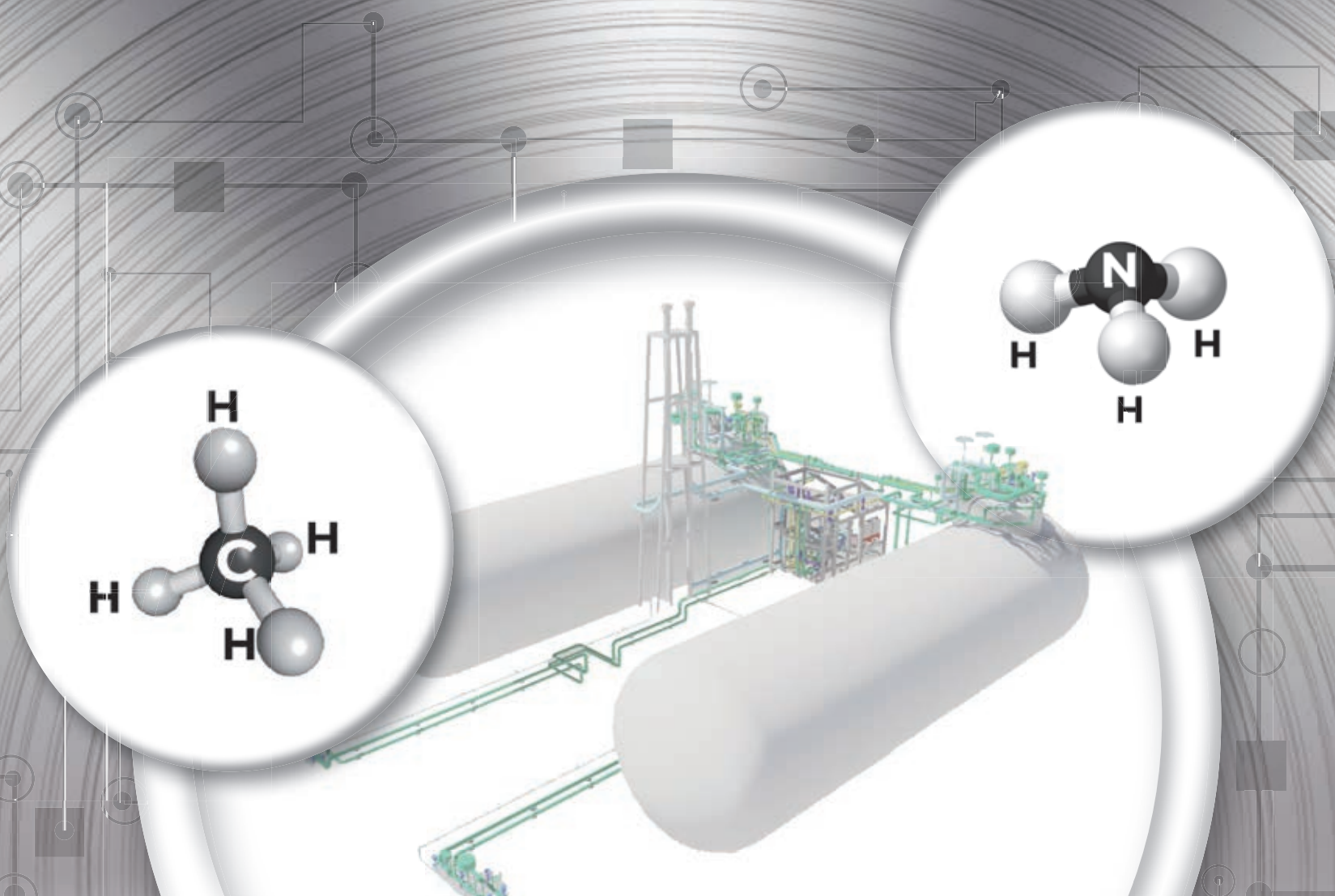
However, China has also been taking advantage of discounted deliveries of Russian energy, comprising LNG, oil and coal, Chinese customs data suggest. Unfortunately, as we have reported earlier this year, China does not longer disclose import volumes of pipeline gas but flows through the Power of Siberia trunkline are likely to also have seen an increase.

China has thus become one of Russia's key energy buyers in the Far East following the Russian invasion of Ukraine. Sanctions imposed by the European Union encompass a ban on coal imports since August while an embargo on seaborne imports of Russian crude oil is due to come into effect at the beginning of December. A stop to EU imports of Russian refined oil

products is set to being in February next year. Whilst there has not been an EU-mandated stop to imports of Russian LNG, European offtakes of that supply have nonetheless decreased this year, our data show. These imports were down by 2.67mmt for the year to September at the time of writing on 26 October. Meanwhile, exports from Yamal LNG to China rose with the onset of summer, which allowed the use of the Northern Sea Route and cut vessels' journey times by more than half compared to routes through Suez or around the Cape.

Nevertheless, we highlight that China received the bulk of additional cargoes from Yamal LNG via the Northern Sea Route (NSR) and that this trend is therefore going to be seasonal, as indicated by our historical data. The current generation of ice-breaking LNGCs are only able to routinely make the NSR journey during the Northern Hemisphere's summer months due to limited availability of dedicated ice breaker support when the ice becomes too thick during the winter months.

Total Russian LNG flows have thus yet to be materially impacted on an annual basis. Our data indicated the country had already increased total LNG shipments to the Far East, Europe and Southeast Asia by 2.98mmt (13 percent) in the year to September at the time of writing. However, Russia is still treading water in terms of global market share. With both Yamal and Sakhalin-2 producing close to capacity, expanding market share can only happen with significant capacity additions. Unfortunately, these have been put at risk since the invasion of Ukraine.



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The plight of sanctions - Arctic LNG 2

Whilst sanctions aimed at Russian pipeline gas exports to Europe have not (yet) had a discernible effect on Russia’s established LNG export levels despite Shell’s retreat from the Sakhalin-2 project and the Russian government’s ban on Yamal cargo liftings by SEFE, the ensuing political tensions have directly impacted the government's expansion plans.

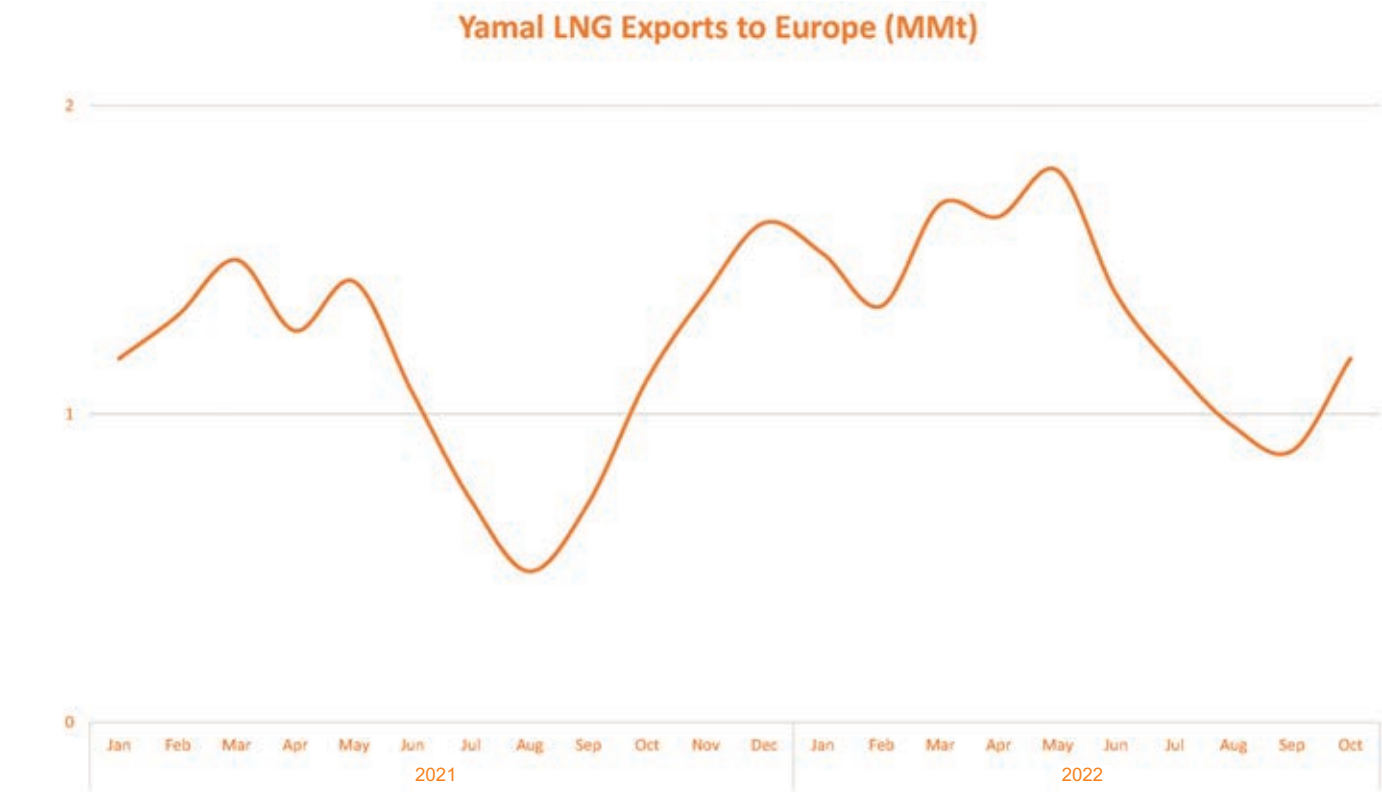
Russia’s largest privately-owned LNG specialist Novatek has been forced to seek new partners in an attempt to save its flagship Arctic LNG 2 project after Western investors and contractors – including TotalEnergies, Technip, Linde, Siemens, Saipem and Mitsui – stopped the supply of equipment, know-how and finance. As a result, the project’s first commercial cargo from West Siberia’s Gydan Peninsula is likely going to be delayed well into 2024. Novatek’s original plan of moving the gravity-based floating foundations into place in summer this year and begin production of LNG in early 2023 has been scrapped, according to Novatek’s deputy chairman Yevgeny Ambrosov. He informed an industry conference in Vladivostok in September that the liquefaction trains’ floating foundations, which are prefabricated near Murmansk, will not be ready until at least August 2023.

Plugging holes

Notably, Train 1 is more than 90 percent complete, according to reporting by Upstream, but the turnkey-nature of the project’s design implies the exit of Saipem and others has put project progression at risk. Arctic LNG 2 is supposed to produce almost 20mtpa from three trains once fully operational, which in the current market could have potentially pushed Russia's share close to 14 percent.

The project’s woes also extend to its shipping component. A whole roster of specialised ice-capable LNG carriers ordered from DSME in South Korea were also cancelled after Russia was excluded from the SWIFT banking system and struggled to pay in line with construction milestones.

Novatek has now pinned its hopes on Russia’s Zvezda shipyard, which originally had agreed to build some of the LNG carriers with design and technical assistance from Daewoo. However, it remains to be seen whether Zvezda is eventually capable of constructing the full



order of 15 vessels in time and on budget. Experience from Brazil, for example, where an ill-fated national programme of technological exchange during the country’s Pre-Sal (deepwater oil) boom required investors to order almost all specialist equipment from relatively inexperienced domestic suppliers, suggests this will not be easy. According to Russia’s Ministry of Industry and Trade, the first two Zvezda-built Arc7 LNG carriers will be commissioned in the near future, however.

Moving things in-house

Difficulties brought about by the hasty withdrawal of Western partners have forced Novatek to look inwards to find alternatives. Accordingly, domestic engineering company Nipigaz has taken over from Technip (the two have had a cooperation agreement since mid-2021) whilst state-controlled Sberbank will step in with finance. Moving things in-house by contracting domestic companies and paying them in rubles may well help to insulate the Arctic LNG 2 project from further sanctions. However, much will depend on whether the 90 percent completion of Train 1 is sufficient for Nipigaz to bring it over the line. It also remains to be seen to what extent any existing technology transfer can facilitate the construction of the remaining two trains, if indeed they are going to be built under current circumstances.

Meanwhile, the launch of two floating transshipment hubs in Murmansk and Kamchatka remains on track, according to Novatek’s Leonid Mikhelson. The two hubs at each end of the icy waters of the

Northern Sea Route are aimed at entrenching a transshipment strategy Novatek has employed since 2018. Since Arc7 carriers are expensive to run, they only carry their cargoes as far as ice would prevent conventional LNGCs to operate and transfer their cargoes for travel beyond that point to save on shipping costs. Each hub has LNG storage capacity of around 360,000 cu. m. with the first one expected to arrive off Murmansk by end-2022. Its sister unit earmarked for Kamchatka in the Far East is expected to arrive in April 2023. Novatek has previously used the port of Honningsvåg in Norway but was beholden to time-limited contracts that were not renewed.

European diversification

Meanwhile, ongoing LNG exports to Europe, successes in the Far East and determination to continue with the development of new export projects notwithstanding, Russia’s challenges vis-à-vis LNG exports to Europe are set to grow.

As has been widely reported, European buyers are hard at work to diversify their gas supply portfolios. After Germany has captured headlines with its plans for at least four FSRU terminals by end-2023, Italian gas network operator Snam SpA won approval to install a new FSRU offshore Piombino in Italy. To that end, the company had already acquired the Golar Tundra earlier this year, according to a Snam statement. The facility is due to come onstream in spring 2023. The project’s declared goal is to increase Italy’s energy security and further reduce

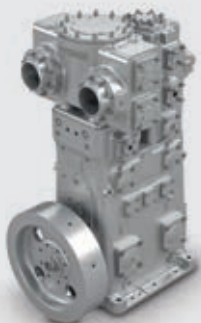
dependency on Russian supplies by increasing LNG import capacity. Snam expects it to contribute nearly 7 percent of Italy’s domestic requirements and play a major role in processing LNG deliveries next year to refill gas storage. Recent months have seen gas deals between energy major Eni and African and Middle Eastern suppliers whilst Algeria is expected to match levels of former pipeline gas imports from Russia.

Concluding thoughts

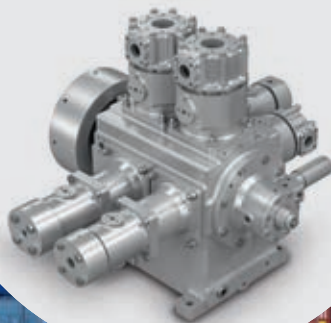
Russia’s LNG economy has seemingly taken the first hurdles that have sprung up since the invasion of Ukraine. Over the summer, LNG exports were able to shift to China in particular – even at likely discounts – whilst exports to Europe still enjoy good prospects, having hitherto not featured in sanctions. The commissioning of a new LNG plant in the Baltic also indicates the government remains committed to its capacity expansion strategy. However, Russia's market share has remained broadly flat year-on-year. This is unlikely to change until Arctic LNG 2 starts exports but the withdrawal of Western partners has at the very least caused significant delays to the project. Moreover, European buyers are keen to advance diversification strategies away from Russian supply, which would place Yamal LNG and (potentially) Arctic LNG 2 at a strategic disadvantage. Only Sakhalin is strategically placed to supply the Far East cost effectively year-round whilst the far larger Yamal project is closer to European buyers – who so far have proven to have the deepest pockets, too. ■

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China's lucrative LNG resale ends abruptly

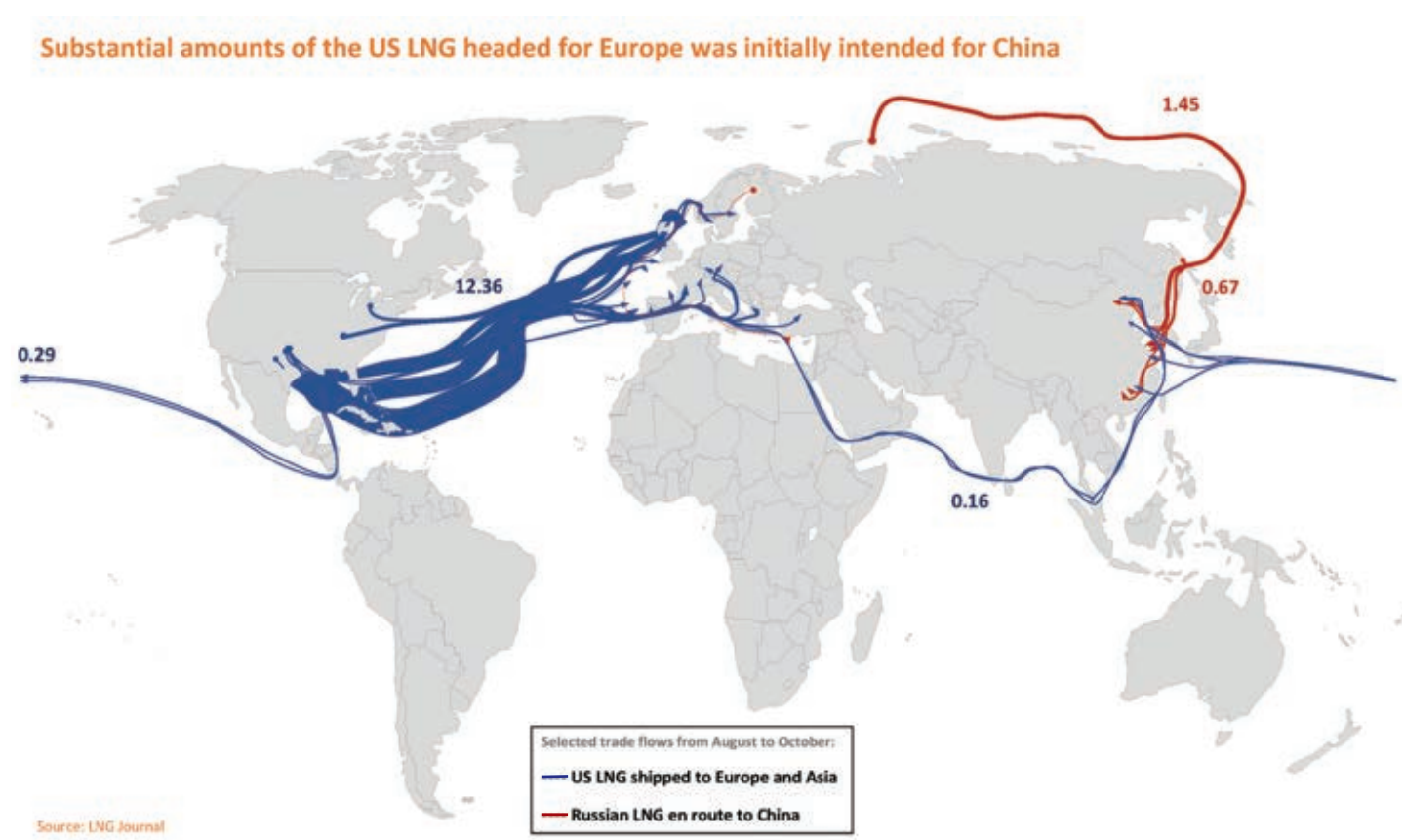
The lucrative practice of Chinese players to resell US cargoes to Europe – and then restock with discounted Russian gas – has come to an abrupt end. For months, Sinopec, CNOOC and PetroChina were cashing in on double-digit price premiums of the Dutch TTF benchmark for gas in Europe over the JKM benchmark for LNG delivered to Asia; but a small supply deficit now prompted the government in Beijing to ban cargo resales and shore up supplies for the winter; our Markets Editor Anja Karl has more.

The National Development and Reform Commission (NDRC) in late October mandated China's state-owned gas importers to halt LNG resales to Europe. Over the summer, Sinopec alone was heard to have sold 45 cargoes of contracted US LNG deliveries, equalling some 3.15 million tons, of its excess gas inventories onwards to Europe – at a massive profit.

ENN Group is understood to have remarketed its entire US LNG shipments, contracted in late 2021, to European buyers since July – as have many others like Sinochem and Guanhai Energy. They were taking the arbitrage of large, double-digit TTF price premiums over JKM prices. Such stark premiums have softened since, but the TTF December contract still trades a good \$10.6 above the corresponding JKM contract as European countries fill up their storage prior to the winter.

Visibility on cargo diversions is difficult to obtain, since cargo loading slots get booked several weeks in advance which gives the buyer a time window to sell on, defer or swap the cargo prior to its actual shipment. When the fully-laden vessel leaves the liquefaction plant, it will go the contracted destination that was agreed 'behind the scenes' without the diversion being noticeable through ship tracking.

Still, it is clear that Europe's scramble for LNG – with demand up 65 percent year-on-year – triggered a realignment of



trade flows around the world. "The Asia Pacific region, where LNG demand fell by 7 percent or 18 billion cubic metres (bcm) year-on-year as a result of mild weather, high prices and Covid-related disruption in China, has provided most of the relief for the European market so far in 2022," analysts at the International Energy Agency (IEA) commented on cargo diversions.

Since the Kremlin's war in Ukraine, Chinese state-owned gas buyers have been snapping up fuel from Russia for cheap while sanctions dried out

Gazprom's Western market. In early September, one Chinese buyer reportedly got hold of a cargo from the Sakhalin-2 liquefaction plant in Russia's Far East at nearly half the spot price and resold it to Europe with a substantial surcharge. But the likes of Sinopec, CNOOC and PetroChina not just benefitted themselves, they also threw a lifeline to EU utility buyers which had to swiftly replace missing Russian pipeline gas deliveries.

Staying clear of the spot market

Though cargo resales are now banned as Beijing is concerned about stocks, China's hardnosed buyers still abstain from spot LNG. Most of them feel they are well covered for November and December, and are hence waiting for JKM prices to fall well below \$29 per MMBtu before they return to spot markets.

JOVO Energy, owner and operator of the Dongguan LNG terminal in Guangdong province, indicated it will not make any spot purchases this winter and rely on short-term cargoes signed last year and term cargoes instead. This strategy could lower JOVO's overall imports by 20 percent this winter compared to a year earlier.

The three majors – PetroChina,

Sinopec and CNOOC – also stopped bidding for spot cargoes as they can easily replace LNG with significantly cheaper Russian pipeline gas and domestic production.

With China set to stay out of the spot market this winter, there is one buyer less to compete for cargoes as Europe scrambles for supplies. "Being over-contracted means that China is essentially growing the spot pie," ICIS' lead Asia gas and LNG analyst Alex Siow said, adding this was good news for Europe as "buyers in Europe are basically just going for spot right now."

No need to pull volumes from the Atlantic yet

Just one single Chinese buyer seems to seek spot cargoes for December to January delivery, but towards the end of this winter, large national energy companies will return to the spot market to fill gaps in supply. "So far, Asian importers have not had a need to pull volumes away from the Atlantic Basin into the Pacific. But the big question is if we get some weather-related demand which could conjure up a need for Asia to start a 'price war'," said Jeffrey More, Platts' head of Asian LNG Analytics.

PetroChina, a large importer of pipeline gas from Russia's Gazprom and



LNG tanker berthing at CNOOC's Tianjin regas terminal

Central Asia, is seen to be the most active Chinese trader to optimise supplies. Term LNG contracts, signed in relation to Brent crude oil or Henry Hub gas prices, have been priced significantly lower than spot LNG for the past year or so. Prudent Chinese buyers are hence trying to rely on such term contracts, but analysts reckon that may not be enough in the event of a severe winter.

“All eyes will be on the weather forecasts, especially for the early part of the winter. There is a lot of storage available – both onshore and floating – which can mitigate some of this risk,” Moore noted, but if that storage gets depleted then spot prices are bound to soar.

Ahead of the heating season buyers in Asia follow contingency plans, making sure that storages are well filled and that sufficient volumes are available under long-term contracts. Traders have been stocking up on LNG vessel charters for storage play well in advance, so winter season cargoes December to February have been in high demand.

“As early as from the middle of this years, charters for 6-12 months charters were snapped up in very rapid manner, and strong demand for refilling storage has also created a shortage of LNG

vessels which has driven spot freight rates,” said Kenneth Foo, S&P Global’s expert on Asia Pacific LNG Pricing.

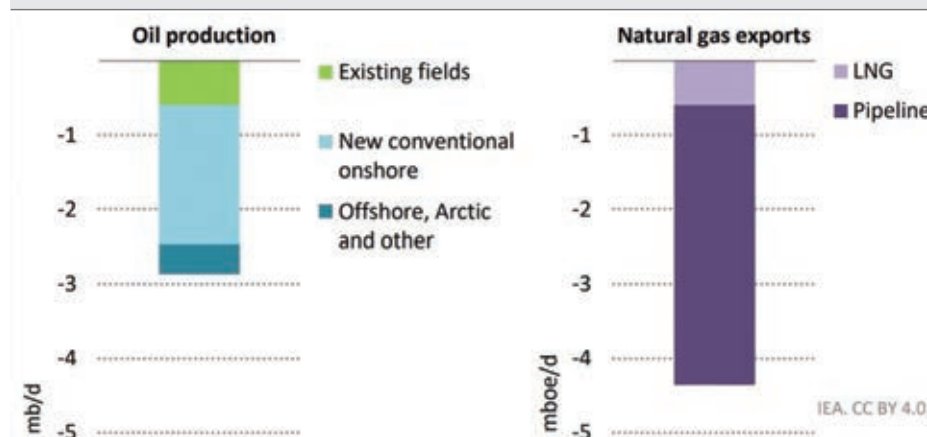
The arbitrage play between Asia Pacific and the Atlantic Basin is key this year and Foo reckons that most US volumes will keep going to Europe given the high freight rates. Rates for a modern vessel headed to Europe increased to \$475,000/day and \$425,000/day for a vessel headed to Asia, according to the brokerage Fearnleys. Moreover, floating storage on LNG vessels has risen to around 31 carries at the start of this month because of a steep contango along the forward price curve. That incentives trading companies to load their ships and hold on to cargoes ahead of early winter procurement.

Slow Chinese gas demand detrimental for Russia

Looking ahead, the International Energy Agency (IEA) expects China’s gas demand growth to slow to just 2 percent through to 2030, down from 12 percent growth over the past decade. This gives Russia “no easy options” to replace its offtakers in Europe, with Russia’s net income from gas exports forecast to plunge from \$75 billion last year to \$25 billion in 2030.

Russia has been by far the world’s

Changes in Russian oil production and natural gas export in 2035 in the WEO-2022 STEPS relative to the WEO-2021 STEPS



largest exporter of fossil fuels, but it’s invasion of Ukraine halted gas sales to Europe and sent prices soaring. “For the moment, with no links to alternative markets, much of the natural gas that was intended to flow westwards to Europe has no place to go,” analysts commented.

“Exports of Russian fossil fuels will never return to the levels seen in 2021,” the IEA reckons, despite a rise in Russian oil flows to Asia. But stepping up pipeline gas sales would require substantial infrastructure investments as well as contracts with a revised pricing structure.

Gazprom is keen to build new pipeline links to China, notably the 38 bcm per year Power of Siberia-2 pipeline through Mongolia. But the IEA’s demand

projections for China raise considerable doubts about the economic viability of another large-scale gas link with Russia, once the existing Power of Siberia line ramps up to full capacity.

Chinese buyers have already contracted large volumes of LNG for the next fifteen years: together with expected supply from existing pipelines and new domestic projects, these more than cover China’s demand requirements in the IEA’s Stated Policies Scenario (STEPS) to 2035. Considering Beijing’s policy preference for renewables and coal as a transition fuel, there is little to no room for buying additional supplies from Gazprom.

Sanctions undercut the prospects for large new Russian LNG projects, and long distances to alternative markets make new pipeline links difficult. Russia’s share of internationally traded gas, which stood at 30 percent in 2021, is hence forecast to fall to less than 15 percent by 2030 which would eradicate two-thirds of its net income from gas exports (revenue minus costs).

Europe’s drive to import non-Russian gas and rising demand in parts of Asia underpin LNG demand growth in all scenarios until the mid-2020s. Thereafter the IEA sees “sharp divergences” and in the STEPS outcome, an additional 240 bcm per year of export capacity is needed by 2050 over and above projects already under construction. In the Advanced Policies Scenario, however, only projects currently under construction are required and in the Net Zero Emissions by 2050 (NZE) Scenario, a sharp decrease in natural gas demand globally means that even these projects are in many cases no longer necessary. “This highlights a key dilemma for investors considering large, capital-intensive LNG projects: how to reconcile strong near-term demand growth with uncertain but possibly declining longer term demand,” analysts concluded.

Contracting of US LNG slows

Buyers’ quest for US LNG has slowed substantially as inflation and rising interest rates changed market sentiment. Unlike in July, when 14 offtake agreements were sealed, buyers are now no longer willing to sign contracts if a project cannot reach FID in the next three months, Poten & Partners says.

That is simply because these offtake agreements would be out of date before FID is taken. Cautious buyers even ask for tentative offtake agreements into 2023 that could be formalised if and when steel prices are falling.

Inflation and the risk of a global recession made interest rates rise markedly since August, preventing several projects from reaching financial close. Just two large projects were sanctioned in the US this year: Venture Global took FID for its Plaquemines LNG project in Louisiana, followed by Cheniere Energy’s FID for a third expansion of Corpus Christi with up to seven midscale trains.

But as tensions heated up over a global supply crunch this summer, European buyers have already snatched up most volumes from approved US LNG project – well ahead of time. Some crafty developers are even overselling capacity on the notion that future expansions plans will take fruition. Buyers in the EU, especially Germany, are still scrambling for long-term LNG commitments to be shipped from the United States. Utility buyers and government agencies typically want to firm up most of their supply well in advance and are hence on the hunt for volumes – often with limited success.

Europe snaps up FSRUs destined for Asia

Mounting gas shortages in Europe has not only drawn flexible LNG volumes away from Asia but also limited the number of available floating storage and regas (FSRU) vessels, the International Energy Agency (IEA)

finds. To replace missing Russian supplies, European importers chartered 12 FSRU that were initially destined for LNG-to-power projects in Southeast Asia.

Just over 20 FSRU vessels were available or under construction as of August. Since the war in Ukraine started in mid-February, 12 FSRUs have been chartered by European utility buyers for recently approved import terminals. Nine additional FSRU-based terminals are planned as EU gas buyers rush to replace Russian pipeline gas with LNG imports.

The scarcity of floating LNG import terminals risk to slow down the electrification of emerging markets in Southeast Asia, where FSRU were meant to account for a sizeable share of future regas capacity. Gas is no longer the fuel of choice for decentralized power projects in Asia, as prices have gone through the roof and developers opt for renewables combined with energy storage instead. ■

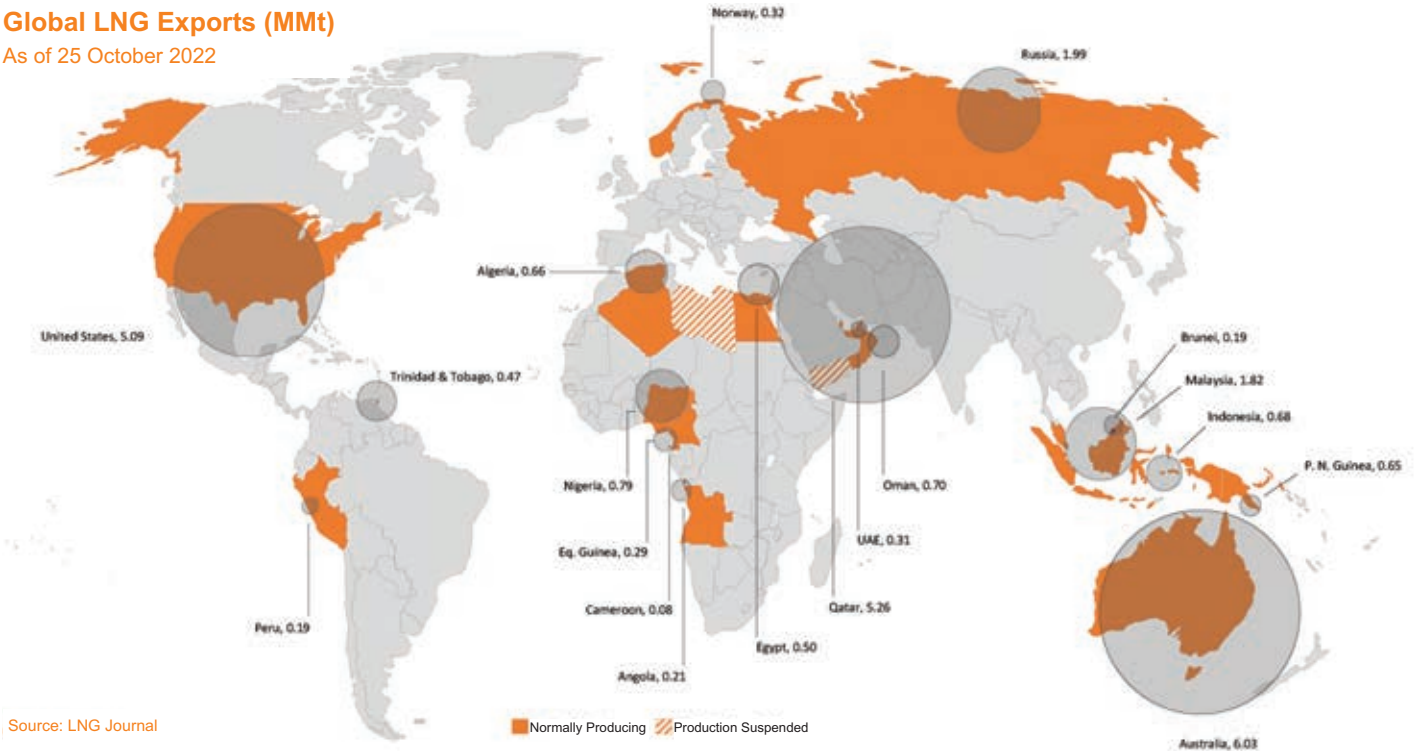
October trade set to continue monthly growth

Our preliminary October data highlights continued export growth whilst also pointing to a strengthening demand vortex in Europe drawing supplies away from the Pacific, our Markets Editor Alexander Wilk reports.

At the time of writing on 25 October, our data showed global LNG trade had continued to grow period-on-period. The shipped amount of 26.24mmt represented net growth of 0.25mmt (1 percent) from the 25.99mmt shipped by 25 September. Nevertheless, we thus only recorded steady year-on-year exports. The monthly improvement in October performance was due to an export boost among Middle Easter LNG producers, led by Qatar. Additionally, Algeria’s Arzew and Skikda plants lifted Atlantic Basin exports whilst robust supply growth out of Australia went a long way to cushion Pacific supply decreases in Southeast Asia and from Russia’s Sakhalin-2 plant.

Meanwhile, there was global net demand growth despite considerable demand decreases among some key Far Eastern importers such as South Korea and Taiwan. Chinese demand had remained broadly steady at the time of writing. Concurrently, Europe’s demand vortex had continued to grow strongly at the time of writing on 25 October and outweighed offtake reductions in Southeast Asia and a seasonal downturn in the Americas.

Global LNG Exports (MMt)
As of 25 October 2022



Source: LNG Journal

Exports

At the time of writing on 25 October, 26.24mmt of global exports for the month to date represented a slight increase of 0.25mmt (1 percent) from 25.99mmt for the equivalent period in September. Pacific Basin shipments were down by 0.16mmt (-2 percent) to 10.15mmt whilst Atlantic Basin exports remained broadly

steady at 9.32mmt in October to date. Period-on-period growth thus only came from the Middle East, where shipments were up by 0.45mmt (7 percent) to 6.77mmt.

Pacific Basin

Our data showed Pacific exports reached 10.15mmt, coming in below its equivalent September volume of 10.31mmt by 0.16mmt (-2 percent). Consequently, annualised capacity utilisation stood at 91 percent at the time of writing.

Australia

The Basin’s most significant exporter by installed capacity – Australia – increased exports by 0.23mmt (4 percent) from 5.80mmt as of 25 September to 6.03mmt as of 25 October. Ichthys LNG continued to be among Australia’s leading export plants in terms of growth, shipping 0.70mmt in the month to date. At the same time in September, the plant’s production stood at 0.55mmt. Gorgon LNG also increased exports by 0.18mmt (17 percent) to 1.25mmt from 1.07mmt this time in September, which meant the plant produced close to annualised nameplate capacity. Concurrently, there were period-on-period export increases totalling 0.35mmt at Pluto LNG, Gladstone LNG, Queensland Curtis LNG and Australia Pacific LNG. For Pluto LNG, a robust export increase of 0.17mmt (40 percent) to 0.59mmt meant the plant had produced well above nameplate

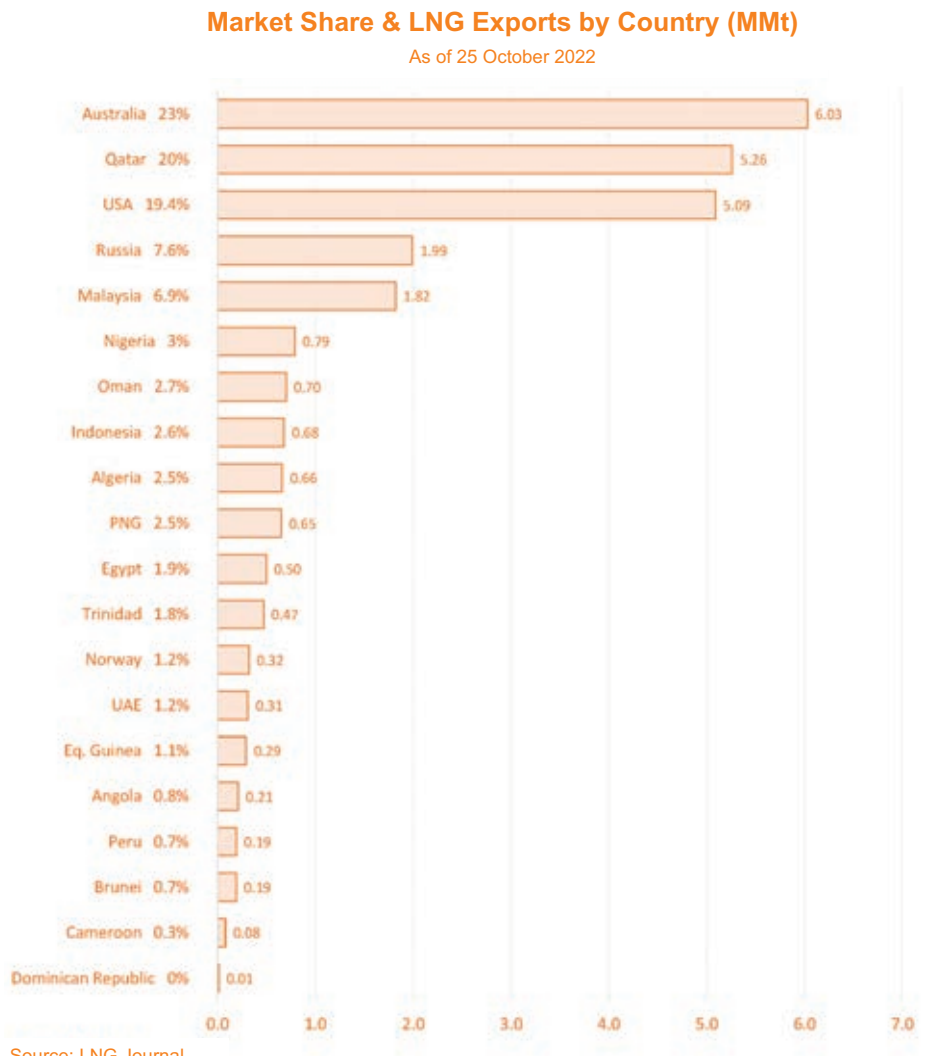
capacity at the time of writing. Although more modest in volume terms, the 0.08mmt (26 percent) and 0.07mmt (13 percent) increases to 0.39mmt and 0.60mmt for Gladstone LNG and Queensland Curtis LNG, respectively, equally represented significant period-on-period growth. For Australia Pacific LNG, meanwhile, the relatively minor increase of 0.03mmt (5 percent) still left the plant’s production at annualised capacity utilisation of 91 percent. These increments, however, were tempered by a significant decrease of 0.39mmt (-31 percent) at NWS LNG in particular, whilst Darwin LNG had not yet been seen in the market in October and Wheatstone LNG kept exports merely broadly steady at 0.78mmt.

Shell’s Prelude FLNG barge, meanwhile, continued to increase shipped LNG volumes at the time of writing. The floating facility had grown exports by 0.02mmt (13 percent) to 0.18mmt at the time of writing compared to 0.16mmt on 25 September. Annualised utilisation for the floating LNG plant thus stood at 56 percent.

Southeast Asia

North of Australia, Papua New Guinea’s PNG LNG saw shipments jump period-on-period by 0.20mmt (44 percent) to 0.65mmt in October compared to 0.45mmt in September. PNG LNG gained significant market share in Japan and South Korea, which was only tempered by

Market Share & LNG Exports by Country (MMt)
As of 25 October 2022



Source: LNG Journal

fewer exports to Japan and no shipments to Taiwan at the time of writing. At 115 percent, the plant thus operated above nameplate capacity, our calculations showed at the time of writing.

In neighbouring Indonesia, the amount of LNG shipped had dropped by 0.36mmt (-35 percent) to 0.68mmt at the time of writing in October from the 1.04mmt recorded as of 25 September. Notably, the Tangguh plant had decreased output by 0.18mmt (-35 percent) to 0.34mmt, having exported 0.52mmt in September. The Bontang plant, meanwhile, decreased shipped LNG volumes by 0.14mmt (-42 percent) to 0.22mmt in October alongside a significant drop in exports from Donggi-Senoro LNG. The plant saw a period-on-period decrease of 0.04mmt (-25 percent) in October, shipping 0.12mmt instead of the 0.16mmt seen as of 25 September.

In contrast, Malaysian shipments had remained broadly steady at 1.82mmt at the time of writing, owing to a notable export increase from the PFLNG Satu offshore facility. The floating plant at 0.07mmt exported 0.02mmt (40 percent) more period-on-period whilst PFLNG Dua kept exports steady at 0.14mmt. Shipments from the country's main capacity cluster at Malaysia LNG, meanwhile, had decreased slightly by 0.03mmt (-2 percent) to 1.61mmt at the time of writing.

Brunei, meanwhile, considerably reduced LNG exports in the month to 25 October by 0.14mmt (-42 percent) to 0.19mmt from the 0.33mmt we recorded on 25 September.

Russia & Peru

Elsewhere in the Pacific, Russia's Sakhalin-2 LNG decreased LNG exports

by 0.15mmt (-20 percent). The plant's shipments amounted to 0.59mmt in October compared to 0.74mmt in September. October's performance suffered from losses in market share in China, Indonesia and Japan. These losses were only partially compensated by an export to South Korea. As such, Sakhalin-2 LNG did not continue to operate close to nameplate capacity as was the case in previous months, with annualised utilisation at 74 percent. Meanwhile, Peru's Pampa Melchorita plant was again only sporadically seen in the market in October. The country has been struggling with a domestic gas supply crunch since July, which has impacted available volumes for export. However, exports of 0.19mmt as of 25 October were 0.07mmt (58 percent) higher than the 0.12mmt recorded on 25 September. The plant typically exports between 0.30mmt and 0.40mmt per month, our data showed

at the time of writing.

Atlantic Basin

In line with the Pacific, the Atlantic Basin's overall shipped LNG had also slightly decreased as of 25 October, with negative growth amounting to 0.05mmt (-1 percent) period-on-period to 9.31mmt in October from 9.36mmt in September. This translated into annualised export capacity utilisation of 72 percent for the Basin.

North Africa & Europe

The amount of LNG shipped from within the north-eastern part of the Atlantic Basin – comprising the EEA, Russia and North Africa (and not including re-exports) – grew slightly by 0.03mmt to 2.38mmt as of 25 October compared to 2.35mmt as of 25 September. Whilst Snøhvit LNG in Norway shipped 0.32mmt in October compared to exports of

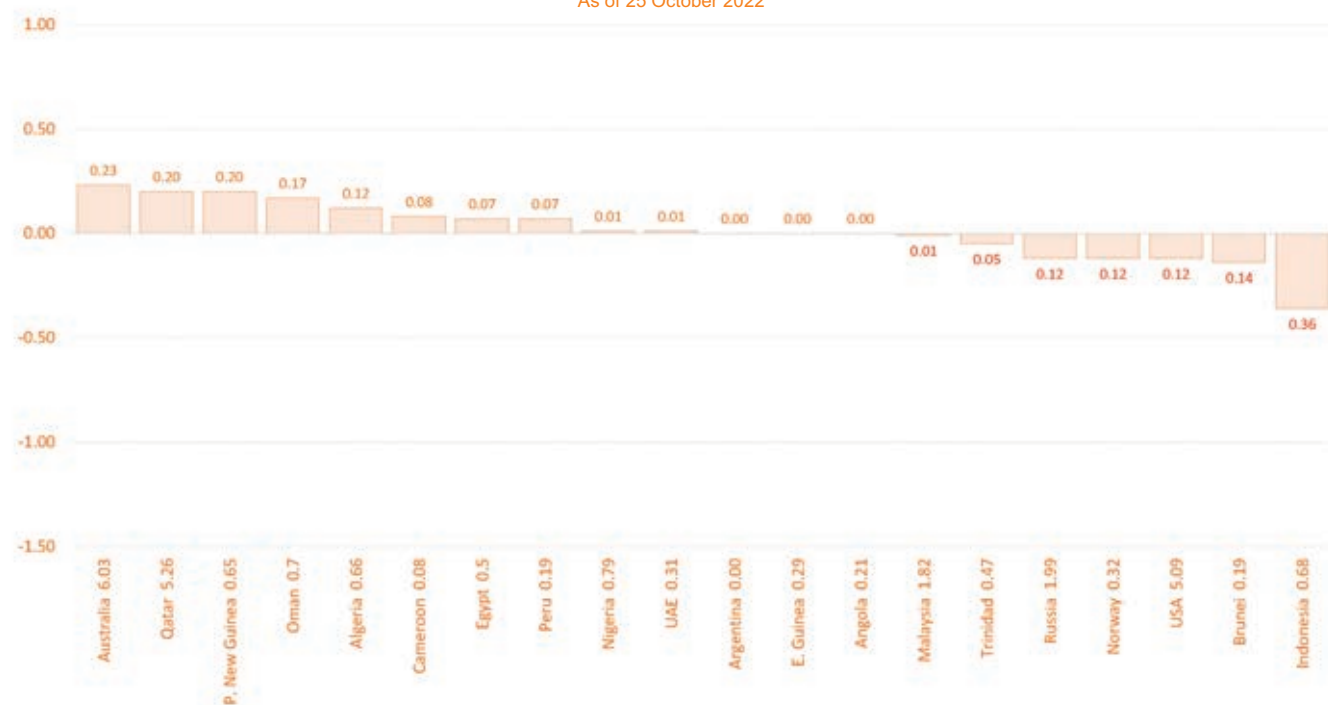
0.44mmt in September – a decrease of 0.12mmt (-27 percent) – Atlantic Basin export levels nonetheless benefitted from an increase of 0.12mmt (22 percent) to 0.66mmt from Algeria's Arzew and Skikda LNG plants. We also recorded period-on-period growth at Russia's Yamal LNG, which had increased exports by 0.04mmt (3 percent) to 1.40mmt from 1.37mmt in September. The plant thus produced close to nameplate capacity. As in September, LNG flows into Europe had retained the lion's share of Yamal's October shipments at the time of writing and saw a net increase of 0.35mmt, partially due to significantly higher offtakes in France, Belgium and the Netherlands. We were also tracking additional cargoes amounting to 0.21mmt en route to undeclared European destinations at the time of writing. Meanwhile, the plant's exports to China via the Northern Sea Route had plummeted by 0.38mmt period-on-period to 0.16mmt. However, we were also tracking 0.14mmt from Yamal en route to the Pacific via Suez at the time of writing. One of these exports is the second commercial cargo by Portovaya LNG aboard the Velikiy Novgorod, which was headed for the Pacific via Suez at the time of writing. Notably, Portovaya uses feedgas formerly earmarked for Nord Stream 2.

West Africa

Meanwhile, West African exports were up by 0.15mmt (12 percent) at the time of writing as the region's customer base narrowed again to focus on Europe and the Far East. Nigeria maintained period-on-period export growth as shipments out of Bonny Island saw growth of 0.07mmt

Incremental LNG Exports by Country (MMt)

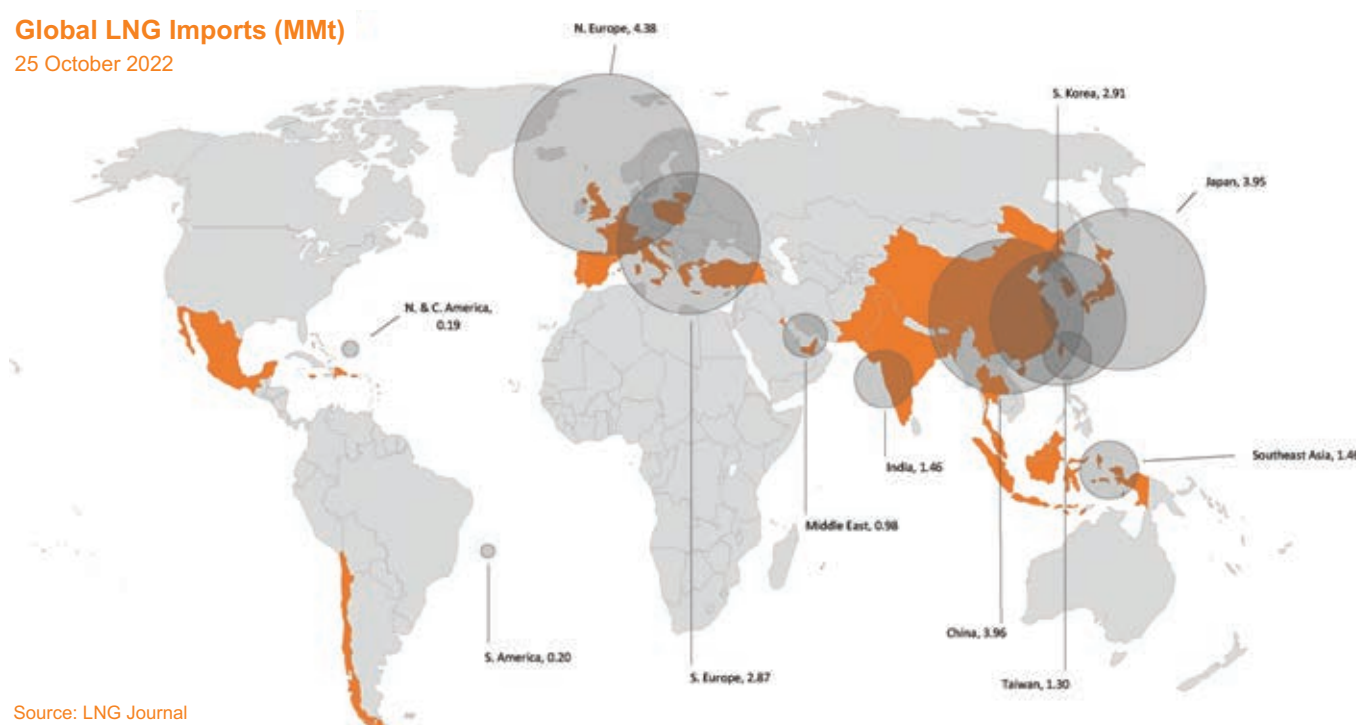
As of 25 October 2022



Source: LNG Journal

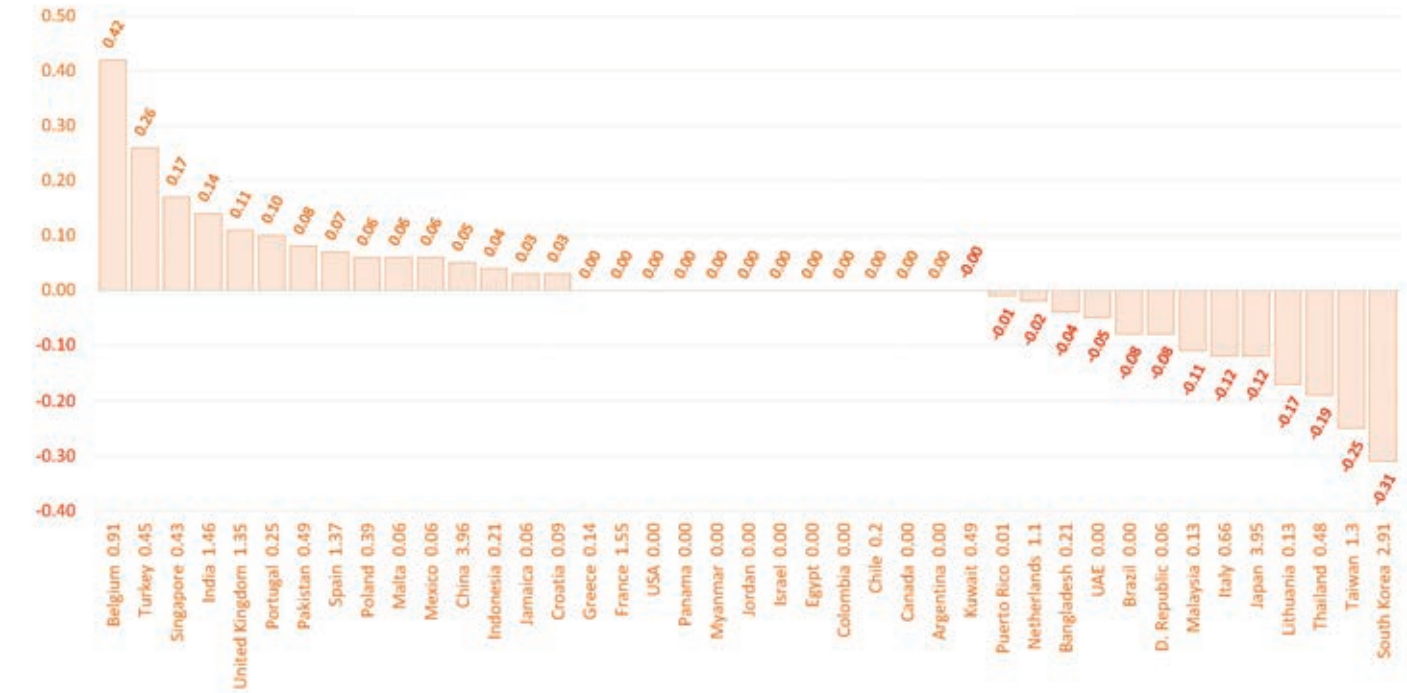
Global LNG Imports (MMt)

25 October 2022



Source: LNG Journal

Incremental LNG Imports by Country (MMt)
As of 25 October 2022



Source: LNG Journal

(9 percent) to 0.85mmt at the time of writing. Angola kept exports steady at 0.21mmt compared to its accumulated on 25 September. The same applied to Equatorial Guinea, which had shipped 0.29mmt at the time of writing. Moreover, Cameroon’s FLNG facility had exported 0.08mmt after it had not been seen in the market by this time in September. Overall, West African exporters gained significant market share in the Pacific whilst maintaining export levels to Europe, which compensated for a continued period-on-period reduction in exports to the Western Atlantic region and the Middle East.

Americas

Exports from the United States grew slightly by 0.04mmt to 5.25mmt at the time of writing in October compared to 5.21mmt for the equivalent period in September. Calcasieu Pass LNG continued its production ramp-up to achieve exports of 0.77mmt, which meant the plant had increased shipments by 0.10mmt (15 percent) in the first 25 days of October. The plant’s capacity utilisation thus stood at 93 percent. Corpus Christi LNG increased exports by 0.22mmt (23 percent) to 1.17mmt, which pegged its utilisation at 94 percent, whilst Cameron LNG grew shipments by 0.20mmt (21 percent) to 1.14mmt and thus produced flat out. However, export growth was still held back due to the protracted shutdown of Freeport LNG. In addition, Cove Point LNG curtailed shipments by 0.31mmt (-82 percent) from 0.38mmt in September to 0.07mmt in October as of the time of writing. Concurrently, Sabine Pass LNG reduced exports by 0.19mmt (-10 percent)

to 1.79mmt, whilst still maintaining output at 86 percent of capacity. Finally, Elba Island LNG had decreased exports by 0.14mmt (-48 percent) to 0.15mmt as of the time of writing.

In South America, Atlantic LNG in Trinidad & Tobago saw exports decrease by 0.05mmt (-10 percent) to 0.47mmt as of 25 October from the 0.52mmt we recorded by 25 September. Atlantic LNG shipments switched their focus to the Caribbean whilst also increasing shipments to Europe at the expense of the Far East.

Middle East

In contrast to lower period-on-period Pacific and Atlantic Basin exports, shipments from Middle Eastern plants had increased significantly as of the time of writing on 25 October. The region’s exports grew by 0.44mmt (7 percent) from 6.32mmt in September to 6.77mmt in October. Accordingly, our data showed the Basin’s overall utilisation of operational export capacity (i.e., excluding Yemen) at 87 percent on 25 October.

Period-on-period export growth in the region was led by Qatar’s Ras Laffan LNG complex, which grew shipments by 0.20mmt (4 percent) to 5.26mmt from 5.06mmt in September. The period-on-period increase was mainly based on significant volumes flowing to Japan, India and the United Kingdom in addition to 0.32mmt that had yet to declare destinations but were apparently en route to Europe. Nevertheless, Qatar’s LNG exports to declared destinations in Europe saw net negative growth of 0.22mmt as Belgium and Italy were trailing their commensurate September offtakes by

0.12mmt (-31 percent) and 0.15mmt (-35 percent), respectively. Meanwhile, Far Eastern imports of Qatari gas were up by 0.10mmt (5 percent) overall to 2.31mmt at the time of writing. This was compounded by 0.18mmt (22 percent) net growth in exports to India and Bangladesh. Kuwait’s and Pakistan’s offtakes from Qatar, however, were down by 0.05mmt (-23 percent) and by 0.02mmt (-5 percent), respectively.

Qatar’s fellow Persian Gulf producers

Oman and the UAE also saw strong overall export growth during the first 25 days in October. Overall, their shipments were up by 0.18mmt (22 percent) at the time of writing, led by a 0.17mmt export increase in Oman. Higher exports to South Korea and China and even isolated shipments to Europe compensated for a reduction in shipments to Japan.

Egyptian LNG exports also grew period-on-period as both the Damietta and Idku plants had overall shipped 0.50mmt by 25 October, up 0.07mmt (16 percent) from 0.43mmt this time in September. European terminals in Spain and Turkey were the main destination for Egyptian LNG whilst a single cargo found its way to Japan in the Far East.

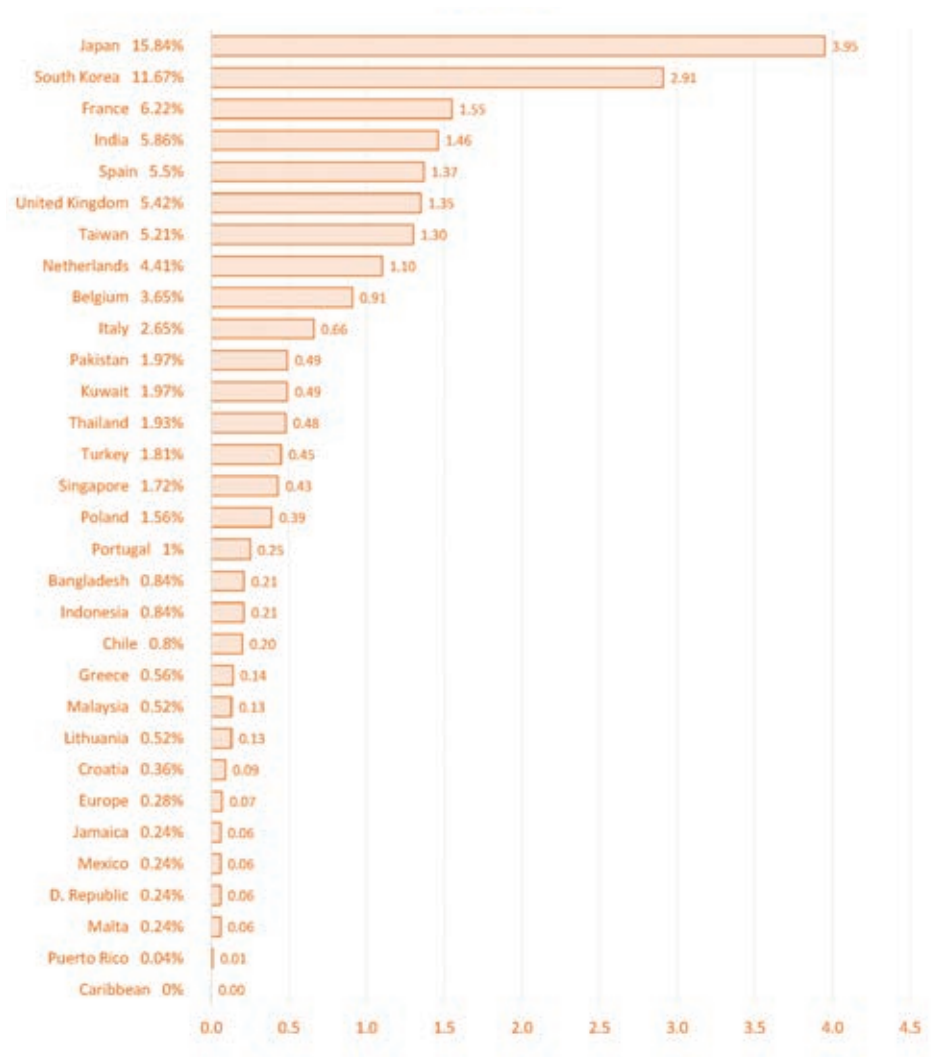
Imports & Domestic Trade

Global LNG imports were up by 0.20mmt (1 percent) at the time of writing in October. Significantly higher demand in the United Kingdom, Belgium and Turkey compensated for negative demand growth elsewhere in South Korea, Thailand and Taiwan.

Pacific Basin

Period-on-period Pacific Basin imports saw a net decrease of 0.56mmt (-4 percent) in October as South Korea, Taiwan, Thailand and Japan together

Market Share & LNG Imports by Country (MMt)
As of 25 October 2022



Source: LNG Journal

decreased their offtakes by 0.87mmt (-9 percent) in total to 8.64mmt. As such, this period-on-period demand decrease among larger importers in the Pacific overshadowed India's import increase of 0.14mmt (11 percent) to 1.46mmt from 1.32mmt in September as well as China's marginal demand increment of 0.05mmt (1 percent) to 3.96mmt.

Alongside the Pacific's net demand decrease, the roster of smaller Pacific buyers in volume terms – including Bangladesh, Thailand, Chile, Indonesia, Malaysia, Mexico, Singapore and Myanmar – collectively saw imports increase by 0.12mmt (11 percent) to 1.24mmt in October. This was primarily due to an increase in imports in Singapore, which were up 0.17mmt (65 percent) from 0.26mmt in September to 0.43mmt at the time of writing in October. The import increase in Singapore came alongside increases totalling 0.10mmt (-6 percent) to 0.27mmt in Mexico and Indonesia whilst Chile's offtakes had remained steady at 0.20mmt at the time of writing. This overall demand growth was only tempered by reductions totalling 0.15mmt (-31 percent) in Bangladesh and Malaysia. Myanmar had not been seen in the market at the time of writing.

Atlantic Basin

In contrast to their Pacific counterparts, LNG imports in the Atlantic Basin grew robustly by 0.73mmt to 8.65mmt as of 25 October, with annualised utilisation of installed capacity at 45 percent.

Ongoing significant growth in European offtakes was a primary factor in the Basin's overall demand picture. Imports in Belgium, Turkey and the United Kingdom – which together increased imports by 0.79mmt (41 percent) to 2.71mmt – buoyed Europe's offtake increase. In addition, Portugal, Spain and Poland together took in 0.23mmt (13 percent) more to reach 2.01mmt at the time of writing. Moreover, Croatia raised imports by 0.03mmt (50 percent) to 0.09mmt whilst Malta appeared in the market with a rare import of 0.06mmt. These increments, in turn, were supported by steady demand of 0.14mmt and 1.55mmt in Greece and France, respectively. As such, it was only the Netherlands, Italy and Lithuania which together tempered growth with their demand reductions totalling 0.31 (-14 percent) to 1.89mmt.

As to demand in the western Atlantic, importers in the Caribbean and South America – including Brazil, Jamaica,

Puerto Rico and the Dominican Republic – had seen LNG demand fall by 0.14mmt (-52 percent) to 0.13mmt at the time of writing. Notably, Brazil was a key factor in the region's demand picture as it had not been seen in the market following imports of 0.08mmt during the equivalent period in September. Offtakes in the Dominican Republic were also down by 0.08mmt (-57 percent) to 0.06mmt. Concurrently, Puerto Rico had slashed offtakes by 0.01mmt (-50 percent) to 0.01mmt. As such, demand growth in the western Atlantic had only been seen in

Jamaica, where demand had doubled to 0.06mmt by the time of writing in October. Nevertheless, with no other importer in the Americas showing demand in the days leading up to 25 October, that growth was insufficient to compensate.

Middle East

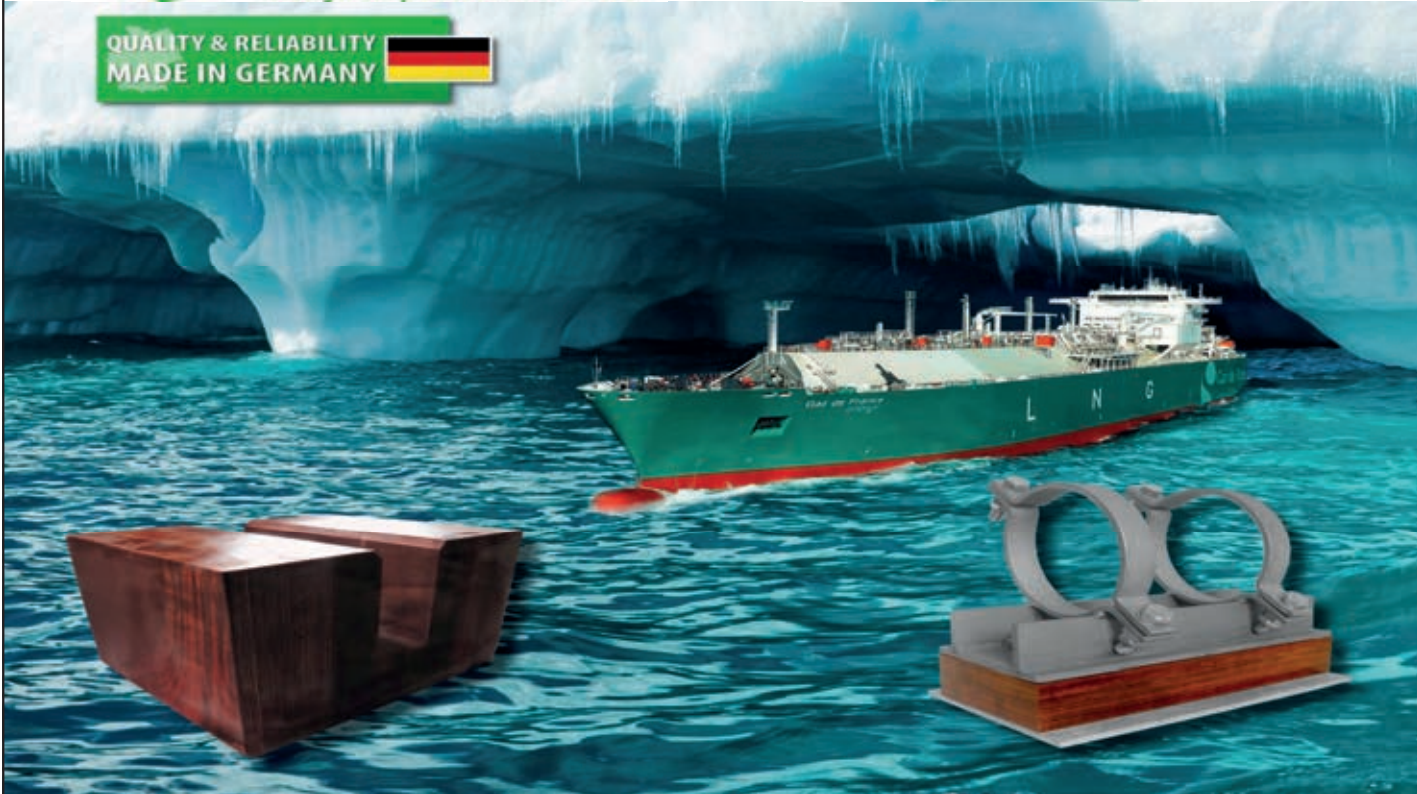
Middle Eastern LNG demand had grown as of 25 October. Regional offtakes were up by 0.03mmt (3 percent) to 0.98 from 0.95mmt on 25 September. Offtake levels were buoyed by a demand increase in Pakistan, which saw a 0.08mmt (19

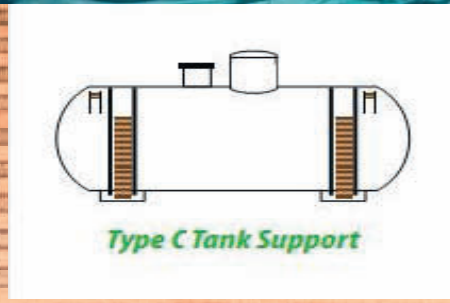
percent) demand increase from 0.41mmt in September to 0.49mmt in October. This increase thus was able to compensate for the disappearance of demand in the UAE, which stood at 0.05mmt in the equivalent report period of the first 25 days in September. Kuwait, meanwhile, kept offtakes unchanged at 0.49mmt. Israel, Jordan and Egypt saw no LNG import activity as of 25 October, unchanged from September. Accordingly, the Middle East's annualised import capacity utilisation stood at 32 percent at the time of writing in October. ■



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Singing the praises of 'ShellLNGTime1 & 2'

The vast majority of LNG charters are concluded on one form - 'ShellLNGTime1 & 2'. Its success is attributable to familiarity, comprehensiveness and (relative) even handedness. Maritime law specialist, Hill Dickinson, explains.

The form was developed from the 2003 edition of the 'Shelltime 4' tanker charter, which is a modernised version of the original 'Shelltime 4' charter from 1984.

Those drafting 'ShellLNGTime1 & 2' were therefore able to analyse how parties typically sought to amend the 'Shelltime 4' form and how its provisions had been interpreted by courts and arbitrators.

This meant that the form reflected 20 years' worth of practical experience and case law, in addition to technical knowledge of LNGCs and chartering.

Most LNGCs are fixed on timecharters, which reflects a market dominated by long-term offtake and sale and purchase arrangements (SPAs) and to which it is well suited.

However, the form is also used for voyage charters, which have been increasing in frequency during the last decade. Parties find it easy to adapt the form for use in trip timecharters, the law firm said.

Hill Dickinson looked at some key issues, which arise specifically under LNG charterparties.

When entering into timecharters using this form, the following considerations may be made:

Boil-Off - Transportation of natural gas is only economically viable when it is in liquefied form (ie LNG) as it occupies less volume than in its gaseous state. To achieve this, LNGCs must be capable of maintaining the cargo at a temperature equal to, or less than, the



Shell's charter form has stood the test of time

prevent it returning to its gaseous state.

Although a vessel's cargo tanks are insulated, the cargo will inevitably warm up over time, producing boil-off gas (BOG). Furthermore, depending upon the relative prices of LNG against fuel oil, it may be more economical to sacrifice some of the LNG in the propulsion of the vessel, and orders can be given to "force boil-off" to achieve this.

Unless it is re-liquefied, the BOG reduces the volume of cargo that will ultimately be discharged. Under Article seven of Annex C of 'ShellLNGTime1 & 2', an owner warrants that BOG shall not exceed a certain percentage of the overall cargo loaded, per day, during the voyage (the daily guaranteed maximum boil-off).

Heel - One issue in particular that does not arise in the non-gas trade is that of 'heel'. This is a small portion of LNG, which is retained on board the vessel following the discharge of a cargo.

The heel's main function is to keep the vessel's cargo tanks cool in between cargoes. It can also be

used in the ship's propulsion system, in substitution for (or in addition to) conventional fuel oil.

As some of the LNG will inevitably boil off during a voyage, this is a good way of ensuring that the gas is not wasted, Hill Dickinson said.

The default position is that, following discharge, owners will retain on board sufficient heel to arrive at the next load port in a cool and ready-to-load condition, and to remain in that condition for 24 hours (eg Clause 16(a)).

The amount of heel required will depend upon several factors, including the distance from the previous discharge port to the loading port and the rate of boil-off expected to occur during the ballast voyage.

Upon loading a cargo of LNG, what remains of the heel will become mixed with the new cargo and it will remain mixed throughout the remainder of the voyage.

Title to the heel will generally remain with the charterers throughout the period of the charterparty, so charterers will in most cases own the entire quantity of the LNG on board.

It follows that there is little requirement to distinguish between heel and cargo during the voyage, and this is reflected in ShellLNGTime1 & 2's terms.

In summary, LNG on board a vessel has three roles:

- The cargo.
- Boil-off from the cargo (and from the

heel), which can be used by the vessel as fuel.

- Heel is required in order to enable a vessel to cool down before loading.

Hill Dickinson's LNG Team has extensive experience advising in all aspects of LNG related activity, including LNG Sale & Purchase; reviewing and advising on master sale and purchase agreements (MSPAs) involving national oil and gas companies worldwide, oil majors, power and electricity companies, and multi-national oil and gas traders.

In addition, the review of and advise in relation to spot/term LNG (master) sale and purchase contracts (MSAs); guarantees; storage arrangements; payment instruments; compliance; indemnity; limitation and exclusion related clauses; *force majeure* clauses and termination of contracts.

The LNG team also regularly advises on incoterms and shipping contracts; LNG/LPG transportation; voyage/timecharters for carriage of LNG/ LNG carriers; and arbitration in relation to disputes arising in the course of transport, including off-hire, demurrage, contamination, breakdown and malfunction.

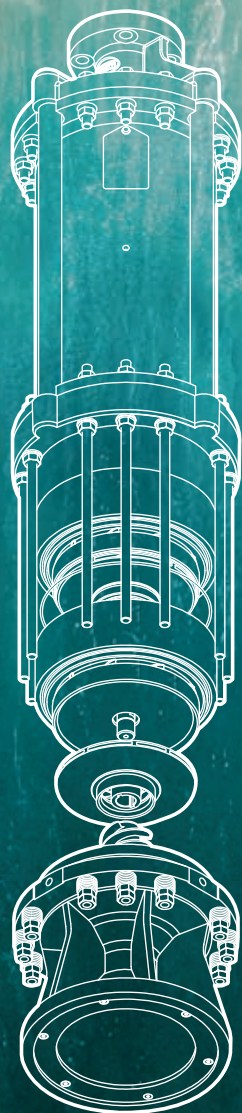
Broader fields are also covered, including insurance, engineering claims, shipbuilding disputes, major incidents and casualties, CDI and OCIMF SIRE disputes, shipmanagement disputes, asset finances and sale and purchase, sanctions, plus environmental regulations. ■

"...the form reflects 20 years worth of practical experience and case law, in addition to technical knowledge of LNGCs and chartering"

boiling point of natural gas to

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Of the LNG marine expansion



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Inert gas systems' orders significantly increase

Survitec's Maritime Protection brand has seen a significant increase in orders for inert gas (IG) systems. Technical Editor Ian Cochran reports.

This follows a surge in orders for newbuildings fitted with LNG-fuelled engines in the past couple of years.

About 35% of the current world orderbook contains dual-fuelled and gas ships running on either a combination of LNG and conventional fuel, or LNG alone.

These engines need to be fitted with an IG system to prevent the build-up of highly flammable gasses.

Bernt Øhrn, Survitec's General Manager, Maritime Protection, explained: "If the ship doesn't have any oil or gas cargo tanks, which require a fixed CO₂-based system to deal with the higher volume, a small N₂ inert gas system is needed to make the fuel system safe."

Demand for natural gas as a marine fuel is expected to continue for the next 20 years, as the industry views the energy source as a vital step towards de-carbonisation.

"This is demonstrable in the increased orders for IG," Øhrn added. "We are seeing

a significant push for alternatively fuelled newbuildings capable of handling the new emissions requirements. But we also see an increase in engine conversions and retrofits, with shipowners converting topsides to accommodate LNG fuel tanks.

"Although LNG only accounts for one-in-three newbuildings, shipowners of all types are beginning to see the dual-fuel or gas engine as the way forward," he said.

According to Øhrn, analysts predicted a 25% increase in orders for dual-fuelled ships in 2023, increasing further to 50% by 2025.

"With the need to further reduce the impact of ship operations on the marine environment, the speed of technological development will see the adoption of other alternative fuels, particularly ammonia and hydrogen," said Øhrn, explaining that Survitec is involved in several industry and university-based research projects investigating ways to make these fuels safe.

Øhrn predicted that ammonia will become increasingly important but will require much larger fuel tanks, while the safety of a hydrogen-fuelled ship is likely to prove a challenge.

Survitec's new Head Start initiative was created to support the industry on its sustainable maritime journey.

"We recognise the opportunities and challenges the industry will face in the coming years, as significantly increasing numbers of vessels will be built or retrofitted to run on alternative fuels," Øhrn continued. "We are designing solutions to ensure operations remain safe no matter the fuel."

***For much the same reason, the Society for Gas as a Marine Fuel (SGMF) has published 'LNG Fuel Tanks - Loading/Filling Limits and Level Instrumentation Consideration and Recommendations'.

The concept of LNG tank filling and loading limits is not new, having been

implemented in the IGC Code for LNGC cargoes for decades.

Whilst the IGF Code specifies the two methods by which these limits are established or calculated for LNG fuel tanks, it is clear that for some vessels in operation and under construction, a number of different interpretations have been applied.

These vary according to the tank type, shipyard or classification society involved in the projects and have seen some vessels applying a lower loading limit, impacting on the amount of LNG which could be carried.

This Technical Guidance Note (TGN) took feedback from SGMF members' projects to date and through discussions with designers and classification societies has established the background to these inconsistencies.

It provides practical and clear guidance with a view to limiting inconsistent applications in the future, SGMF said. ■

WinGD to power Qatari LNGCs

WinGD's latest X72DF-2.1 engines will power 25 LNGCs earmarked for QatarEnergy's North Field East (NFE) project, the biggest LNGC newbuilding programme thus far.

The 50 dual-fuel engines, which will feature the new on-engine intelligent control by exhaust recycling (iCER), were contracted by several shipyards and shipowners involved in the project.

iCER was unveiled in May of this year and provides improved fuel efficiency in both gas and diesel modes and a 50% reduction in methane slip, compared to the first-generation X-DF, WinGD said.

One order for the Qatar NFE programme consists of two 174,000 cu m LNGCs to be built for TMS Cardiff Gas at Daewoo Shipbuilding & Marine Engineering (DSME). They will be the first ships built by DSME to feature on-engine iCER systems.

Volkmar Galke, WinGD's Director, Global Sales, said: "This huge order intake with on-engine iCER technology shows the need for proven and reliable dual-fuel engines, as the LNG carrier ordering surge continues.

"Owners and operators are seeking

fuel flexibility without compromising efficiency, emissions or CAPEX. And the fact that all have chosen our latest compact, cost-saving configuration confirms that WinGD delivers the best possible solution to customers, giving them confidence in their investment for today and for the future," he said.

The advantages of X-DF low-pressure dual-fuel engines are claimed to be low CAPEX, low maintenance costs and ultra-low air pollution, reaching IMO Tier III NO_x limits without after treatment.

Since coming onto the market in 2015, the whole X-DF fleet has grown to more than 350 engines in operation.

QatarEnergy has secured around 60% of the world's LNG shipbuilding capacity through 2027 to cater for its growing fleet requirements, which could reach more than 100 new vessels.

Several shipowners have agreed to build LNGCs on the back of long-term charters to QatarEnergy. These vessels will be delivered between 2023 and 2027.

WinGD's X72DF engine has become the standard for LNGCs, with 224 in service and more than 130 engines on order, the company claimed. ■



WinGD's latest generation of X72DF-2.1 engines fitted with the new on-engine iCER

Amsterdam bioLNG project progresses bunkering plans

Developers behind a new bioLNG plant at Port of Amsterdam have progressed plans, with the facility set to begin production next year and support a new generation of low-carbon bunkering. Fuelling Editor Malcolm Ramsay reports.

The FirstBio2Shipping project is currently under development by a consortium of partners that includes liquefied biomethane (LBM) and LNG supplier Titan, sustainable fuel expert Nordsol, and waste-processing specialist Attero.

“The project is on track for producing the first kilogram of bioLNG in the fourth quarter of 2023,” Leon van Bossum Commercial Director at Nordsol tells LNG Journal, adding that the partners “aim to decarbonize the maritime sector by demonstrating an industrial plant producing bioLNG in a standardized and scalable fashion.”

Off-take agreements

Once complete the FirstBio2Shipping plant will be the largest bioLNG complex at the port and is expected to produce 200,000 tonnes of LBM per year once fully operational.

Titan has already signed exclusive off-take agreements with BioValue, one of the largest biogas suppliers in the Netherlands, for the entirety of onsite produced LBM. BioValue will also supply a significant part of the biogas required for the total LBM production.

“For this, BioValue will construct a new biogas plant, adjacent to the LBM plant. The remaining biogas will be sourced from other production installations throughout Europe that are connected to the existing gas grid. This hybrid sourcing setup enables the scale required for impactful decarbonisation of the marine

industry,” a spokesperson for Titan explained.

BioValue, currently operates six production sites across the Netherlands and is the exclusive partner of gas optimization specialist Schaumann BioEnergy in Netherlands and Belgium.

Ronald van Selm, CTO at Titan notes that the project “is paramount in implementing our strategy of reaching carbon zero within the coming two decades. Furthermore, it builds upon Titan’s previous successful funding application called ‘Bio2Bunker’ that realizes three additional bioLNG bunker barges.”

Broadening scope of liquefied fuel

The Bio2Bunker project secured €11 million in funding in 2020 for new infrastructure development and will include construction of the Titan Hyperion, an LNG-refuelling ‘mothership’ serving the Amsterdam-Rotterdam-Antwerp (ARA) region. This will be linked to the firm’s growing fleet of FlexFuelerbunker vessels.

“Mature transport, storage, and bunkering infrastructure are not the only benefits of bioLNG, it is also increasingly recognised as a sustainable option that can be ‘dropped in’ and blended with LNG at any ratio, with no changes required onboard the vessels,” van Selm adds.

Earlier this year, Titan rebranded from Titan LNG as it dropped the single product focus from its name to better



Rendition of FirstBio2Shipping plant

reflect a focus on emerging bunkering practices, with Niels den Nijs, CEO of Titan explaining that the firm’s investment program “for the immediate and long-term future is 100% dedicated to carbon neutral fuel infrastructure”, with LBM bunkering and even hydrogen increasingly at the fore.

“Having the energy transition, circular economy and clean shipping at the core of our sustainability strategy, Port of Amsterdam welcomes the novel renewable fuel plant with full support. We want to reduce emissions in our port area and lead the way in the transition to a sustainable society. This plant, with its hydrogen-ready design, is a perfect example that fits seamlessly with our long-term strategy for the port,” Roon van Maanen, Director Energy & Circular Industry at Port of Amsterdam, said.

Longer-term, the port’s authority aims to build on utilisation of the plant’s biogenic CO2 side stream to enable future production of e-methane, where the biogenic CO2 is combined with green hydrogen, to further improve sustainability.

Titan expanded its LNG bunker fleet earlier this year, signing a charter agreement with Estonian firm Elenger to operate the vessel Optimus. The new bunker ship will supply LNG and LBM at the ports of Amsterdam, Rotterdam, Antwerp and Zeebrugge.

Welcoming this expansion, van Bossum notes that “it is important for

bioLNG projects such as FirstBio2Shipping that the shift to cleaner fuels in the maritime sector is accelerating, as evidenced by the trend in newbuild vessel orders, and that LNG is dominant.”

Macro-energy disruption

Despite the positive support that bioLNG has received in recent years, the transition to LBM still faces numerous challenges. Not least the impacts of Russia’s invasion of Ukraine which has disrupted traditional pipeline gas flows in Europe and driven unprecedented demand for LNG from industry.

While this change is undoubtedly accelerating the construction of LNG infrastructure and will undoubtedly boost the sector in the long-term it is having the short-term side-effect of soaking up all available gas supply, limiting availability in some cases.

Van Bossum remains “optimistic that the macro-energy market situation will not impact the outlook of this project” however adding that “especially now that the energy market has been shaken up by the war in Ukraine, the importance of clean and local energy supply has become even more clear.”

Headquartered on the outskirts of Utrecht, Nordsol is the developer of the first bioLNG plant in the Netherlands, a joint project with Renewi and Shell which opened in 2021 at Amsterdam Westpoort. ■



Nordsol bioLNG tank

There is new energy in the heart of the Mediterranean



OLT Offshore LNG Toscana is the company which manages the floating storage and regasification unit "FSRU Toscana". The Terminal is technologically innovative and well-advanced. It guarantees the maximum standards in terms of environmental sustainability and safety. "FSRU Toscana" is permanently moored off the Italian coast – between Livorno and Pisa – in the heart of the Mediterranean Sea. The Terminal has a maximum authorized regasification capacity of 3.75 billion Standard cubic meters per year and an LNG storage capacity of 137,100 cubic meters. New SSLNG service soon available.

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For the Record

ALASKA Governor Mike Dunleavy has just concluded a trade mission to Japan where he met executives of leading energy companies and utilities as well as government ministries to discuss Japanese companies procuring long-term Alaskan LNG supplies.

The meetings came at a time when Japan is looking in the medium term and long-term for more oil and gas amid sanctions against Russia for the Ukraine conflict.

Governor Dunleavy was accompanied to the talks in Tokyo by Alaska Gasline Development Corp.'s senior executive Frank Richards and by the US Ambassador to Japan, Rahm Emanuel.

"Summit attendees gathered to advance the Alaska LNG project to commercialize abundant North Slope natural gas for delivery to Alaskans and export markets, including Japan," said the statement.

The in-person participants in the meetings also included Ambassador Emanuel, Alaska US Senator Daniel Scott Sullivan, Japanese government officials and executives from the Asian nation's leading LNG importing companies Tokyo Gas, Inpex Corp, Mitsubishi Corporation and the largest importer JERA Co. Inc.

Two other US officials participated by video link. They were US Department of State Senior Advisor for Energy Security Amos Hochstein, and US Department of State Assistant Secretary for Energy Resources Geoffrey Pyatt.

Japanese government officials included representative of the Ministry of Economy, Trade, and Industry (METI), the Japan Bank for International Cooperation (JBIC), and the government agency Japan Oil, Gas and Metals National Corp. (Jogmec).

"This gathering of top energy and policy leaders from Japan and the US signifies Alaska LNG's incredible potential to provide Japan with a multigenerational supply of reliable clean Alaska energy," said the Alaska statement from Governor Dunleavy and AGDC's Richards.

"LNG is poised to help fulfil national energy security and clean climate goals for both nations, and the discussions were

an important step forward in the ongoing dialogue to develop a strong privately-led partnership to successfully develop and operate Alaska LNG," they added.

The Alaska LNG project is well positioned for the state to realize the decades-old proposal to bring natural gas off the North Slope gas fields for the benefit of Alaskans and worldwide markets.

The project would build an 800-mile pipeline to transport natural gas from the North Slope to Southcentral Alaska for export.

Strong LNG demand is expected to create a gap in supply starting in 2028, which new projects are required to fill and Alaska LNG is competing to fill the supply gap.

Alaska has ample gas supply. The North Slope Basin in Alaska holds more than 45 trillion cubic feet (Tcf) of combined contingent natural gas resource and reserves.

There are also an estimated 299 Tcf of undiscovered, technically recoverable conventional natural gas resource, and an additional 100 Tcf of unconventional resources.

"The United States and Japan took a significant step forward in achieving energy security for both our countries by convening the 'Alaska LNG Summit' in Tokyo," said Ambassador Emanuel.

"Energy security is one of the fundamental pillars of global economics and geopolitics," added Emanuel.

"Japan's energy needs into the future are more secure and more reliable with allies and friends rather than adversaries. I look forward to continued collaboration and discussions to achieve our shared goals," the Ambassador stated.

BAKER HUGHES, the US liquefied natural gas equipment-maker and energy services company, said in reporting third-quarter earnings that even amid economic challenges the outlook for oil, gas and LNG was supportive of a multi-year upturn in spending.

The Nasdaq-listed company with main offices in Houston and London reported orders of \$6.1 billion for the third quarter, a 13 percent increase year-on-year.

Revenues in the three months came to \$5.4Bln, up 5 percent compared with the same three months of 2021, while adjusted operating income rose to \$503M versus \$402M in the prior-year quarter.

Net losses for the quarter narrowed to \$17M compared with \$810M of losses in the same quarter of 2021.

Chairman and Chief Executive Lorenzo Simonelli spoke in a conference call after the earnings release saying he remained very positive for LNG and the energy business where his company has four divisions, oilfield services, oilfield equipment, turbo-machinery and process solutions and digital solutions.

He praised global operators for continuing to demonstrate a great deal of financial discipline, meaning a "more durable upstream spending cycle", even in the face of an unpredictable commodity price environment.

Simonelli noted in particular the elevated prices in the LNG market had been created by a "multitude of factors" and expected the "exceptionally tight global market" could become even tighter in 2023.

"This situation has resulted in record high LNG prices, but it's also slowed down switching from coal to gas in some developing countries," said Simonelli.

"We believe that significant investment is still required over the next five to 10 years to ensure natural gas is positioned as a key part of the energy transition," he declared.

"This is also a pivotal time for the industry, with price-related demand destruction occurring in some markets and LNG developers facing inflationary pressures and a higher cost of capital for new projects," he explained.

"As a result, we believe the landscape may be shifting in favour of established LNG players with the scale, diversity and financial strength to navigate the risks and uncertainties," stated the Baker Hughes CEO.

Simonelli added that projects that utilize faster-to-market modular designs may be particularly advantageous in the coming years.

In the earnings report, Baker Hughes said LNG-related TPS orders came to \$1.81Bln in the quarter, a 5 percent increase year-on-year.

"The TPS segment saw continued growth in LNG. TPS secured another contract for two additional New Fortress Energy's (NFE) 'Fast LNG' projects, supplying two main refrigerant turbo-compressor strings," said the report.

"Each turbo-compressor will feature one LM6000PF+ gas turbine, and the technology will be deployed in various offshore projects across the globe, helping to increase overall LNG supply," it added.

The company's TPS division also announced a new outcome-based services contract for the maintenance and

monitoring of turbo-machinery equipment operations at the "Coral Sul FLNG", the first deep-water floating LNG facility operating off the coast of Mozambique for the Coral South project led by Italian major Eni.

"This new service agreement builds on an existing contract awarded to Baker Hughes in 2017 for the project's power and gas refrigeration process," said the company.

"As part of the scope, Baker Hughes will fully leverage its growing digital capabilities by providing remote monitoring and diagnostics services," it added.

In other orders, the OFS Wireline Services product line was also awarded a three-year contract by Sonatrach in Algeria, leveraging its deep understanding of the customer's needs and positioning OFS as the leading wireline provider in the North African country.

OFS also continued to drive interest in its digital portfolio of solutions.

A major North American operator awarded Baker Hughes a contract to perform an offline analysis on 60 wells in the Permian and Delaware basins using ProductionLink.

BP has agreed to acquire Archaea Energy of Houston in Texas for \$4.1 billion, comprising \$3.3Bln in cash as well as around \$800 million of net debt, to increase its presence in the bio-natural gas fuel sector.

Archaea is a leading producer of gas from waste, which proponents call renewable natural gas (RNG) and operating 50 RNG and landfill gas-to-energy facilities across the US.

This enables Archaea to produce around 6,000 barrels of oil equivalent a day of RNG.

BP Chief Executive Bernard Looney described Archaea as "a fantastic fast-growing business", and BP would add distinctive value through its trading business and customer reach.

BP said that when the acquisition is finalised the London-based company would have an immediate 50 percent increase to its biogas supply volumes.

"Archaea has a development pipeline of more than 80 projects that underpin the potential for around five-fold growth in RNG production by 2030," said BP.

"Earlier this year, it announced a joint venture with Republic Services Inc. to develop 40 RNG projects across the US, part of this pipeline," added BP

statement. Republic Services is a leading an American waste disposal company whose services include waste collection, transfer, disposal and recycling.

“The joint venture will convert landfill gas into pipeline-quality RNG that can be used for a variety of applications to displace conventional natural gas,” BP said in its statement.

BP added that the completed Archaea deal would double the company’s expected gross income from biogas to around \$2Bln by 2030.

“This supports the increase in bp’s aim for EBITDA from transition growth businesses by 2030 from \$9Bln-10Bln to more than \$10Bln,” stated BP.

The oil and gas major also expects to benefit from additional distinctive value through integration with BP’s trading capabilities and global customer relationships.

“Bioenergy is one of five strategic transition growth engines that BP intends to grow rapidly through this decade,” said the company.

BP expects investment into its transition growth businesses to reach more than 40 percent of its total annual capital expenditure by 2025 and to around 50 percent by 2030.

“It will accelerate our key bioenergy growth engine, creating a real leader in the biogas sector. And, importantly, we’re doing this while remaining focused on the disciplined execution of our financial frame,” stated the BP CEO Looney.

“Investing with discipline into the energy transition, creating further value through integration - this is exactly what BP’s transformation into an integrated energy company is all about,” he added.

BP is also involved in RNG with another US company, the Nasdaq-listed firm Clean Energy Fuels Corp. whose headquarters are in Newport Beach, California.

Clean Energy has developed the Redeem brand of LNG and compressed natural gas fuel made from waste.

The company also owns liquefaction plants in California and Texas and transports bulk LNG and CNG to filling stations and off-grid customers around the US.

Clean Energy BP are additionally working within an existing joint venture to build on plans to finance and develop new projects at dairy farms in the US Midwest, Texas and other states.

The various project are using dairy farms with more than 30,000 head of

cattle, to convert the methane produced from cow manure into millions of gallons of RNG.

CHINESE natural gas imports, including LNG and pipeline natural gas, dropped by 9.5 percent in the first nine months of 2022 as the economy slowed while China paid over 40 percent more for its gas during the period.

China’s National Bureau of Statistics said the country’s natural gas imports came to a total of 81.16 million tonnes, a decline from the 89.85MT logged in the first nine months of 2021.

Natural gas imports for September 2022 for pipelines and LNG declined by 4.4 percent to 10.15MT compared with 10.62MT in September 2021.

The cost of LNG and pipeline gas imports during the January-September period surged by 43 percent to 49.62 billion yuan (\$6.85Bln) versus 34.51Bln yuan (\$4.76Bln) in the same period of last year.

The Chinese import data was issued days after an announcement by China National Offshore Oil Corp (CNOOC), that it had discovered a large deep-water gas field with proven reserves exceeding 50 billion cubic metres in waters offshore the southeast of Hainan Province.

“The gas field called ‘Baodao 21-1’ achieved the biggest drilling success in the Songnan-Baodao area in more than 50 years,” said CNOOC.

The Chinese major said that the Baodao 21-1 gas field is located in Baodao Sag in the Qiongdongnan Basin of the Western South China Sea.

“The water depth ranges from 660 to 1,570 metres. The main gas-bearing layer is the Paleogene Lingshui formation,” said CNOOC.

“The discovery well Baodao 21-1-1 was completed at hole depth of 5,188 metres, encountering 113 meters of pay zone,” added CNOOC.

“The well is tested to produce an average of 587,000 cubic metres of natural gas per day. Chinese governmental bodies reviewed the discovery and certified the proven in-place of natural gas and condensate at over 50 billion cubic metres and 3 million cubic metres respectively,” stated CNOOC.

CNOOC said that Baodao 21-1 gas-bearing structure would be a solid foundation for the construction of a gas production base of one trillion cubic metres of resources in the South China Sea.

“Exploration has always been a priority for CNOOC,” said Zhou Xinhui, Chief Executive.

“We have accelerated the pace to explore in deep waters, targeting the discovery of large and medium-sized oil and gas fields,” said Zhou.

“We concentrated on geology and technology to make the breakthroughs and to bolster our efforts to increase reserves and production,” added Zhou.

ENAGAS, the Spanish natural gas grid and LNG terminals operator, posted a 15 percent increase in net profits and said the network of six LNG terminals had saved the country money and confirmed the opening in early 2023 of a seventh and existing LNG export terminal dedicated to European Union supplies.

Enagás reported net profits of €353 million (\$348M) in the first nine months of the year compared with the same period a year earlier.

“The start-up of the El Musel Terminal (Gijón) as a logistics facility is scheduled for January 2023 and it will be able to supply up to 8 billion cubic metres of LNG per year to Europe,” said Enagás.

“The terminal has authorizations from the Ministry for the Ecological Transition and only requires final approval of its earnings model from the National Commission for Markets and Competition,” the company explained.

Enagás confirmed that the training of the team of about 50 employees and technicians who will start up and operate the previously moth-balled terminal from January has already begun.

Enagás has capacity at six LNG regasification terminals in Spain. It owns five terminals at Barcelona in the northeast, at Cartagena in the southeast, at Sagunto in the east of Spain, at Huelva in the southwest and the El Musel terminal in the northwest that is now being reactivated for EU trans-shipments.

In addition to the El Musel terminal reactivation, the jetty at the Enagás terminal at Barcelona has been adapted to increase its handling capacity to also enable trans-shipments from Barcelona to other EU nations.

Gas exports from Spain in the first nine months of this year amounted to 26.6 terawatt hours, which is the energy equivalent of around 26 LNG cargoes.,

The company said that the LNG terminals in the Spanish gas system operated with 100 percent availability and those terminals currently have their

LNG storage tanks with an average fill level of around 80 percent.

“Thanks to the six Spanish LNG plants, natural gas prices in Spain have been among the lowest in the entire EU since the war in Ukraine broke out, with savings of around €7.8 billion on the national energy costs,” stated Enagás.

Enagás also praised the contribution to earnings and EU energy security of the Trans-Adriatic Pipeline in which the Spanish company has a 16 percent stake.

The TAP, which is 878 kilometres (545 miles) in length, brings Caspian natural gas from Azerbaijan to Greece, Albania and via the Adriatic Sea to Italy.

“The Trans-Adriatic Pipeline continues to help reduce dependence on Russian gas, especially in Italy and Greece,” said Enagás.

“With 98 percent utilization, this pipeline has delivered 7.9 Bcm of gas to Europe through September 30, 2022,” stated the company.

Enagás also has a stake in the Greek gas network company DESFA and said that the subsidiary was reinforcing the key role of the Revithoussa LNG import terminal, which covered 42 percent of Greece’s total gas import needs in the first nine months of 2022.

The company added that the DESFA terminal received LNG from seven different countries as gas demand in Greece increased by 13.2 percent in the period.

Enagás also has a stake in the Mexican Altamira import terminal in the Gulf of Mexico and said it had 100 percent operational availability during the nine-month period.

In the United States, Enagás has pipeline natural gas operations through its Tallgrass Energy subsidiary.

“Tallgrass pipelines had a high level of contracting and utilization during the first three quarters of the year with an average contracted capacity of the Rockies Express pipeline of over 90 percent and with a utilization ratio of the Pony Express Pipeline of 85 percent,” said the Spanish company.

In Peru, where Enagás has a stake in the Transportadora de Gas del Perú (TGP) pipeline and in the utility Compañía Operadora de Gas (COGA), gas demand increased by 10 percent and there was 83 percent utilization of the gas transportation infrastructure.

EXCELERATE Energy, the US floating LNG import terminal specialist, signed a five-year charter agreement in

Berlin with the German Government for the floating storage and regasification unit (FSRU) “Excelsior”.

The company, based in The Woodlands in Houston, Texas, said the ship would help provide energy security and supply diversification to Germany after the cut-off of pipeline natural gas from Russia.

The charter deal was signed by Excelerate’s President and Chief Executive Steven Kobos and Patrick Graichen, the State Secretary at the Federal Ministry for Economic Affairs and Climate Action.

The event at the Ministry of Economic Affairs in Berlin was also attended by Woodward Clark Price, the Chargé d’Affaires at the United States Embassy.

“The deployment of the FSRU ‘Excelsior’ to Germany demonstrates our commitment to strengthening energy security at a time when traditional energy sources have proven unreliable,” stated Kobos.

“FSRUs can offer flexible access to greater supply diversification and can serve as a complementary backstop for the rapid scaling of green energy projects,” added the Excelerate CEO.

The German Government had previously announced that a consortium including Tree Energy Solutions, the German utility E.ON and the French utility Engie would jointly develop and implement Germany’s fifth FSRU import terminal using an Excelerate vessel.

The US company added that the FSRU would accelerate the development of the Tree Energy terminal at the North Sea port of Wilhelmshaven.

Under the terms of the agreement, the FSRU “Excelsior” will go on charter in the first quarter of 2023.

Excelerate added that the “Excelsior”, which has an LNG storage capacity of 138,000 cubic metres and send-out capacity of 5 billion cubic metres per annum of regasified LNG, would go to drydock at the end of 2022 for scheduled maintenance prior to its deployment to Germany.

The US company offers a full range of regasification services from FSRUs to infrastructure development to LNG supply.

Excelerate has offices around the world where it has set up LNG import projects or was hoping to including the United Arab Emirates, Buenos Aires in Argentina, Dhaka in Bangladesh, Ho Chi Minh City in Vietnam, Manila in the Philippines and Rio de Janeiro in Brazil.

Germany is developing about half a

dozen other LNG import projects. Among them is the onshore import facility at Brunsbüttel on the Elbe River being developed by German LNG Terminal GmbH.

Other German import terminal plans include a mixture of FSRUs and onshore facilities.

Deutsche ReGas, a private company that has raised financing from Australian investment bank Macquarie Capital, said it aimed to import LNG in the next few months at the Baltic port of Lubmin and would use a mixture of vessels including small-scale shuttle carriers.

The port of Lubmin in the German state of Mecklenburg-Vorpommern is best known as the landfall for the shutdown Nord Stream gas pipelines under the Baltic Sea from Russia.

Lubmin has been chosen by the German Government as one of four coastal hubs for LNG FSRU imports because of existing German gas grid links.

Another FSRU venture and an onshore facility are proposed for the port of Stade on the Elbe River backed by a development company, Hanseatic Energy Hub GmbH.

Germany has said it was acquiring at least five FSRUs to move away as fast as possible from dependence on Russian pipeline natural gas from Gazprom.

The Stade seaport is situated on the Elbe sea-lane between Hamburg and the Elbe estuary at Cuxhaven and is close to the North Sea.

GAIL INDIA, the grid and natural gas pipelines operator and the second-largest importer of LNG after Petronet, has just brought in a new Managing Director and Chairman at a time when Indian energy strategies are expected to be revised with a more urgent focus on natural gas.

Sandeep Kumar Gupta took over the reins at GAIL at the start of October from Manoj Jain, who retired having been in charge since August 2019.

Gupta, 56, was chosen by India’s Public Enterprises Selection Board from a list of 10 candidates.

He is a Chartered Accountant by education and with 30 years of experience in the energy industry at Indian Oil Corp. (IOC), the nation's largest oil refining and fuel marketing company.

He had been Finance Director of IOC for three years before being selected to head GAIL under a contract that will run until February 2026.

GAIL is India's largest gas transmission and gas marketing company with pipeline capacity of 206 million standard cubic metres a day and a network covering 21 states.

GAIL currently has a 70 percent share of the gas-transmission network and more than 50 percent of the country’s domestic natural gas sales.

It additionally has a founding stake in Petronet LNG and operates over a dozen other joint ventures and associated business.

GAIL has six subsidiaries including GAIL Global USA Inc., which looks after its Cove Point LNG interests in the state of Maryland.

The company also runs an LNG trading business based in Singapore.

Other assets include a majority stake in Konkan LNG, the ownership company of India's Dabhol LNG import terminal, located south of Mumbai, and with 5 million tonnes per annum of capacity.

A statement was issued to the Bombay Stock Exchange (BSE) containing Gupta’s first address to the company’s employees.

He praised and recognised the “balanced business portfolio” built over time and the overall contribution made by many people to the development of the natural gas sector in the country.

“The contributions of my predecessors and the support of stakeholders including the Ministry of Petroleum and Natural Gas and employees have played a key role in the growth witnessed by GAIL over the years,” said Gupta.

He mentioned that the company is firmly aligned with government's vision of having a gas-based economy wherein the share of natural gas in the energy mix is to be taken to 15 percent by 2030.

“GAIL is set on the growth path in the natural gas value chain,” said Gupta.

“The company which had started with a single pipeline project in the year 1984, now owns and operates a truly diversified business portfolio including over 14,500 kilometres of natural gas pipelines and an LNG sourcing portfolio of around 14 million tonnes per annum,” explained Gupta.

“We will create a future energy landscape including small-scale LNG liquefaction, more gas and LNG storage and bunkering,” said Gupta.

He added that the company had carved out a “robust petrochemical expansion” to further strengthen its business.

Gupta also stated that the company would continue to operating Gas Processing Units and liquefied petroleum

gas (LPG) transmission networks, producing LPG and other liquid hydrocarbon products.

The new Chairman also declared that GAIL would at the same time remain committed to its “considerable presence” in the Indian renewal energy sector with holdings in solar and wind projects.

GLENFARNE GROUP, the US developer and operator of global energy and infrastructure assets and of the Texas LNG Brownsville and Magnolia LNG projects in Texas and Louisiana, has overhauled the business and formed Glenfarne Energy Transition (GET) for its energy assets while giving estimates for LNG final investment decisions.

“GET will operate through three core businesses: Global LNG Solutions, Renewables, and Grid Stability,” said New York-based Glenfarne.

“Responsibly sourced and environmentally sensible US LNG is one of the most financially and logistically flexible fuels to help fill global energy needs while countries bring modern power grids and other renewable infrastructure online,” added Glenfarne.

GET’s existing assets include 12 grid stability power plants, 5,000 miles of gas pipelines, 13 gas processing plants, 27 renewable assets and the two LNG export projects, Texas LNG and Magnolia LNG, which have been approved for a combined 12.8 million tonnes per annum of LNG production.

Glenfarne in May 2022 signed a contract for its Texas LNG project to be built by a joint venture comprising European engineers Technip Energies and South Korea’s Samsung Engineering.

The Texas LNG plant will have 4 MTPA of output and be constructed in the Port of Brownsville in Texas.

The project involves LNG liquefaction modules fabricated and then brought to Brownsville for installation.

Texas LNG, which has yet to take a final investment decision, is seeking to complete the project and ship its first cargo by 2026.

US regulators had also previously approved construction of the Magnolia LNG plant proposed for a 115-acre site near the Calcasieu Ship Channel with 8.8 MTPA of output from four Trains.

The Magnolia development had previously been owned by an Australian-listed company LNG Ltd that ceased trading amid financial difficulties and the assets were acquired by Glenfarne.

“We look forward to making final

investment decisions for Texas LNG later this year and Magnolia LNG in 2023,” stated Brendan Duval, Chief Executive and Founder of Glenfarne Group and the new GET unit.

“Together with our LNG import terminal developments and projected renewables and grid stability expansion, our business model is even more attractive and offers multiple growth vectors,” Duval added.

“We are proud to introduce Glenfarne Energy Transition during such a critical moment in the global decarbonization movement and the various efforts to achieve energy security,” he added.

Duval said grid stability was an enabler of deep penetration of renewables, and the group was continuing to invest in and develop infrastructure assets that provide sustainable and economically sensible solutions.

“With an experienced management team leading nearly 600 team members and a global LNG commercial footprint, GET is quickly expanding into several high-growth emerging markets in Asia and Latin America,” said Duval.

“GET believes that the world needs to adopt renewables at an accelerating rate to fight climate change and achieve energy security, but economies globally lack sufficient grid stability to maximize the power of renewables,” he explained.

GRTGAZ, the French gas grid company with three liquefied natural gas import terminals under its control, began transporting pipeline gas to Germany after reversing the normal flow on the only link between the two nations and since then European Union day-ahead spot gas prices have dropped, though other influences have been at play.

The first deliveries of pipeline gas to Germany began at 6 am on the morning of October 13 at the flow rate of 31 gigawatt hours per day (GWh/d).

The pipeline route passes through the border towns of Obergailbach, the interconnection point in the Moselle Department of Lorraine in eastern France, to Medelsheim in Germany’s Saarland.

The gas from Obergailbach is also having to be transferred according to French rules which require adding an odour to the gas for safety reasons, something the Germans do not require.

The project will eventually allow GRTGaz to sell 100 gigawatt hours per day (GWh/d) to Germany, with the

possibility of marketing unsold gas the day after.

GRTGaz Chief Executive Thierry Trouvé said in a presentation that the quantity of gas capability sent to Germany amounted to what about four nuclear reactors could produce in a day.

The main effect on European day-ahead pipeline gas prices in Germany and France is that they became almost aligned since October 13.

In addition, the EU’s strict gas storage policy ahead of winter means that French and German storage sites were almost full over a month early.

“In an unprecedented energy context linked to the war in Ukraine, France is in solidarity with its German neighbour by sending gas directly to it,” said GRTgaz after the launch of the service.

“After a sharp drop in Russian gas deliveries to Europe and in the context of European solidarity on energy security, GRTgaz has mobilized to adapt its network and formalize a proposal to market gas transport capacity from France to Germany,” it added.

In September, GRTgaz’s proposal had been the subject of a consultation of market players, organized by the Energy Regulation Commission.

The only existing interconnection point between France and Germany at Obergailbach was originally designed to operate in the Germany to France direction.

“GRTgaz, in collaboration with the German carriers (OGE and GRTgaz Deutschland), made the necessary technical adaptations in order to be able to reverse the direction of operations of the interconnection,” explained GRTgaz.

GRTgaz has as its subsidiary Elengy, the operator of three LNG import terminals in Western and Southern France at Montoir-de-Bretagne, Fos Tonkin and Fos Cavaou.

France’s fourth LNG import terminal is at the Channel port of Dunkirk under the ownership of Belgian utility Fluxys and partners and a fifth will be operational at Le Havre from the next winter season in 2023-2024.

The Port of Le Havre on the northwest coast of Normandy had previously had an onshore facility that handled deliveries of LNG from Algeria for the national utility previously called Gaz de France.

GRTgaz, which is headquartered in the Bois-Colombes suburb of northwest Paris, is the main natural gas transport operator in France while it is also assisted

by another company, Teréga, the operator in Southwest France.

Flows previously coming from Belgium have also been reversed and LNG deliveries in recent months have increased sharply in the EU in general and the LNG import terminals have been operating at near their maximum capacity at 90 percent regasification usage.

“LNG has played a major role in the supply of gas in France since the beginning of 2022,” GRTgaz has declared.

GTT, the French LNG storage technology company for ships and onshore, said it received two approvals from maritime classification societies for its new three-tank LNG tanker design.

The Approvals in Principle (AiP) came from Norwegian class society DNV and France’s Bureau Veritas.

DNV and BV have issued approvals in principle for the three-tank LNG carrier design for the Mark III and No. 96 technologies developed by GTT.

“This technological solution is aimed at increasing the profitability and overall performance of the vessel,” stated GTT.

GTT explained that the three-tank LNG carrier concept allowed a reduction in construction costs through the suppression of one cofferdam, one pump tower and all associated cryogenic equipment such as liquid and gas domes, valves and piping.

Philippe Berterottière, Chairman and Chief Executive of GTT, said that for almost 60 years, the GTT Group has been constantly improving its technologies to meet customer requirements as well as those of the regulatory authorities.

“Thirty years ago, we upgraded LNG carriers from five to four tanks and we now hope to bring the market forward with a three-tank LNG carrier. We hope to see this concept become standard in future years,” declared Berterottière.

The Paris-based company said that the overall surface area of the containment system will also be reduced by about 2,000 cubic metres, generating lower costs for the materials and vessel construction.

GTT added that improved ratio between the volume of LNG transported and the surface area of the cryogenic liner would make it possible to reduce the daily boil-off rate.

As an example, GTT estimated that it would achieve a boil-off rate as low as 0.080 percent of tank volume per day with the Mark III Flex technology compared to 0.085 percent of the volume per day with the LNG carriers currently in operation.

The company said that this new design could also offer time-savings for shipyards and could help optimise their construction schedules.

Jean-Baptiste Boutillier, Vice President of Development, Innovation and Technical Strategy at GTT, said the company was honoured by the granting of these two approvals in principle for the three-tank LNG carrier.

“We are convinced that this evolution will benefit all stakeholders by improving the performance of the LNG carrier while reducing its carbon footprint,” added Boutillier.

INDIAN liquefied natural gas imports suffered another large monthly fall by more than 16 percent because of the slowing economy and the higher prices needed to attract additional shipments from the higher-priced Atlantic Basin.

LNG imports for the month of September to India’s network of six terminals amounted to 1.75 million tonnes, or 26 cargoes, a drop of 16.3 percent from the 2.09MT, or 31 cargoes, delivered in September 2021, according to provisional data from the Ministry of Petroleum and Natural Gas.

Shipments for the month of August had amounted to 1.74MT, which was 19.3 percent lower than the 2.16MT of deliveries in August 2021.

Deliveries for the first six months so far for the fiscal year from April to September came to 10.88MT, which was 11.3 percent down on the 12.26MT received in the same six-month period of 2021.

LNG cargoes costs have spiralled this year because of higher prices and the fall of the rupee’s value against the dollar.

However, they were also a relatively high level in Asia at this time last year and almost equal to today’s prices.

The delivery costs for LNG shipments in the fiscal six months came to \$6.6Bln, or 54,683 crore rupees, versus \$5.8Bln, or 48,055 crore rupees, in the previous fiscal-year period, according to Ministry data.

The cost of the September LNG imports came to around \$1Bln, or 8,285 crore rupees, down from the \$1.3Bln, or 10,771 crore rupees, of September 2021 when volumes were larger.

LNG deliveries to Indian terminals have come mainly in the past year from Qatar, which provides over one-third of volumes, as well as West Africa, the US, Asian nations, Australia, Russia and the spot market.

While LNG imports have declined

every month since September 2021 more domestic pipeline natural gas has been produced in the fiscal year so far offshore the East Coast of India in the Bay of Bengal.

The Ministry data showed that the domestic natural gas production for the April-to-September period rose by 1.7 percent to 17.184 billion cubic metres from 16.891 Bcm in the prior-year period.

However, gas production in September declined by 1.7 percent to 2.852 Bcm from 2.902 Bcm in the same month of 2021.

The Krishna-Godavari Basin and other gas resources are the subject of several projects to boost domestic production.

The Ministry data also gave average capacity utilization rates for the six operating LNG terminals one month in arrears from April-to-August.

The total capacity of the six terminals amounts to 42.7 million tonnes per annum of LNG.

The largest Indian terminal at Dahej, located north of Mumbai and operated by Petronet LNG, has capacity of 17.5 MTPA and the latest utilisation rate from the Ministry was on a par with the previous month at 86.6 percent.

At the Hazira facility, operated by Shell India, the utilisation rate rose to 48.3 percent for 5.2 MTPA, up from 47.0 percent last month.

The West Coast terminal at Mundra saw lower usage of 17.8 percent for its 5 MTPA of capacity, down from 18.2 percent.

The throughput for Gas Authority of India (GAIL) at the Dabhol terminal, located south of Mumbai, fell further in the April-to-August period to 19.2 percent for 5 MTPA of capacity versus 23.6 percent previously.

At the Kochi facility in the southwest state of Kerala usage edged higher to 17.0 percent for 5 MTPA compared with 16.8 percent up to July.

At Kamarajar (Ennore), the only East Coast terminal, fiscal-year usage declined to 12.0 percent at the facility with 5 MTPA of capacity from 13.0 percent last month.

The Ministry said that the volumes of natural gas available for sale during September 2022 dropped by 9 percent year-on-year to 4.711 Bcm.

"Total consumption in September came to 4.669 Bcm and the major consumers were the fertilizer industry (36 percent), city-gas distribution (21 percent), power generation (13 percent), refineries (6 percent) and petrochemicals (3 percent)," said the Ministry.

ITALY'S onshore Panigaglia LNG import facility near the port of Genoa, is set to receive more cargoes for the 2022-2023 winter season as the nation fully mobilises its regasification assets to help the European Union emerge from the supply crisis.

Panigaglia was Italy's first ever LNG terminal and has been operational since 1969.

The Italian gas grid operator SNAM, whose name comes from Societa Nazionale Metanodotti (National Pipeline Company), runs the Panigaglia terminal as well as having a 49 percent stake in the LNG facility, the "FSRU Toscana", moored off the Italian coast off the port of Livorno.

Italy currently has three full-scale LNG import terminals, the third being the Adriatic terminal co-owned by units of ExxonMobil Corp, and QatarEnergy.

Adriatic LNG is located 15 kilometres (9.3 miles) off the Veneto coastline and is a gravity-based structure.

The first additional cargo for Panigaglia was delivered on October 9 from Angola in southwest Africa after having been reloaded onto smaller ships at Spanish terminals for them to be compatible with the onshore terminal in Italy's Liguria region, the crescent shaped coastal area also known as the Italian Riviera.

"Further LNG deliveries from Egypt and Algeria are also expected in October at onshore Panigaglia," said a statement from the supplier, Italian oil and gas company Eni.

"The overall contribution of additional LNG volumes to Italy, thanks to the availability of regasification terminals currently under development (FSRUs), will exceed 2 billion cubic metres between 2022 and 2023," explained Eni.

"It will progressively reach 7 Bcm between 2023 and 2024, and will exceed 9 Bcm between 2024-2025, in addition to further supplies to be delivered via pipeline," stated Eni.

SNAM has additionally agreed to buy a second floating storage and regasification unit (FSRU) from BW LNG of Singapore after purchasing the first FSRU from Norwegian fleet owner Golar LNG.

SNAM has signed an agreement to buy the "BW Singapore" which like the Golar vessel can act as a conventional carrier or an FSRU.

The "BW Singapore" was built in 2015 and has storage capacity of about 170,000 cubic metres and a nominal continuous

regasification capacity of about 5 Bcm per annum.

The FSRU, which is currently bound by a charter agreement with a third party until November 2023, is expected to be based in the upper Adriatic Sea, close to Ravenna.

SNAM said the "BW Singapore" acquisition was financed from its own resources for an amount of around \$400M.

SNAM agreed a similar deal at the start of June 2022 with Golar LNG, acquiring the FSRU "Golar Tundra" for \$350M.

The 170,000 cubic metres capacity "Golar Tundra" may be deployed near a port on the Italian island of Sardinia.

The two FSRUs acquired by SNAM will contribute 13 percent of the national gas demand alone.

JAPANESE liquefied natural gas imports for the first six months of the current fiscal year rose by 4 percent and with deliveries from the Russian Far East Sakhalin liquefaction plant increasing year-on-year and costing 90 percent more than the previous year as more Atlantic Basin shipments pointed at Europe.

LNG imports to Japan for the April to September period amounted to 34.9 million tonnes, according to preliminary data from the Ministry of Finance.

The cost of the deliveries for the first six months of fiscal 2022-2023 was 138.6 percent higher than the previous fiscal year's six-monthly period at 4.281 trillion yen (\$28.6Bln).

Japan imported 3.16MT of LNG from Russia from April to September and following the invasion of Ukraine at the end of February 2022. The Russian volumes received were 2.2 percent more than in the previous fiscal-year period.

By comparison shipments to Japan from the US dropped year-on-year for the same six months by 31 percent to 2.04MT.

The Russian cargoes cost 312.06 billion yen (\$2.09Bln) for the six months, an increase of 90 percent on last year's costs.

Japan's thermal coal imports also increased by 6.2 percent from April to September and amounted to 56.62MT.

However, Japan's LNG imports declined in the month of September after falling as well in August when monthly costs rose to over \$6 billion.

Shipments to Japan's network of 37 terminals amounted to 5.32MT in September 2022, or 78 cargoes, 15 fewer than last month and two less than the

total of 5.41MT, or 80 cargoes, delivered in September 2021.

Deliveries of LNG to Japan had amounted to 6.27MT in August 2022, down 0.45 percent.

The September 2022 deliveries cost 878.17 billion (\$5.87Bln), which was 164.2 percent higher than the September 2021 costs of 332.42Bln yen (\$2.23Bln).

The August 2022 import bill had been 874.47 billion yen (\$6.09Bln), the highest ever monthly cost to the nation in recent times.

The country's thermal coal imports also declined in September by 4.3 percent to 9.50MT and cost 506.14Bln yen (\$3.38Bln) and Finance Ministry data showed that this was 200 percent more than in September 2021.

While LNG imports have edged lower in the past three months they had increased in the first three months of the fiscal year.

Japan's 2021 LNG cargo deliveries had been less than those of China for the first time and came to 74.31MT, down 0.2 percent on 2020 and 4.62MT less than the Chinese total for 2021.

The top eight suppliers of LNG to Japan in the past year have been Australia with more than one-third of deliveries, Malaysia, Qatar, Russia, the US, Brunei and Papua New Guinea.

During September the volumes of LNG delivered from Australia year-on-year increased along with those from Asian nations and Russia.

Shipments of LNG from Asia in September increased by 60.9 percent year-on-year to 1.51MT.

The Ministry data also showed that Middle East cargo deliveries from nations like Qatar were well down by 73.8 percent year-on-year to 253,000 tonnes.

September deliveries from the US dropped by 41.9 percent from a year ago to 190,000 tonnes and they were less than the 333,000 tonnes received in August 2022.

Russian deliveries in the month were up 10.7 percent year-on-year to 582,000 and were also higher than August's 450,000 tonnes of deliveries.

The balance of imports and the biggest portion of cargoes in September 2022 came from Australia with some additions from African nations and the spot market.

However, the volumes in the Australian segment were lower than the previous month at 2.78MT for September 2022 versus 3.33MT in August 2022, though higher than the 2.53MT posted in September 2021.

JOGMEC, the Japan Oil, Gas and Metals National Corporation helping secure a stable supply of the nation's energy other resources, has just published the results of two surveys on the volume of LNG handled by Japanese companies and the current status of destination restrictions in LNG sales and purchase agreements.

Jogmec was set up by the Tokyo Government in 2004 and has the full cooperation of all Japanese companies engaged in LNG.

The agency said that the latest surveys were aimed at "improving the flexibility and liquidity" of the LNG market to enhance energy security.

The survey on the "LNG Handling Volumes of Japanese Companies" revealed that they handled around 110 million tonnes of LNG in the fiscal year 2021.

The second survey on the "Destination Clauses and Price Indices in LNG SPAs" showed that the contract quantity with destination restrictions were improving for 10-year contracts through 2030.

"About 45 million tonnes, or 53 percent of the total, in the fiscal year 2021, had destination clauses compared with 21 million tonnes, or 43 percent of the total, in the fiscal years through to 2030," said Jogmec.

"The LNG volumes handled by Japanese companies last year came to 109.57MT, showing a slight decrease of 0.73MT from the previous year. However, the Japanese companies have continuously achieved 100MT since fiscal 2019," said the report.

Jogmec also noted that the FY2019 and FY2020 actual figures had been revised in this latest survey due to corrections of reports from the surveyed companies.

LNG imports in FY2021 totaled 71.46MT, a decrease of 4.9MT from the previous year, while the volume of the "external trade" increased by 4.17MT to 38.11MT, resulting in the LNG handling volume in FY2021 being at almost the same level as in FY2020.

The second survey looked at 10-year contracts from FY2021 through FY2030 and based on the annual contract quantity (ACQ).

The ACQ of the fixed-term SPAs concluded by Japanese companies was approximately 84MT in FY2021 and will amount to 49MT through FY2030.

As of FY2021, the ACQ for Delivered Ex-Ship (DES) and free-on-board (FOB) terms and their respective shares were

approximately 50MT, or 59 percent, for DES terms and 34MT, or 41 percent, for FOB terms.

"As of FY2030, as the ACQ declines, the ACQ for DES and FOB terms is also to decrease to approximately 25MT and 24MT respectively," said Jogmec.

KINDER MORGAN, the leading US pipeline feed-gas company for liquefied natural gas plants and a key energy infrastructure developer, reported third-quarter net income of \$576 million, up from \$495M in the prior-year quarter, as the executive team forecast a continuing and deepening LNG boom on the Gulf Coast.

"As we continue to witness the tragic consequences of the war in Ukraine, including global economic turbulence and volatility, our company and the US energy sector as a whole can take some measure of pride in continuing to provide both our citizens and those around the world with natural gas, refined products and crude oil," said KMI Executive Chairman Richard D. Kinder.

In an overview of third-quarter operations, KMI President Kim Dang said that volumes were affected by the pipeline outage at El Paso Natural Gas (EPNG), the Freeport LNG plant outage following the June fire and the continued decline in Rockies production.

"If you adjusted our volumes for the EPNG and Freeport outages, which are temporary in nature, we estimate volumes would have been up about 4 percent," said Dang.

"Sequentially, volumes are up 6 percent with big increases in the Bakken, up 14 percent, Haynesville Shale, up 8 percent and the Eagle Ford, up 7 percent," explained Dang.

"Overall, our natural gas gathering volumes were budgeted to increase about 10 percent for the full year and we're currently on track for about 13 percent," she added.

"Our fundamentals group estimates natural gas demand to grow from roughly 100 billion cubic feet per day market currently to approaching a 130 Bcf market by 2031," she stated.

Chairman Richard Kinder and the other executives joined a conference call with analysts to speak mainly about natural gas infrastructure and the value of the company's existing assets.

"As we all know, it's become increasingly difficult to build new greenfield pipeline projects, particularly in the Northeast and other areas outside

the US Gulf Coast," said the Chairman Kinder

"While this situation is, in my opinion, unfortunate and poor public policy, it does make existing infrastructure even more valuable. I don't think that value is fully recognised by the equity markets," he stated.

"Having such an extensive network already in place affords great opportunity for a company like ours to extend and expand our assets on an incremental basis without the Herculean task of permitting and building a new greenfield project," stated the Chairman.

He declared that KMI was fortunate that a large portion of its network was in Texas and Louisiana.

These are states that "understand and appreciate" the need for new energy infrastructure and where so much of the demand for additional throughput, particularly natural gas, is located.

"Let me be more specific. The demand for natural gas in those states is projected to grow enormously over the rest of this decade," he told analysts.

"That growth is driven by a number of end-users but let me just focus on LNG export facilities. Year-to-date, in 2022, LNG is consuming over 11 Bcf a day and that number incorporates the absence of roughly two Bcf a day of demand from the Freeport LNG facility," he explained.

"We project that after 2027, LNG demand will continue to grow and is expected to be 28 Bcf a day by 2030," said Kinder.

"Given the situation in Europe today, which will result in more long-term contracts and the continuing usage in Asia, this hyper-growth scenario actually seems pretty reasonable to me," added the Chairman.

Kinder said that was a "huge increase" and most of it would occur in Texas and Louisiana, where so much of its asset base is located.

"As you know, we currently move about 50 percent of all the gas consumed by LNG facilities, and we expect to maintain or expand that share in the future," he said.

"When you add the increasing need for natural gas for industrial uses, electric generation and exports to Mexico to that massive LNG demand, the result is an enormous opportunity to grow our system in a capital-efficient manner, which in turn will grow the value of our company," he concluded.

CEO Steve Kean said the company currently had 5.7 Bcf a day under long-

term contracts serving existing LNG facilities.

"The associated investment for that 5.7 Bcf was \$1.3 billion. That is very capital-efficient expansion of our network. There are other opportunities as well," said Kean.

"We have identified and talked to customers on our Texas Intrastate system about over a Bcf a day each of power plant, industrial and utility expansion," explained the CEO.

"Of course, not all that's going to happen, but it shows the level of economic activity in one of our biggest natural gas markets," stated Kean.

NEWMED ENERGY, formerly Delek Drilling and owner of the largest Israeli offshore natural gas field and a likely future LNG feed-gas supplier, is continuing with the process of being listed on the London Stock Exchange through a reverse takeover of UK company Capricorn Energy.

The expected completion date of the NewMed Energy merger with London-listed Capricorn is the first quarter of 2023.

Capricorn cancelled its proposed merger with UK rival Tullow Oil in favour of the combination with Israel's NewMed, which was first announced on September 29, 2022.

There had previously been plans for a \$1.4 billion merger between Tullow and Capricorn, which is based in Edinburgh and was formerly known as Cairn Energy.

Among its assets, NewMed Energy holds the rights to 45 percent of the Leviathan Israeli offshore gas field with the other major shareholder in the field being Chevron Corp.

NewMed also has the Aphrodite gas field in Cyprus's offshore economic zone waters, making it one of the biggest players in the East Mediterranean.

NewMed aims to promote the expansion of the Leviathan field and the development of the Aphrodite reservoir alongside the launch of exploration and production of natural gas in other countries in the Middle East.

The Leviathan gas field in addition to supplying the Israeli domestic market also supplies Egypt and Jordan with gas and has existing plans to supply feed gas for liquefaction at Egyptian plants east of Alexandria.

NewMed Energy Chief Executive Yossi Abu will lead the merged company, which will still be called NewMed Energy.

As part of the merger agreement,

Capricorn will distribute to its shareholders a special dividend in cash and related payments amounting to \$620 million.

Capricorn offered 2.337 new shares for every NewMed participation unit held.

The combination with Capricorn aligns with NewMed's long-term strategy of becoming a major energy player focused on the Middle East and African regions with reserves and resources across them both.

The deal when completed will expand and strengthen NewMed's existing portfolio by adding Capricorn's producing assets in Egypt and a number of exploration assets.

The shares of the combined company will be listed on the LSE under the name New-Med Energy, and will also be dual listed for trading on the Tel Aviv Stock Exchange.

The completion of the merger in early 2023 will create a significant energy company with 2P reserves of more than 1.5 billion barrels of oil equivalent, most of which is natural gas from the Leviathan field with low production costs and stable cash flow.

Completion is subject to a number of conditions, including the approval of the New-Med participation unit as well as approval by the Jerusalem District Court to turn the NewMed partnership into a public company.

"We share with Capricorn a common vision and a strategic plan to double our production by 2030, from organic opportunities, with exposure to the LNG market and with the aim of contributing to the supply of natural gas to European markets," said NewMed CEO Yossi Abu.

OFFSHORE ENERGIES UK,

the leading trade body for the country's offshore oil and gas and energy industries with 400 members, has welcomed Rishi Sunak's appointment as the nation's next Prime Minister.

"Sunak must refocus attention on the crucial issues facing the nation, including helping people pay their winter energy bills and keeping the lights on in the face of Europe-wide gas shortages," said the UK body about the new Conservative Party leader.

"In the longer term he must deal with the challenges of fuelling the future, including using the gas and oil remaining in the UK's offshore waters to provide energy during the transition to low carbon," added OEUK.

It pointed out that last year oil and gas

accounted for 75 percent of the UK's energy needs.

Last year the British consumed 78 billion cubic metres of gas, or the equivalent of 58 million tonnes of LNG, the output of four of the largest US LNG export plants.

Annual UK gas consumption amounted to 1,100 cubic metres per person.

The UK needed to import 11.05 million tonnes of LNG last year to help meet its needs, just behind Europe's two largest LNG buyers, Spain with 13.85MT and France with 12.35MT.

Around 80 percent of UK households, or 24 million homes, rely on natural gas for heating and on average about 42 percent of all UK electricity is produced by burning gas.

As regards the nation's oil needs, the UK consumed 55 million tonnes of oil and oil products in 2021, equivalent to 0.8 tonnes per person.

On UK roads, 32 million cars and trucks rely on gasoline and diesel for their fuel and require 22 million tonnes per annum of diesel and 10MT a year of gasoline.

"We wish Rishi Sunak the best. We are already in very challenging times and energy is at the top of the agenda. Global energy prices are rising, and UK consumers face surging bills at the coldest time of year," said Deirdre Michie, OEUK's Chief Executive.

"OEUK's members are protecting the UK from many of the worst impacts of those shortages by producing energy for the whole nation," she added.

"They will keep doing that in the tough times ahead. We work with politicians of all parties, now including Mr Sunak's administration, and we look forward to meeting him and his team," she added.

"When we do, we will be making a powerful case around the need for stability in the fiscal and regulatory regimes governing the UK's offshore sector," explained Michie.

"The UK needs to secure billions of pounds for offshore investments if it is to keep producing the gas, oil and offshore wind, plus other low-carbon energies, needed for future growth and productivity," she declared.

ORIGIN ENERGY, the Australian upstream supplier to the Australia-Pacific LNG export plant in Queensland, said it expected a sizeable increase in underlying earnings from its utilities business, though signalled possible lower coal-

seam-gas output affecting APLNG because of weather issues.

The Sydney-based utility company is the nation's second-largest power market player and had previously suspended its seasonal outlook due to extreme gas and power price volatility.

Coal deliveries to its Eraring coal-fired power plant located north of Sydney had also created supply problems.

Origin's business comprises Integrated Gas with its feed-gas sales and a utilities and domestic power markets unit, the Energy Markets division.

This is made up of retail and wholesale electricity sales and natural gas supplies to the states of Queensland, New South Wales, Victoria and South Australia.

The company now expects underlying earnings for its Energy Markets division to be between A\$500 million (\$315.6M) and A\$650M in fiscal 2023, compared with A\$365M at the same time last year.

For Integrated Gas, Origin referred to possible weather issues affecting onshore CSG output in Queensland.

The company said production from the APLNG plant would likely be at the lower end of the 680 petajoules to 710 petajoules range due to "unfavourable" weather.

"The continued impact of unseasonal wet weather and a forecast third 'La Niña' is likely to result in production towards the lower end of the (forecast) range," said Origin.

The "La Niña" weather system in the Asia-Pacific region typically increases the chance of above average rainfall for northern and eastern Australia during the Southern Hemisphere spring and summer.

The APLNG plant is a supplier to China and one of its shareholders is China Petroleum & Chemical Corp, known as Sinopec.

Origin is the main upstream operator for CSG supply to the facility while US major ConocoPhillips remains the plant operator.

APLNG came on stream in 2016 and has two liquefaction Trains with total nameplate capacity of around 9 million tonnes per annum with about 7 MTPA going to China.

The plant sits alongside two other CSG-to-LNG facilities on Curtis Island, the Shell-run Queensland Curtis LNG plant and the Gladstone plant, operated by Adelaide-based Santos.

A year ago, Origin executed an agreement with EIG Global Energy Partners, an institutional investor in the

energy sector, to sell a 10 percent shareholding in APLNG for A\$2.12Bln.

The line-up of shareholders in APLNG is operator ConocoPhillips with 37.5 percent, Origin still holding 27.5 percent, Sinopec with 25 percent and EIG owning 10 percent.

Origin said that the improvement in underlying earnings compared with the prior year was driven by an expected increase in natural gas gross profit.

This could be offset by electricity earnings that are subject to coal contracting issues.

"Electricity gross profit is expected to remain suppressed reflecting higher energy costs only partially priced into regulated tariffs," added Origin.

The utility company added that it had contracted 4.4 million tonnes of coal of a targeted 5MT to 6MT and expects to reach this target by the end of the 2022 calendar year.

"Contracted coal reflects both legacy priced contracts and contracts priced at market forward prices at the time of contracting," said Origin.

"Coal rail deliveries and mine performance have significantly improved over recent months. However, there remains a risk of coal under-delivery. The coal stockpile has increased and is currently around 660,000 tonnes," it added.

In a recent Origin assets transaction, the company said in September 2022 it was selling its 100 percent interest in Beetaloo Basin shale gas in Australia's Northern Territory.

Origin said it was exiting its upstream exploration permits but would share in any future profits.

The utility said agreements had been reached to sell the Beetaloo assets to Australia's Tamboran Resources and its partners for A\$60 million (US\$40.2M) and with a royalty on future production over the life of the field.

"Origin has also executed a gas sale agreement for offtake of future gas production," it added.

QATARENERGY has selected UK major Shell as the second international partner for the LNG expansion known as the North Field South (NFS) liquefaction and export joint venture.

The NFS expansion, which will follow the North Field East project, is aimed at adding a further increase in the Arabian Gulf nation's LNG production to 126 million tonnes per annum by 2028.

Following its selection as a partner for

the 32 MTPA NFE project Shell has now taken a stake in the production of 16 MTPA in the NFS joint venture.

NFS involves constructing two additional mega-LNG Trains, each with 8 MTPA of output.

“Shell has been selected to participate in the next wave of Qatar’s LNG expansions – the North Field South project (NFS),” said the London-based company.

Shell explained that it would obtain a 9.375 percent participating interest in the NFS project out of a total 25 percent interest available for international partners. QatarEnergy will hold the remaining 75 percent.

“I am delighted that Shell’s strategic partnership with QatarEnergy is further deepened through our participation in the North Field South project,” said Shell Chief Executive Ben van Beurden at the October 23 signing ceremony

“LNG has a key role in ensuring energy system reliability and our investments with QatarEnergy will support the energy transition and energy security, two of the most fundamental challenges the world faces today,” added Van Beurden.

French major TotalEnergies was the first partner chosen to also obtain a 9.375 percent participating interest in the NFS project.

Natural gas offshore the northeast coast of Qatar was discovered in 1971 and has taken the Gulf state to a leadership position in global LNG supplies along with Australia and since joined by the US.

The gas field covers more than 6,000 square kilometres and with an estimated 900 trillion standard cubic feet of recoverable reserves.

Together, NFE and NFS form the wider North Field expansion project to increase LNG production from the North Field, adding 48 MTPA overall to Qatar’s export capacity.

The Upstream part of the project will develop the southern area of the North

Field with five platforms, 50 wells and gas pipelines to the onshore processing plant.

QatarEnergies has said that downstream comprising the two 8 MTPA mega-Trains would enable the NFS project to benefit from significant synergies with NFE, making it one of the most cost-competitive LNG projects worldwide.

RELIANCE Industries, the Indian conglomerate and a leading energy company supplying rising domestic gas volumes to supplement LNG imports, reported an increase in earnings across its energy division and the start-up soon of a third gas field in the Krishna Godavari Basin KG-D6 block on the East Coast of India.

The two onstream fields shared with BP of the UK are called the R-Cluster and the Satellite-Cluster and a third one is almost ready to start up and is called the MJ field.

Reliance said the Phase-II drilling and completion campaign for the MJ field was under way.

“The floating production storage and offloading (FPSO) is currently at Kakinada (Andhra Pradesh) anchorage after completion of sea-trials and commissioning of the hull and topsides,” said Reliance in reference to the platform delivered from South Korea.

“After receiving necessary the approvals the FPSO will move to the field location for hook-up, offshore testing, pre-commissioning and commissioning activities,” the company explained.

“Production from the MJ field is expected to commence by end of the year. With the incremental production from the MJ field, the KG-D6 block is expected to contribute around 30 percent of India’s gas production,” stated Reliance.

Reliance said gas exploration and production division revenues jumped by 134.4 percent to 3,853 crore rupees (\$465.6 million) led by higher production and improved gas price realizations.

KG-D6 gas production during the quarter was 41 billion cubic feet (Reliance’s share) versus 39.2 Bcf of output in the same three months last year.

“The average gas price realized for KG-D6 was \$9.86 million British thermal units compared with \$3.62 per MMBtu in the same quarter last year with the raising of the gas price ceiling by the Government of India,” said Reliance.

Reliance also has gas assets in the Mahanadi Basin as well as two coal-bed

methane (CMB) blocks, Sohagpur (East) and Sohagpur (West) in Madhya Pradesh state in central India south of New Delhi.

Reliance said coal-bed methane production slipped to 2.43 Bcf in the quarter compared with 2.62 Bcf in the 2021 quarter.

“The gas price realized for CBM was higher at \$23.34 MMBtu (GCV) almost 3.5-times the realized prices in the same quarter of the last fiscal year,” added Reliance.

The company said the ceiling price applicable for KG-D6 (R-Series/Sats) increased to \$12.46 per MMBtu for the first fiscal half year.

Reliance explained in its fiscal second-quarter earnings statement that revenues in the oil and chemicals division increased by 32.5 percent to 159,671 crore rupees (\$19.29Bln) versus 120,475 crore rupees (\$14.55Bln) in the same three months last year on account of higher crude oil prices.

“Our domestic oil and gas business continued to deliver robust performance maintaining production at 19 billion standard cubic metres per day levels in the KG-D6 block, significantly enhancing energy security for the country,” said Mukesh D. Ambani, Chairman and Managing Director of Reliance.

“We are confident of commissioning the MJ Fields by year end,” he stated.

Reliance, based in Mumbai, is a group also involved in textiles, retail, telecoms and media and other business as well as oil, gas and chemicals.

The company said gross overall revenues for all the businesses in the quarter to the end of September 2022 amounted to 253,497 Indian crore rupees (\$31.2 billion), which was 32.4 percent higher than the same three months of 2021.

Reliance said consolidated overall earnings came to 34,663 crore rupees (\$4.3Bln), an increase of 14.5 percent compared to the prior-year quarter.

The company’s net profits for the quarter amounted to 15,512 crore rupees (\$1.9Bln), higher by just 0.2 percent.

SAIPEM, the Italian LNG and energy engineering company, has been awarded a contract valued at around \$4.5 billion by Qatargas for the North Field Production Sustainability (NFPS) offshore compression project to enable the Arabian Gulf nation’s two forthcoming expansions.

“This prestigious award represents the largest single offshore contract by total

value in the company’s history,” stated Saipem.

This NFPS project will help maintain gas output from the Qatari North Field as Qatar prepares for its first major gas expansions since Ras Laffan was constructed.

State-owned QatarEnergy is the largest shareholder in Qatargas and operates the North Field.

“The scope of work encompasses the engineering, procurement, fabrication and installation of two offshore natural gas compression complexes aimed at sustaining the production of the North Field,” explained Saipem.

It includes two of the largest fixed steel jacket compression platforms ever built, flare platforms, interconnecting bridges, living quarters and interface modules.

“To execute this project, Saipem will leverage on its own assets, know-how and competences on offshore engineering, installation and fabrication, as well as its capability to maximize local content,” said the Milan-based company.

The Qatargas contract follows the award in early 2021 related to offshore facilities for extraction and transportation of natural gas for the same field and demonstrates the “continuity and the quality” of Saipem’s performance in Qatar.

“With this contract, Saipem accelerates its strategic repositioning in the offshore segments (E&C and drilling) which represent the large majority of the announced order intake year-to-date, further supporting the delivery of its strategic plan,” said the company.

QatarEnergy is carrying out two expansion projects in the North Field to boost its current nameplate capacity of 77 million tonnes per annum.

The Gulf state is adding 33 MTPA in the North Field East (NFE) project and a further 16 MTPA in the North Field South (NFS) liquefaction venture to increase production to 126 MTPA by 2028.

Natural gas offshore the north-east coast of Qatar was discovered in 1971 and the gas field covers more than 6,000 square kilometres and with an estimated 900 trillion standard cubic feet of recoverable reserves.

SEMPRA, the operator of the Cameron LNG export plant in Louisiana, has signed an amended engineering, procurement and construction (EPC) contract with engineering firm Bechtel

Diary of events

22nd World LNG Summit & Awards

29 November - 2 December
Athens, Greece
<https://www.worldlngsummit.com>

LNG2023 World Conference

10-14 July 2023
Vancouver, Canada
<https://www.igu.org/events/lng2023-conference/>

Energy for the Port Arthur LNG export project in Texas.

Bechtel and the Sempra unit, Sempra Infrastructure, have amended the EPC contract for the proposed Phase 1 liquefaction project in Jefferson County in Texas to a new price of approximately \$10.5 billion.

“The execution of the final contract is a critical step in advancing Phase 1 of Port Arthur LNG toward a final investment decision,” said Justin Bird, Chief Executive of the Sempra Infrastructure unit.

“Based on robust customer interest, we know that Port Arthur LNG is highly attractive to the global market and we look forward to providing customers with access to secure, abundant and reliable US LNG,” added Bird.

Paul Marsden, President of Bechtel, said the firm was delighted to continue its partnership with Sempra after constructing the Cameron export plant at Hackberry.

“Alongside Sempra Infrastructure, Bechtel is ready to continue active construction in the Gulf Coast and bring more opportunities to the local region” added Marsden.

The Sempra EPC contract with Bechtel covers engineering, procurement, construction, commissioning, start-up, performance testing and operator training activities for Phase 1 of the new Texas plant.

The Port Arthur Phase 1 project has all its permits and is expected to include an initial two liquefaction Trains with a combined 13.5 million tonnes per annum of output.

Sempra said it was already working on a similarly-sized Port Arthur LNG Phase 2 project with “active marketing” taking place. This would take total production eventually to 27 MTPA.

California-based Sempra has signed a series of supply deals for Port Arthur Phase 1 involving four companies.

They are the Polish Oil & Gas Company, the German utility RWE Supply & Trading, UK chemicals company INEOS and US major ConocoPhillips.

The Sempra Infrastructure unit of Sempra also contains the other LNG assets like the Cameron plant and the Costa Azul export project in Mexico.

Earlier in 2022 Sempra agreed to sell a 10 percent interest in Sempra Infrastructure Partners to a subsidiary of the Abu Dhabi Investment Authority (ADIA), the wealth fund in the United

Arab Emirates, for \$1.78Bln in cash.

The San Diego-based utility business of Sempra includes San Diego Gas & Electric Co. and Southern California Gas Co.

TECHNIP ENERGIES, the leading energy and LNG engineering company, said events in 2022 had underlined the need for increased spending in LNG and natural gas as the Euronext exchange-listed company continued its “orderly exit” from the Arctic LNG II project in Russia.

Technip reported strong nine-month revenues of €4.86 billion (\$4.76Bln) as net profits for the January-to-September period came to €222.9 million compared with €159.7M in the same period of 2021.

However, order intake was lower in the nine months at €2.72Bln and with a backlog down to €13.50Bln from €16.46Bln a year ago.

“The world requires an energy system that balances affordability, availability, and sustainability,” said Arnaud Pieton, Chief Executive of Technip Energies, in reporting the earnings.

The Technip CEO stated that recent events had underlined the urgent need for increased investment and accelerated project development, with a particular emphasis on natural gas, LNG and low-to-zero carbon solutions.

“Our orderly exit from Arctic LNG II is progressing and all operational personnel have been demobilized from the project,” explained the CEO.

“We have signed an Exit Framework Agreement with our customer (Novatek joint venture), which we are currently implementing, and anticipate completing this process within the first half of 2023,” he added.

Technip said it was making progress on other LNG and energy projects worldwide.

At the QatarEnergy North Field Expansion project, Technip said the ramp-up of civil construction activities at the site was continuing along with equipment and material deliveries.

Technip added that the “Coral Sul FLNG” project offshore Mozambique in southeast Africa has progressing with start-up activities.

At Sempra Infrastructure’s Mexican LNG export project, the Energía Costa Azul venture, the first steel structures deliveries have been received and all heavy equipment shipped to the site.

For the Karish Gas Development in Israel led by the Energean company,

Technip said approval had been received from the Israeli Ministry of Energy to start the flow of gas.

“We expect a significant improvement in order intake trends over the next 12-18 months,” added CEO Pieton.

“In the third quarter, our teams continued to demonstrate robust business execution and our revenues excluding Arctic LNG 2 increased as planned,” he said.

Technip said that orders in the third quarter of 2022 to the end of September included a FEED contract for Papua LNG upstream production facilities, a large ethylene contract for the INEOS Project One cracker in Belgium, a significant contract for the Neste renewable products refinery expansion in Rotterdam and a contract for the YURI green hydrogen project in Australia.

The first half orders included notably a large EPC contract from Hafslund Oslo Celsio for the world’s largest full-scale waste-to-energy plant with carbon capture in Norway and a carbon capture and a storage expansion at ExxonMobil’s LaBarge facility in the US.

TOTALENERGIES and Middle East partner QatarEnergy have inaugurated a huge solar energy project linked to Qatar’s LNG expansion and the various joint ventures set up for the North Field East and North Field South liquefaction and export projects.

Al Kharsaah solar power plant was developed by TotalEnergies and QatarEnergy along with a third partner, the Japanese trading house Marubeni Corp.

The inauguration ceremony was led by Sheikh Tamim bin Hamad Al Thani, the Emir of Qatar, as the project started up and was connected to the Qatari national electricity grid.

The Al Kharsaah facility is located 80 kilometres (50 miles) west of the Qatari capital Doha and is the first such renewable facility in the Arabian Gulf state..

The plant with capacity of 800 megawatts was built on a 1,000-hectare site, equivalent to an area of 1,400 soccer pitches and containing 2 million high-efficiency bifacial modules mounted on single-axis trackers.

Al Kharsaah can supply 10 percent of the country’s peak power consumption and will avoid 26 million tons of carbon-dioxide emissions during its lifetime as Qatar itself expands its LNG output from just under 80 million tonnes per

annum currently to 126 MTPA by 2027.

Analysts said the Qatari solar project underpins pledges made by leading global LNG producers and stakeholders to pursue renewables in a sensible way while keeping natural gas flowing to guarantee essential energy services.

“After our recent entry into the giant LNG projects NFE and NFS alongside QatarEnergy, we are proud to announce the start-up of the Al Kharsaah solar plant,” said the Paris-based oil and gas major.

“This giant project, which contributed to the sustainability roadmap of Qatar, demonstrates once again TotalEnergies’ ability to support producing countries in their energy transition by combining natural gas production and solar energy to meet the growing demand for electricity,” declared Patrick Pouyanné, Chairman and Chief Executive of TotalEnergies.

“This is another milestone in our long-standing and trustful relationship with QatarEnergy, also bringing us closer to our goal of 35 gigawatts of production capacity by 2025,” added Pouyanné.

The power plant is operated by the Siraj 1 joint venture, which is jointly owned 40 percent by a consortium comprising TotalEnergies (49 percent) and Marubeni (51 percent) and with the 60 percent balance held by QatarEnergy Renewable Solutions.

The project includes a 25-year Power Purchase Agreement between Siraj 1 and the Qatari power grid operator Kahramaa.

The inauguration of the Al Kharsaah plant with capacity of 800 megawatts follows the recent selection of TotalEnergies as QatarEnergy’s first international partner for the NFE liquefaction plant expansion after already signing up for the NFS venture.

Participation in these projects will enable TotalEnergies to add production to its global LNG portfolio by 2028, in line with the company’s goal of increasing the share of natural gas in its sales mix to 50 percent by 2030,” explained TotalEnergies.

The Al Kharsaah start-up follows QatarEnergy’s recent announcement of a second solar project for the Ras Laffan and Mesaieed industrial cities, also supported by TotalEnergies.

“With 900 MW of installed capacity, this second project would be another landmark venture in QatarEnergy’s strategy to reduce the carbon footprint of its facilities by 2030 and to develop

5 gigawatts of renewable power generation capacity by 2035,” stated the French major.

WOODSIDE ENERGY, the Australian LNG plants operator, reported a more than 3.5-fold increase in third-quarter revenues, reflecting higher sales volumes and surging average realised prices in the portfolio.

Woodside, which runs the North West Shelf liquefaction project and Pluto LNG in Western Australia as well as owning and having stakes in other oil and gas project at home and overseas, reported revenues for the three months of US\$5.85 billion compared with US\$1.57Bln in the same three months of 2021 and US\$3.43Bln in the second quarter of 2022.

The company said its average traded LNG price in the quarter soared to US\$32.7 per million British thermal units versus US\$9.9 per MMBtu in the prior-year quarter.

Woodside’s quarterly activities report also showed that the average price of produced LNG was US\$19.10 per MMBtu in the three months to the end of September versus US\$9.7 per MMBtu in the year-ago quarter and US\$13.8 per MMBtu in the second quarter of 2022.

The company said sales volumes for the quarter climbed 59 percent from the preceding three months to 57.1 million barrels of oil equivalent.

“Work on our major projects progressed to plan. The first stage of the Pluto Train 2 construction accommodation village in Karratha has been completed and

fabrication of the subsea flowlines for the development of Scarborough (gas field) commenced,” said the activities report.

“Overall, the Scarborough and Pluto Train 2 projects combined were 21 percent complete at the end of the quarter and remain on track for the targeted first LNG cargo in 2026,” it added.

In the Sangomar oil field project offshore Senegal in West Africa, Woodside said the subsea installation campaign began in September and development drilling progressed, with six of the planned 23 wells now complete.

The project was 70 percent complete at the end of the quarter and with first oil targeted for the second half of 2023.

The company also noted that two long-term marketing deals signed during the quarter would strengthen Woodside’s

trading position in the Atlantic Basin.

Woodside entered into a long-term sale and purchase agreement with Germany’s Uniper Global Commodities to supply LNG from its global portfolio from 2023 into Europe, where buyers are urgently seeking alternatives to Russian gas.

“We also signed an SPA for supply from the proposed Commonwealth LNG export facility in Louisiana,” said Woodside.

Woodside Chief Executive Meg O’Neill said the rise in production and revenues in the third quarter, reflected the first full three months of contribution from the former BHP petroleum business.

“This is our first full quarter following the merger and these results demonstrate the new, expanded Woodside is delivering what we promised: safe, reliable energy from a more diverse portfolio,” she added.

“Strong operational performance across the combined portfolio has allowed us to upgrade our full-year production guidance to 153-157 MMboe,” said the CEO.

O’Neill also noted that the company’s investment in the Pluto-Karratha Gas plant Interconnector was creating significant value, enabling the acceleration of 2.3 MMboe of Pluto gas using available production capacity at Karratha

In its hedging activities, Woodside said that as of the end of September 2022, its had placed oil price hedges for approximately 17.5 MMboe of 2022 production at an average price of \$74.6 per barrel of which around 11.6 MMboe has been delivered and about 21.8 MMboe of 2023 production at an average price of \$74.5 per barrel.

Woodside also has a hedging program for Corpus Christi LNG volumes in the US to protect against downside pricing risk.

These hedges are Henry Hub and Dutch Title Transfer Facility (TTF) commodity swaps.

“As at the end of September, and as a result of hedging and term sales, approximately 78 percent of Corpus Christi volumes for the remainder of 2022, approximately 72 percent of 2023 volumes and approximately 28 percent of 2024 volumes have reduced pricing risk,” said Woodside.

The company said that the year-to-date value of hedged positions to the end of September 2022 was a post-tax expense of approximately \$500M

Hedging losses will be included in “other expenses” in the full-year financial statements. ■



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
Dominican Republic	Zhoushan Zhejiang	Enn Group	2018	2	320,000
Finland	Zhuhai, Gaolan	CNOOC	2013	3	480,000
	Punta Caucedo	AES Andres	2003	1	160 000
France	Pori	Gasum Skangas	2016	1	30,000
	Tornio	Gasum Skangas	2018	1	30,000
	Fos Tonkin	Elengy	1972	3	150,000
	Montoir-de-Bretagne	Elengy	1980	3	360,000
Gibraltar	Fos Cavaou	Engie, Total	2010	3	330,000
Greece	Dunkirk LNG	EDF, Fluxys, Total	2016	3	570,000
India	Gasnor	Shell	2018	1	5,000
	Revithoussa	DEPA	2000	3	225,000
	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
Indonesia	Mundra	Gujarat State Petroleum, Adani Group	2018	2	320,000
Italy	Kamarajar (Ennore), Tamil Nadu	Indian Oil, DFC, ICICI Bank	2019	2	360,000
	Arun	Pertamina	2015	5	507,000
Jamaica	Panigaglia	Snam	1969	2	100,000
Japan	Porto Levante (offshore GBS)	ExxonMobil, Qatar Petroleum, Edison Gas	2009	2	250,000
	Montego Bay	New Fortress	2018	1	7,000
	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	Storage	
				Tanks	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
Korea	Hachinohe LNG	Nippon Oil	2015	2	280,000
	Hitachi LNG	Tokyo Gas	2015	1	230,000
	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
Kuwait	Samcheok	Kogas	2014	3	600,000
	Tong-Yeong	Kogas	2002	17	2,620,000
	Jeju	Kogas	2019	2	90,000
Mexico	Al Zour LNG	KIPIC	2021	8	1,800,000
	Pengerang Johor	Petronas Gas	2017	2	400,000
	Altamira	Vopak, Enagas	2006	2	300,000
Netherlands	Energia Costa Azul	Sempra LNG	2008	2	320,000
Panama	Manzanillo	Samsung, Kogas, Mitsui	2012	2	300,000
Phillipines	Gate LNG	Gasunie, Royal Vopak	2011	3	540,000
Poland	Costa Norte	AES	2018	1	130,000
Portugal	Pagbilao LNG	Energy World Corp.	2017	1	130,000
Puerto Rico	Swinoujście	Baltic Gaz System	2015	2	320,000
Singapore	Sines	REN Atlantico	2004	3	390,000
Spain	Penuelas	EcoElectrica	2000	1	160,000
	Singapore	Singapore Energy Authority	2013	3	540,000
	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
Sweden	Mugardos, El Ferrol	Reganosa, Sonatrach, Sojitz Corp.	2006	2	300,000
	El Musel, Gijón,	Enagas	2013	2	300,000
Taiwan	Lysekil	Gasum	2014	1	30,000
	Nynashamn	AGA Gas	2011	1	20,000
Thailand	Yung-An	CPC	1990	6	690,000
Turkey	Tai-Chung	CPC	2009	5	800,000
	Map Ta Phut	PTT LNG	2011	2	320,000
USA	Marmara Ereglisi	Botas	1994	3	255,000
	Izmir	EgeGaz	2006	2	280,000
	Everett	Suez LNG NA	1971	2	155,000
	Lake Charles	Shell, ETE	1982	4	425,000
	Freeport	Freeport LNG Development	2008	2	320,000
UK	Golden Pass, TX	Qatar Petroleum, ExxonMobil	2010	5	775,000
	Pascagoula, MS	Gulf LNG, Kinder	2012	2	320,000
	Isle of Grain	National Grid	2005	8	1,000,000
	South Hook	ExxonMobil, Qatar Petroleum, Total	2009	5	775,000
	Dragon LNG, Milford Haven	Shell, Petronas	2009	2	310,000

LNG Import Terminal Projects

Country	Location/Project	Owners/Project Developers	Start up	Storage	
				Tanks	Capacity
China	Shenzhen	CNPC Yudean Power	2021	2	120,000
	Tianjin (Nangang)	Beijing Energy	2022	10	2,000,000
	Yangjiang	CNPC Yudean Power	2023	2	120,000
	Zhangzhou Fujian	CNOOC	2022	2	160,000
India	Dhamra Odisha	Indian Oil, Adani, GAIL	2020	2	320,000
	Jaigarh	Hiranandani Group	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
Ghana	Tema LNG	Helios/GNPC	2021
Indonesia	Lampung	Hoegh LNG, PGN LNG	2014
	Nusantara (Jakarta Bay)	Golar LNG, Pertamina	2012
	Benoa LNG	PT Pertamina 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	Klaipėdos Nafta Hoegh LNG	2014
Malaysia	Malacca FSRU	Petronas	2012
Malta	FSU Armada Mediterranea	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	Etiki 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
	Area 4 FLNG	Eni and partners	2022	1	3.4
NIGERIA	NLNG Train 7	NNPC, Shell, Eni, Total	2022+	1	7.0
PAPUA NEW GUINEA	Elk-Antelope LNG	Total, ExxonMobil Oil Search, Petromin	Studies		
RUSSIA	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
		(Mistubishi/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 Gladstone LNG Gorgon LNG Pluto LNG QCLNG Wheatstone LNG Ichthys LNG Prelude FLNG	ConocoPhillips, Origin Energy, Sinopec	2016	2	7.5	2	320,000
		Santos, Petronas, Total, Kogas	2015	2	7.8	2	280,000
		Chevron, Shell, ExxonMobil	2016	3	15.6	2	360,000
		Woodside, Tokyo Gas, Kansei	2012	1	4.8	2	240,000
		Shell, CNOOC	2014	2	8.0	2	280,000
		Chevron, Woodside, Kuwait (KUFPEC), Jera, Kyushu	2017	2	8.9	2	300,000
		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		
NIGERIA	Bonny Island	NNPC, Shell, Total, Eni	1999	2	6.4	2	168,400
		Nigeria LNG (formed by above)	2002	1	3.2	1	84,200
		Nigeria LNG	2006	2	8.2		
		Nigeria LNG	2008	1	4.1	1	84,200
NORWAY	Snøhvit/Melkoya	Equinor, Total, Petoro	2007	1	4.2	2	280,000
OMAN	Oman LNG	Oman Govt., Shell, Total, Korea LNG	2000	2	7.1	2	240,000
		Mitsubishi, Mitsui, Partex and Itochu					
PAPUA NEW GUINEA	PNG LNG	Oman Govt., Oman LNG Union Fenosa, Osaka Gas, & Itochu	2006	1	3.7	2	240,000
		ExxonMobil, Oil Search, Santos, JX Nippon Oil	2014	2	6.9	2	320,000
PERU	Peru LNG	Hunt Oil, Shell, Marubeni, SK Group	2010	1	4.4	2	260,000
QATAR	Qatargas 1-T1&2	QP, ExxonMobil, Total, Marubeni, Mitsui	1997	2	6.4	4	340,000
	Qatargas 1-T3	QP, ExxonMobil, Total, Marubeni, Mitsui	1999	1	3.1		
	Qatargas II-T1	QP, ExxonMobil	2009	1	7.8		
	Qatargas II-T2	QP, ExxonMobil, Total	2009	1	7.8	8	1,160,000
	Qatargas III-T1	QP, ConocoPhillips, Mitsui	2010	1	7.8		
	Qatargas IV-T1	QP, Shell	2010	1	7.8		
	RasGas I- T1&2	QP, ExxonMobil, Kogas, Itochu, LNG Japan	1999	2	6.6		
	RasGas II- T3	QP, ExxonMobil	2004	1	4.7		
	RasGas II- T4	QP, ExxonMobil	2005	1	4.7	6	840,000
	RasGas II- T5	QP, ExxonMobil	2007	1	4.7		
	Rasgas III – T6	QP, ExxonMobil	2009	1	7.8		
	Rasgas III – T7	QP, ExxonMobil	2010	1	7.8		
RUSSIA	Sakhalin Island	(Sakhalin Energy) Gazprom, Shell, Mitsui, Mitsubishi	2009	2	9.6	2	200,000
	Yamal LNG Siberia	Novatek, Total, CNPC, Silk Fund	2017	3	16.5	4	640,000
TRINIDAD & TOBAGO	Point Fortin Train 1	BP, Shell, CIC, NGC	1999	1	3.0	2	204,000
	Train 2	BP, Shell	2002	1	3.3	1	160,000
	Train 3	BP, Shell	2003	1	3.3	1	160,000
	Train 4	BP, Shell, NGC	2005	1	5.2	1	160,000
USA	Cheniere Sabine Pass	Cheniere Energy	2016	5	22.5	5	800,000
	Cove Point LNG	Dominion Energy	2017	1	5.3	7	695,000
	Cheniere Corpus Christi	Texas Cheniere	2018	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

World LNG Carrier Fleet

LNG Carrier	Capacity m ³	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
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

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
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 Aranthera	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



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Castillo de Villalba	138,000	Empresa Naviera Elcano	Navantia Cadiz	Sep-03	Spain	Steam	GT NO 96	4	Portfolio	87
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 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
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

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 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
Fedor Litke	172,410	Arctic LNG 2 Ltd.	Daewoo	May-17	Cyprus	TFDE - Azipod	GT NO 96 GW	4	Yamal	2422
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 Chelsea	153,000	Gas-Fifteen Ltd.	Hanjin (Busan)	Jun-10	Bermuda	TFDE	TZ Mk. III	4	–	193
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	74,100	GDF Armateur 2	STX	Jan-04	France	Diesel/Gas-Electric	CS1	4	Portfolio	32M
Global Energy	173,400	Hai Kuo Shipping 2118G Ltd.	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

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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 Frost	160,000	Golar LNG	Samsung	Oct-14	M. Islns.	Diesel/Gas-Electric	TZ Mk. III Flex	4	Portfolio	2055
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 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
Lalla Fatma N'Soumer	145,000	Algerian Nippon Gas Transport Corp.	Kawasaki	Oct-04	Bahamas	Steam	Moss	4	Arzew	1534
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 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

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
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
NFE Grand	145,700	Golar Grand Corp.	Daewoo	Jan-06	M. Islnds.	Steam	GT NO 96	4	Gorgon	2226
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
Oak Spirit	173,400	Teekay LNG Partners	Daewoo	Mar-16	Bahamas	ME-GI	GT NO 96 GW	–	Sabine Pass	2408
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 Sea	170,852	Meridian 23 Ltd.	Samsung	Jan-22	Liberia	X-DF	TZ Mk. III	4	Portfolio	2336
Orion Star	174,000	Jupiter 3 Ltd	Samsung	Apr-22	Liberia	–	–	4	–	2319
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 Intan Satu	137,100	MISC	Mitsubishi	Aug-02	Malaysia	Steam	GT NO 96	4	MLNG III	2165
Puteri Mutiara Satu	137,100	MISC	Mitsui E&S	Apr-05	Malaysia	Steam	GT NO 96	4	MLNG III	1562

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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
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 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
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
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
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

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	138,000	K Line LNG Shipping (UK) Ltd.	Samsung	Nov-02	Isle of Man	Steam	TZ Mk. III	4	Portfolio	1380
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
Yakov Gakkel	172,658	DSME Hull No.2434 LLC	Daewoo	Nov-19	Bahamas	ME-GI	GT NO 96 GW	4	Yamal	2434
Yamal Spirit	174,000	Teekay LNG Partners	Hyundai Samho	Jan-19	Bermuda	ME-GI	TZ Mk. III Flex	–	Freeport	S857
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

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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