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LNG import levels on Indian subcontinent under pressure

LNG buyers on the Indian subcontinent have seen LNG imports decrease by around 20 percent in each case as they previously relied in part on spot cargoes that have now gone to Europe. They now struggle to close the supply gap, writes our Market Editor Alexander Wilk.

Over the past five years, the number of the Indian subcontinent's LNG import facilities has grown considerably to total installed annual capacity of 55 million tonnes (mtpa). The majority of that capacity – 40mtpa – is situated in India. The goal of installing that capacity was to move away from coal, fuel economic growth and raise living standards by providing reliable household energy supply. However, the three countries' combined capacity utilisation stood at just over 54 percent for the year of 2022 on imports of 29.71mmt, according to our data.

LNG demand on the Indian subcontinent (including Pakistan, which we usually attribute to the Middle East) has been on a distinct downward trend since 2022. Whilst internal structural gas market issues have played their part, the more recent slump in offtakes can be attributed to the price hike driven by the ongoing European demand vortex. As a result, the number of spot cargoes finding their way to the three countries has plummeted since the beginning of Russia's invasion of Ukraine.

Pakistan

Although Pakistan's LNG imports are going to be higher year-on-year, according to our market visibility at the time of writing, they are only looking to be up by 0.12mmt (20 percent) from 0.59mmt in January 2022 to 0.71mmt in January 2023. This is still below the 0.75mmt we recorded for January 2021.

Meanwhile, Pakistan is currently in the grip of a prolonged gas supply crisis. Spot market supply from, among others, Angola, Algeria and Equatorial Guinea fell away as increasingly free LNG cargoes went to Europe in 2022. This left Pakistan's LNG economy almost completely reliant on Qatari supply. Whilst an increase in Qatari shipments to Pakistan by 7 percent to 5.92mmt in 2022 has relieved some pressure caused by a



lack of spot supply, Pakistan's annual LNG offtakes from all sources that year were still down by 1.65mmt (-20 percent) to 6.70mmt from 8.35mmt in 2021.

Efforts by Pakistan LNG Ltd. – the government-controlled entity tasked with organising LNG supply – to replace at least some of the lost spot market volumes have been mostly unsuccessful. Supply tenders since June last year have not resulted in any bids by qualified suppliers. A tender for a new six-year supply agreement that closed in October resulted in no bids at all, government documentation shows.

The supply shortfall is likely to continue at least in the short-term as the trading arm of Italy's energy champion Eni warned that it may not be able to deliver a term LNG cargo due in the second week of February, according to Pakistani news outlets citing senior officials at Pakistan's Energy Ministry. Eni has a 15-year agreement to supply Pakistan LNG with one cargo a month until 2032.

Pakistan's government, under its gas

load management plan, originally planned for gas supply to domestic consumers at set intervals throughout the day for cooking during the winter period. There is now a risk of even that intermittent supply not being provided consistently and that Pakistan's industrial output will suffer unless the country turns to burn more fuel oil to generate power.

The Energy Ministry is now counting on only seven LNG deliveries in February. Our historical data indicate Pakistan usually takes in eight or nine cargoes, including one supplied by Eni. February's seven cargoes will be Brent-linked, as was the cargo scheduled to be delivered by Eni, with two originating in Qatar at 10.2 percent of Brent under an existing term agreement.

Pakistan's government, in turn, has laid the blame at Eni's door, claiming that the company had missed supplying agreed volumes in March, May, July, September and November last year. In a statement to Reuters, Eni pointed to an unspecified *force majeure* incident and intimated that

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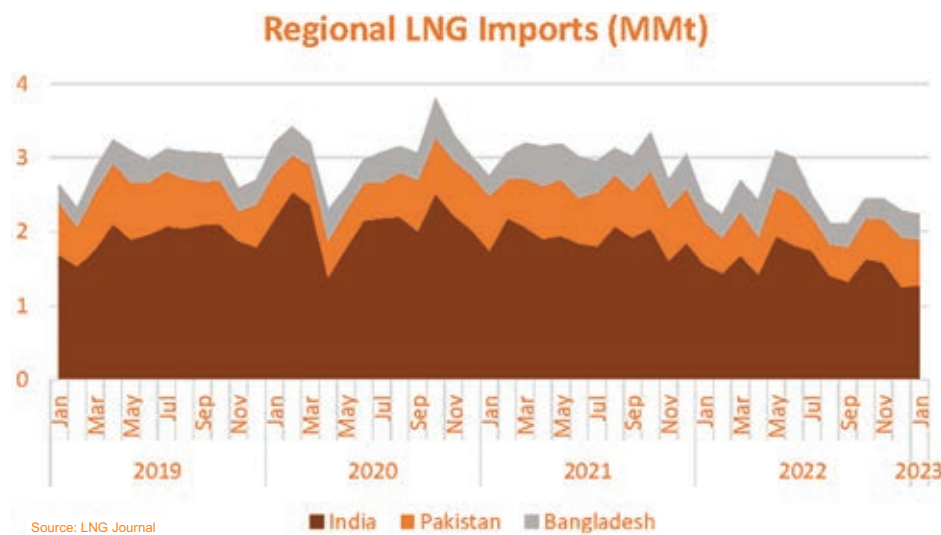
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one of its suppliers defaulted on its obligations, as was the case last year, and that it had not benefitted from not supplying LNG to Pakistan.

At the time of writing, our data did not indicate any production outage at any LNG plant in which Eni holds a stake. Meanwhile, the company has signed a framework agreement with Egyptian gas regulator EGAS that will allow it to maximise gas production and LNG exports in the future. However, no additional gas has officially been earmarked for countries such as Pakistan. Instead, the agreement aims to promote Egyptian gas export to Europe, specifically to Italy, in the context of the transition to a low-carbon economy. Concurrently, European spot prices, whilst down considerably for their recent peak in summer, remain elevated and above those Pakistan has historically been prepared to pay.

India

There have been hopes that India could be exiting coal with the help of gas. However, for now, this is likely to remain a hope and is still a considerable way away from reality. As with Pakistan, the European demand vortex has absorbed a considerable amount of LNG supply formerly available to India from other sources, such as Egypt, Angola, Cameroon and Nigeria. This shortfall included volumes under long-term contracts.

The most recent government statistics show India was forced to buy 72 percent of its LNG imports used to generate electricity on the spot market in November last year. Ironically, India's LNG intake included European re-exports amounting to 0.21mmt from France and Turkey, the majority sold by Shell according to vessel charter data. There were also two Zeebrugge transshipments of Yamal LNG volumes. Total Indian LNG demand has decreased by 18 percent to 18.76mmt in 2022, down by 4.19mmt from 22.95mmt in 2021, according to our data,

as spot prices rose on the back of strong European demand growth.

Although India has advanced the most in expanding its gas economy, building new LNG import terminals and expanding its pipeline network, large parts of its LNG infrastructure (with the exception of the Dahej terminal) remain underutilised.

Crucially, gas demand from India's industrial and power sector is swiftly affected by LNG prices as the government plans to hold on to coal as a significant part of its energy mix by 2030, a presentation by India's Central Electricity Authority indicates. As a result, the power and industrial sectors will continue to have a relatively cheap fuel alternative. Concurrently, the adoption of regasified LNG as fuel by households and the mobility sector may also slow in response to higher landed LNG prices.

Notably, India's gas strategy remains in flux as on the one hand considerable investments have been made into existing LNG terminals and gas pipeline network expansions whilst on the other, the government's own plan still sees power capacity ready to burn coal at 32 percent of the overall mix in 2030.

Much will depend on price volatility and infrastructure constraints. Despite large investments, India still lacks a nation-spanning gas pipeline grid. As we have reported previously, there have been

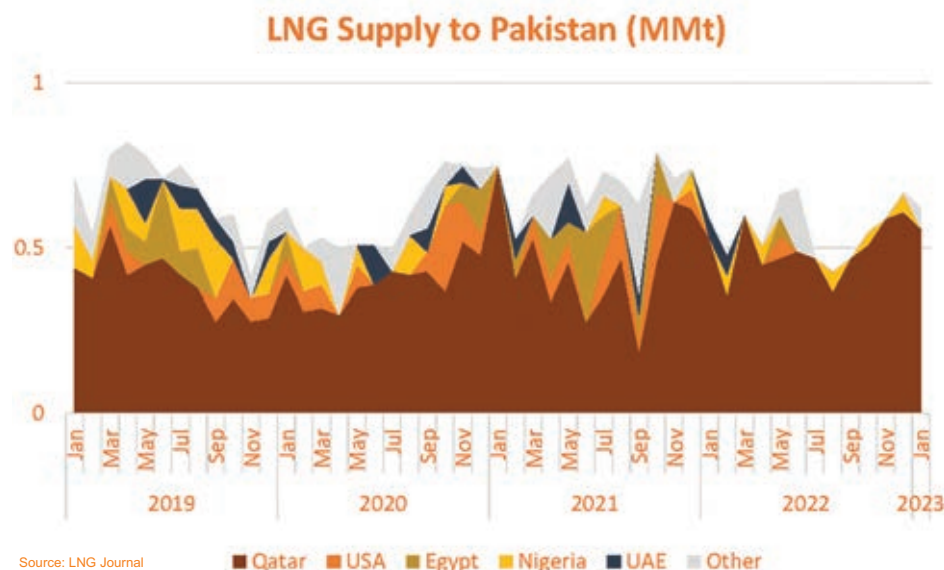
considerable delays in completing pipeline projects, which has also weighed on demand growth.

High international prices will continue to cause much of India's LNG import infrastructure to remain underutilised, which, in turn, will dampen appetite for fresh investment in pipeline infrastructure. Natural gas' share of energy remained stuck below 10 percent in 2021 and whilst a full dataset for 2022 was not yet available at the time of writing, the slide in LNG imports suggests that share will have shrunk.

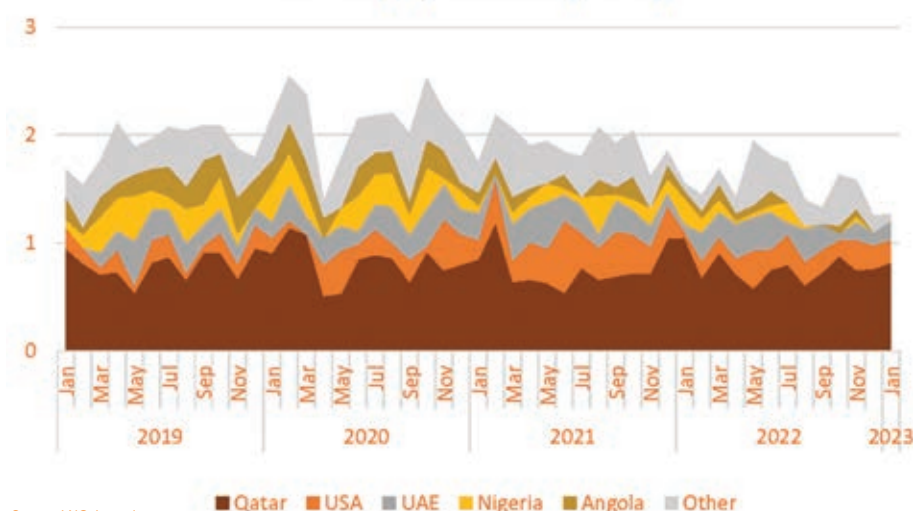
The current price volatility impacting India primarily stems from Europe's disengagement from Russian pipeline gas supply. As we have reported in July, the Singaporean subsidiary of Gazprom Marketing & Trading (GM&T) missed five scheduled LNG deliveries to GAIL, one of India's leading gas players. Our data indicated GM&T shipments of Yamal gas to India stopped in April last year, which coincided with the German government taking control of GM&T and Russia's subsequent banning of cargo liftings by the company from Yamal LNG. GM&T has since been renamed 'SEFE' (Securing Energy For Europe).

SEFE initially said it will endeavour to plug the gap with cargoes from its non-Russian portfolio. However, our data show that SEFE-controlled cargoes from Cameroon, for example, were not shipped to India but to Europe. The country's FLNG plant had supplied 0.43mmt to India until June 2022 but these deliveries ceased thereafter. Speaking to Reuters, GAIL highlighted the number of missed SEFE cargoes had grown to 17 by the end of September. The Indian firm declined compensation equivalent to 20 percent of the LNG cost offered by SEFE in line with its contract terms.

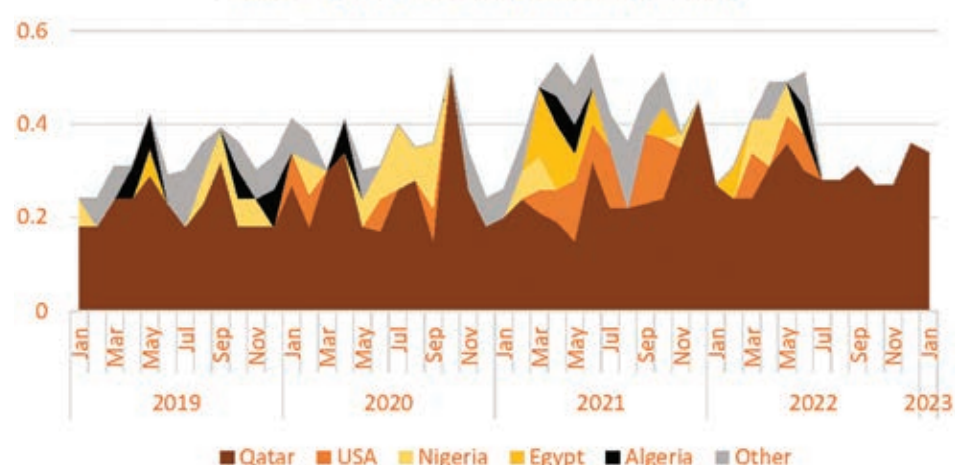
A silver lining exists when it comes to city gas distribution. A presentation by GAIL noted that city gas is now available



LNG Supply to India (MMt)



LNG Supply to Bangladesh (MMt)



across roughly 88pct of Indian territory. Apart from supplying gas to city households, GAIL also owns 166 gas-filling stations for cars and trucks. Overall, India has more than 4,000 such filling stations. But that silver lining will remain in some considerable distance until India manages to wiggle itself out of the tight supply corner it has been pushed into.

Bangladesh

In 2016, the Asian Development Bank

rested hopes for Bangladesh to meet, at least in part, a gas supply shortfall from domestic production through LNG imports to meet demand. Previously, the country had been able to meet the majority of its gas demand through domestic production, albeit from ageing fields (the most recent discovery was in 1990, according to the Ministry of Power and Energy).

Since mid-2022, however, LNG supply to Bangladesh has solely come from Qatar, our data show, as spot supply from

sources such as Algeria and Equatorial Guinea vanished. Imports were down by 19 percent from 5.24mmt in 2021 to 4.25mmt in 2021, according to our data. Like Pakistan, Bangladesh has had little success in securing replacement cargoes, with Qatar cooling expectations it could increase its longer-term supply before 2026. As a result, Bangladesh has seen a gas supply crunch in the summer, which has left the country with rolling blackouts.

Concluding thoughts

As we have noted previously, European buyers have begun to swing their weight around in a tight market. Not only do they need to replace as much of Russian pipeline gas as possible, but also maintain gas consumption to prevent missing their climate goals. This, however, comes at the expense of some Asian buyers that have previously been considered bright stars among emerging LNG buyers.

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Lull in LNG export capacity growth keeps market tight

Though numerous pre-FID projects could get sanctioned, based on contracting activity, no new LNG export capacity will start up over the coming months. Apart from the return of Freeport LNG, buyers have to rely on the ramp-up of capacity commissioned late last year or wait until 2024 for new projects to come onstream which is bound to intensify competition for cargoes; our Market Editor Anja Karl finds.

Sluggish supply growth is pegged at just 4 percent or 20 million tons this year – mostly resulting from the restart of Freeport LNG which can export just under 1.3 million tons on a monthly basis. But repeated delays add uncertainty and even after Freeport's announced return in late January, it will take a couple of months for the liquefaction plant to reach full production.

Various pre-FID ventures could go forward this year – based on contracting activity and project 'momentum' – but none is likely to start-up this year," Rystad Energy reckons. Sanctioned US projects, currently under construction, are bound to increase capacity by 40.3 percent from 14 billion cubic feet per day (Bcf/d) in late last year to 19.7 Bcf/d not before the end of 2025 – leaving markets undersupplied until then.

But despite no newly built LNG facilities, analyst anticipate global supply to expand by 1.84 Bcf/d or 14 million tons this year – coming from the November 2022 start-up of Coral South FLNG as well as the ramp-up of recently commissioned Portovaya LNG, Calcasieu Pass LNG and Sabine Pass Train 6.

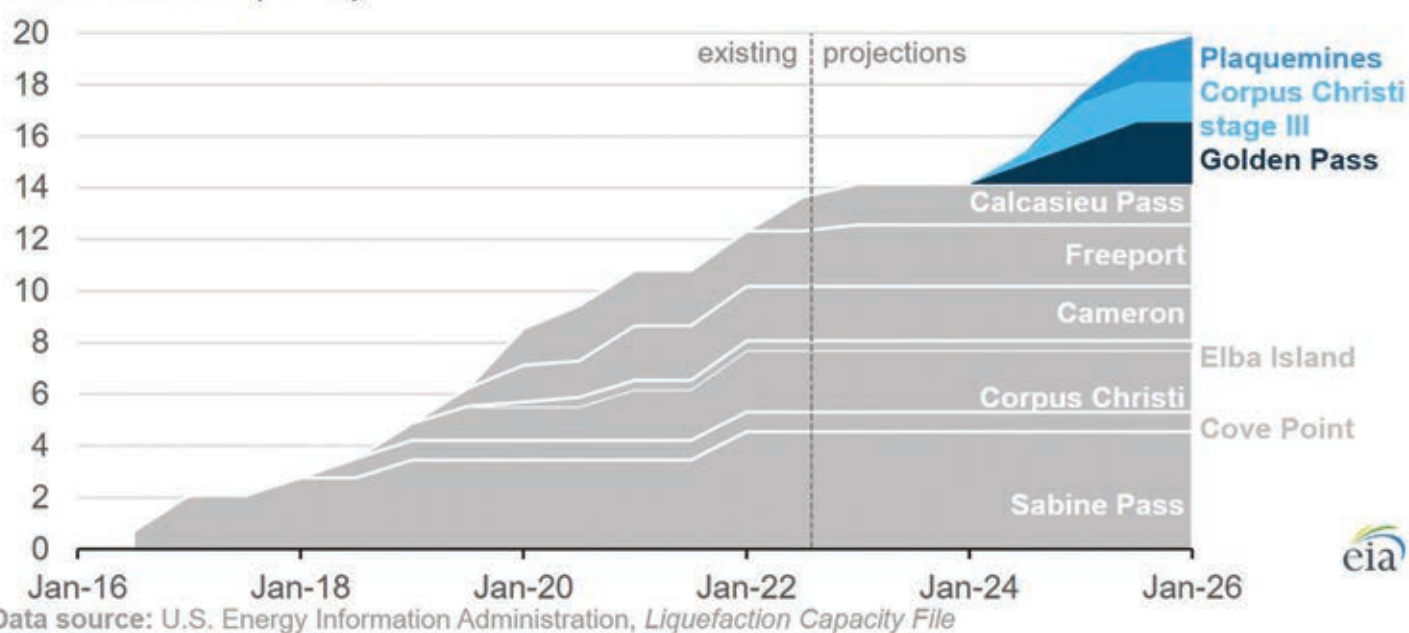
"Not bad for a year with zero new facilities," Rystad's vice president Emily McClain commented.

Further out, Kosmos and BP are targeting first gas at their Greater Tortue Ahmeyin LNG project offshore Mauretania and Senegal in the third quarter of 2023, with first cargo scheduled for early 2024.



The ramp up of Coral South FLNG adds some new supply

U.S. liquefied natural gas export projects: existing and under construction (2016–2025)
billion cubic feet per day



Debt financing gets more expensive

Though European buyers are prepared to pay premium prices to secure LNG cargoes, developers of US liquefaction plants are having more and more trouble to access debt finance to get their projects over the finish line. Soaring inflation has pushed up interest rates markedly since August 2022 which prevented several projects from securing financing.

Melanie Lovatt, financial adviser for the ship brokerage Poten & Partners expects margins for exports to rise, and in turn prices for customers. "The timeline of some LNG expansions may well slip," she said, suggesting financing will become harder to get and more expensive as equity investors are dragging their

feet. Cautious buyers refrain from signing offtake agreements if a project cannot reach FID in the next three months, she observed.

Trouble to access debt financing at attractive rates has forced several project developers to reconsider their options:

- Energy Transfer, for instance, had been targeting FID for its Lake Charles LNG project by the end of 2022 but had to delay the timeline into the first quarter of 2023. In Energy Transfer's latest earnings call, co-CEO Tom Long said: "We expect to finance a significant portion of the capital cost of this project by means of the sale of equity in the project to infrastructure funds and possibly to one or more industry participants in conjunction with LNG offtake agreements." So far, offtake for about half of Lake Charles' permitted liquefaction capacity has been secured.
- Tellurian was forced to withdraw an offering of senior secured notes for the Driftwood LNG export project in Louisiana, blaming "uncertain conditions in the high-yield market." The firm said it had aimed to sell units of 11.25 percent notes due in 2027 at a principal amount of \$1,000 for each note, but it needed to improve terms for investors before withdrawing the offer completely. Now, Tellurian is in search of equity partners instead.
- NextDecade, meanwhile, managed to

raise \$85 million for its Rio Grande LNG project through a private placement equity sale – but did not proceed to financial close just yet.

- Similarly, Glenfare Group's Texas LNG project is also still in limbo even though the developer entered a joint venture with Technip and Samsung Engineering seven month ago with a view to deliver the project.

Flurry of FIDs on the cards

Still, market observers believe the dam could break in 2023 and projects with 6.2 Bcf/d of additional capacity could reach financial close. First in line is Sempra with its Port Arthur LNG greenfield project in Texas. The 13.5 mtpa venture is likely to take FID in the first quarter of this year having revised its EPC contract with Bechtel after securing a substantial equity, offtake and gas supply deal with ConocoPhillips, in addition to 7.3 mtpa of firm offtake agreements from Ineos and Engie combined.

Another greenfield project, the 8.4 mtpa Commonwealth LNG project in Cameron, Louisiana, has all regulatory permits in place and Australia's Woodside committed to 30 percent of the offtake. Financial close is expected in the first quarter of this year, and modular construction could allow it to be online within three years from FID, in the third quarter of 2026.

NextDecade could also take FID in the first quarter on a three-train 16.2 mtpa



Much equity in the Lake Charles LNG project could be sold to infrastructure

portion of its overall 27 mtpa Rio Grande LNG project. Over half of the volume has been committed via long-term contracts. Similarly, Semptra is edging closer to sanction Cameron Phase 2. FEED works are well underway and an FID needs to follow this year if Semptra wants to bring the train into operation as planned in 2027.

A third front-runner, tipped for an early FID this year, is the second phase of

Venture Global's Plaquemines (6.7 mtpa) – while others still have to overcome marketing, financing or engineering hurdles, hence Wood Mackenzie doubts that all abovementioned projects will go ahead in 2023.

Three projects under construction

While contenders strive to get new projects sanctioned, construction works

are progressing at Golden Pass LNG in Texas, a joint venture between QatarEnergy (70 percent) and ExxonMobil (30 percent). The \$10 billion project already reached financial close in 2019 and has a nameplate capacity of 2.58 Bcf/d, underpinned by 20-year gas supply contracts via the Gulf Run Pipeline. If all goes to plan, Golden Pass is scheduled to start service in phases over the course of next year and in 2024.

Venture Global's \$13.2 billion Plaquemines Phase 1 project was sanctioned in May last year after developers agreed project finance. Phase 1 has a nameplate capacity of 1.89 Bcf/d, underpinned by gas deliveries from Enbridge, and is due to come into service in late 2024. As contracting momentum picks up, Venture Global also aims to sanction the second phase of Plaquemines early this year – competing with Semptra's Port Arthur LNG venture for the first FID in 2023.

Cheniere Energy took FID for Corpus Christi Stage 3 one month later than

Plaquemines Phase 1 after securing a \$4 billion loan that will cover about half of total project costs. Being built next to three liquefaction trains that are already in full swing, Corpus Christi Stage 3 consists of 14 new, mid-scale trains with a combined peak capacity of 1.59 Bcf/d. Market observers expect Cheniere will shoulder the second half of project costs to ensure the units start operation in 2025.

Most of the announced US LNG growth projects through 2025-26 are underpinned by long-term offtake commitments from Asian buyers, while European buyers are hesitant to sign longer deals. "European demand might accelerate LNG capacity expansion in the US, but that would require long-term offtake commitments from European buyers, even as they struggle to reconcile new energy security needs and the EU's commitment to accelerate carbon-transition efforts," Amol Joshi, a senior credit officer at Moody's noted. ■

US gas production could triple by 2033

Driven by high exports, the North American gas market could support up to 29 Bcf/d of production from 2022 to 2033, tripling its current size. Though producers are still seen to focus on capital discipline, investment in new fields increases with the market expansion estimated to be "equivalent to adding two new Permian basins."

Supply is returning "at a measured pace," as upstream companies will only gradually increase investment over the next few years to support the market expansion, Wood Mackenzie reckons. In October and November, US dry gas production reached a monthly record of over 100 Bcf/d – way exceeding pre-pandemic monthly production records, and government analysts expect dry gas production will stay on these high levels through March 2023.

Growth has been spurred by increased drilling activities in the Haynesville shale in Louisiana and East Texas as well as in the Permian shale in West Texas and the Southeast New Mexico, according to the US Energy Information Administration's (EIA) latest Drilling Productivity Report. In 2023, output may well rise another 2 percent to up to 101 Bcf/d but the EIA cautions that dry gas production is limited by pipeline constraints and

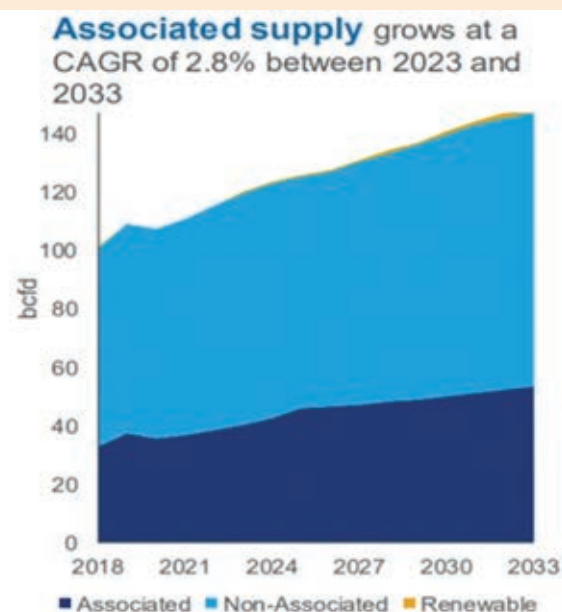
falling gas prices.

The US Henry Hub benchmark is forecast to average \$5.00 per million British thermal units (MMBtu) in the first half of 2023, down from the EIA's anticipated December 2022 monthly average of \$6.34/MMBtu.

For the second half of next year, developers have scheduled more pipeline expansions which should help increase dry gas production further from already high levels.

Three capacity expansion projects are close to the finishing line:

- The Gulf Coast Express Pipeline Expansion, implemented by Kinder Morgan will expand compression on the pipeline and increase its capacity by 0.57 Bcf/d to 2.55 Bcf/d. The project is expected to enter service in December 2023.
- The Permian Highway Pipeline Expansion, financed and carried out by Kinder Morgan, will also expand



compression and boost capacity by 0.55 Bcf/d to 2.65 Bcf/d. The project is slated to start operations November 2023.

- The Whistler Pipeline Capacity Expansion, announced on May 2 by WhiteWater and MPLX, is a joint venture between Stonepeak and West Texas Gas, Inc., that will expand compression by installing three new compressor stations on the pipeline, increasing capacity by 0.5 Bcf/d to 2.5 Bcf/d. The project is expected to enter service in September 2023.

Expansion of key pipelines will boost

dry gas production which is expected to outpace the increase in LNG exports that results from rising liquefaction capacity. Analysts reckon that the onset of new supply will put downward pressure on gas prices – until new LNG export facilities come online towards the end of the decade, creating an outlet to international demand centres. "As Europe diversifies to more secure gas supply sources and international buyers across the globe seek reliable low-cost supply, North America is poised to deliver," Dulles Wang, Wood Mackenzie's director, Americas Gas and LNG Research concluded. ■

January trade down from peak in December

Our January data show weaker LNG output globally following December's strong growth in trade whilst a net demand increase also remained elusive, our Market Editor Alexander Wilk reports.

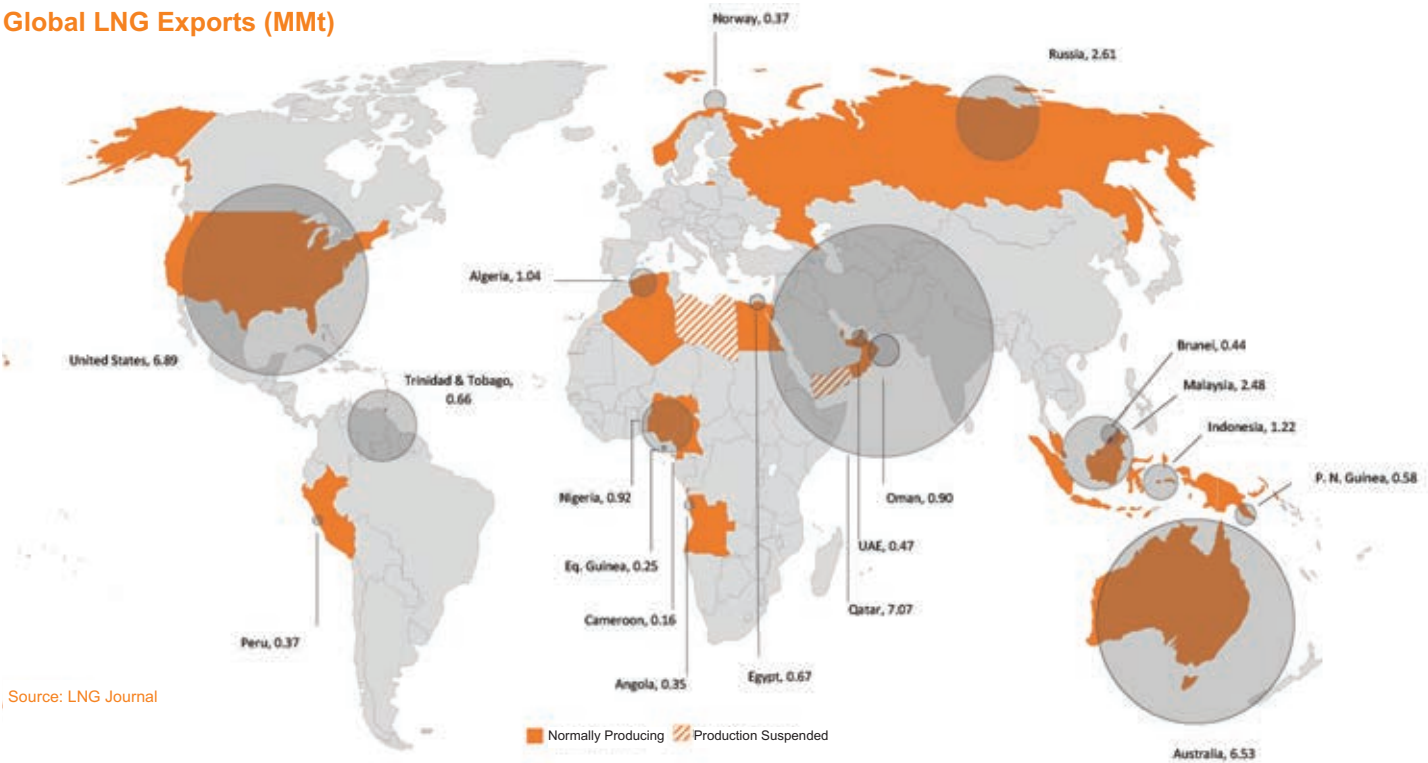
Our data showed global LNG trade had decreased in January. The shipped amount of 34.14mmt represented net negative growth of 2.82mmt (-8 percent) from 36.96mmt shipped in December. We nevertheless still recorded marginal year-on-year export growth of 0.14mmt (0.4 percent). January's performance was due to export decreases among major Pacific and Atlantic Basin producers, led by the United States and Australia. Major month-on-month export growth thus only came from Qatar and the UAE.

Meanwhile, continued high demand notwithstanding, global offtakes also saw net negative growth due to considerable demand decreases among some key Pacific and European importers – namely China, France and Spain.

Exports

In January, 34.14mmt of global exports for the month represented a decrease of 2.82mmt (-8 percent) from 36.96mmt in December. Pacific Basin shipments were down by 0.87mmt (-6 percent) to 12.67mmt whilst Atlantic Basin exports saw a reduction of 1.73mmt (-12 percent) to 12.36mmt. Monthly export growth was

Global LNG Exports (MMt)



also elusive in the Middle East, where shipments were down by 0.22mmt (-2 percent) to 9.11mmt.

Pacific Basin

Our January data showed Pacific exports reached 12.67mmt, coming in below December's full-month volume of

13.54mmt by 0.87mmt (-6 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 – decreased exports by 0.71mmt (-10 percent) from 7.24mmt in December to 6.53mmt in January. Gorgon LNG slashed LNG exports by 0.30mmt (-18 percent) to 1.00mmt in January, having shipped 1.30mmt in December. Queensland Curtis LNG also decreased exports by 0.21mmt (-36 percent) to 0.38mmt. Concurrently, NWS LNG decreased exports by 0.19mmt (-15 percent) to 1.12mmt, whilst Gladstone LNG reduced its monthly exports by 0.14mmt (-21 percent) to 0.54mmt. Australia Pacific LNG, Wheatstone LNG and Ichthys LNG, meanwhile, kept exports broadly steady at 0.70mmt, 0.82mmt and 0.77mmt, respectively. As such, negative growth in January's Australian LNG supply was only cushioned by Pluto LNG and the offshore Prelude facility. Pluto LNG grew exports by 0.08mmt (16 percent) to 0.59mmt after it had shipped 0.51mmt in December. Offshore, Shell's Prelude FLNG barge continued to be seen in the market following no shipments of 0.06mmt in December. The barge exported 0.20mmt in January, up 0.14mmt (233 percent) month-on-month.

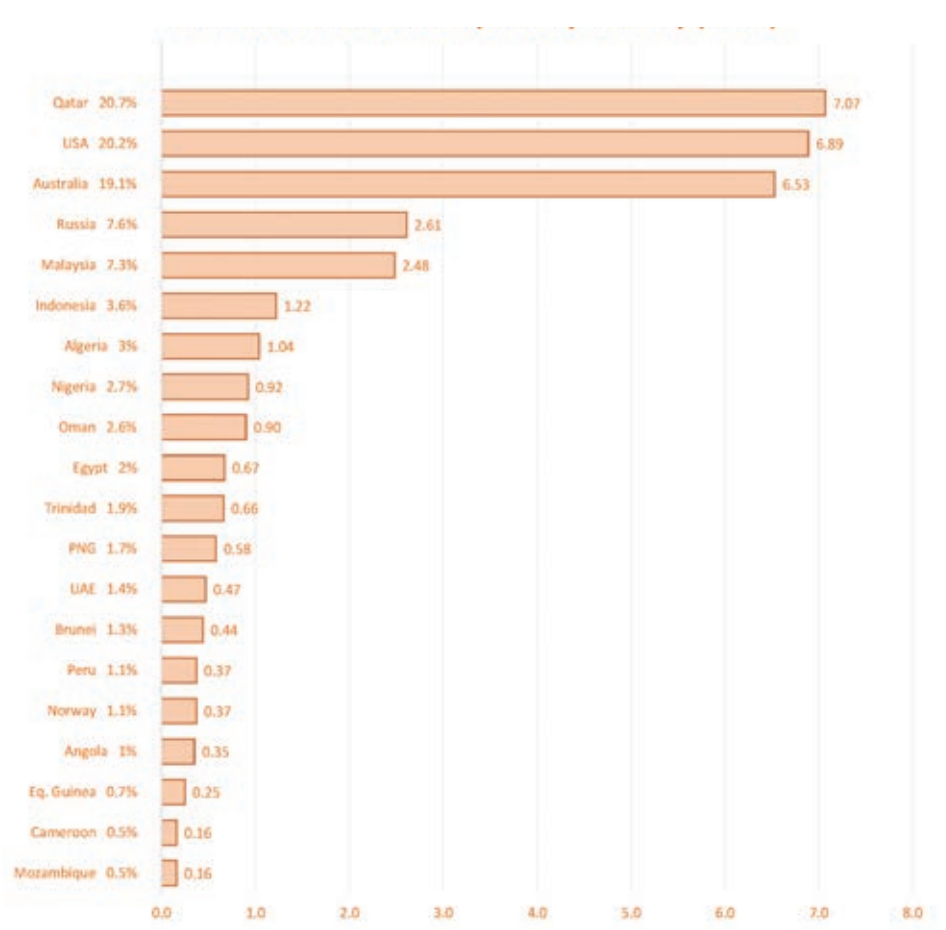
Overall, Australian shipments to Japan plummeted in January, down 0.73mmt (-24 percent) to 2.30mmt. Alongside this cut were export reductions to China, Malaysia and Indonesia amounting to 0.77mmt.

Southeast Asia

North of Australia, Papua New Guinea's PNG LNG also saw shipments decrease month-on-month by 0.13mmt (-18 percent) to 0.58mmt in January from 0.71mmt in December. PNG LNG gained market share in China and South Korea, but this growth was tempered by a reduction in exports to Japan and Taiwan. At 102 percent, however, the plant continued to operate above nameplate capacity, our calculations showed.

In neighbouring Indonesia, the amount of LNG shipped per month also decreased. Exports were down by 0.09mmt (-7 percent) to 1.22mmt in January from 1.31mmt recorded in December. The Tangguh plant increased monthly output by 0.03mmt (5 percent) to 0.67mmt, which also meant it continued to produce close to nameplate capacity. The Bontang plant, however, reduced shipments by 0.07mmt (-16 percent) to 0.37mmt month-on-month, producing at 42 percent of installed capacity. Concurrently, the Donggi-Senoro LNG plant decreased LNG exports by 0.07mmt (-30 percent) to 0.16mmt in January, producing at

Market Share & LNG Exports by Country (MMt)



96 percent of installed capacity.

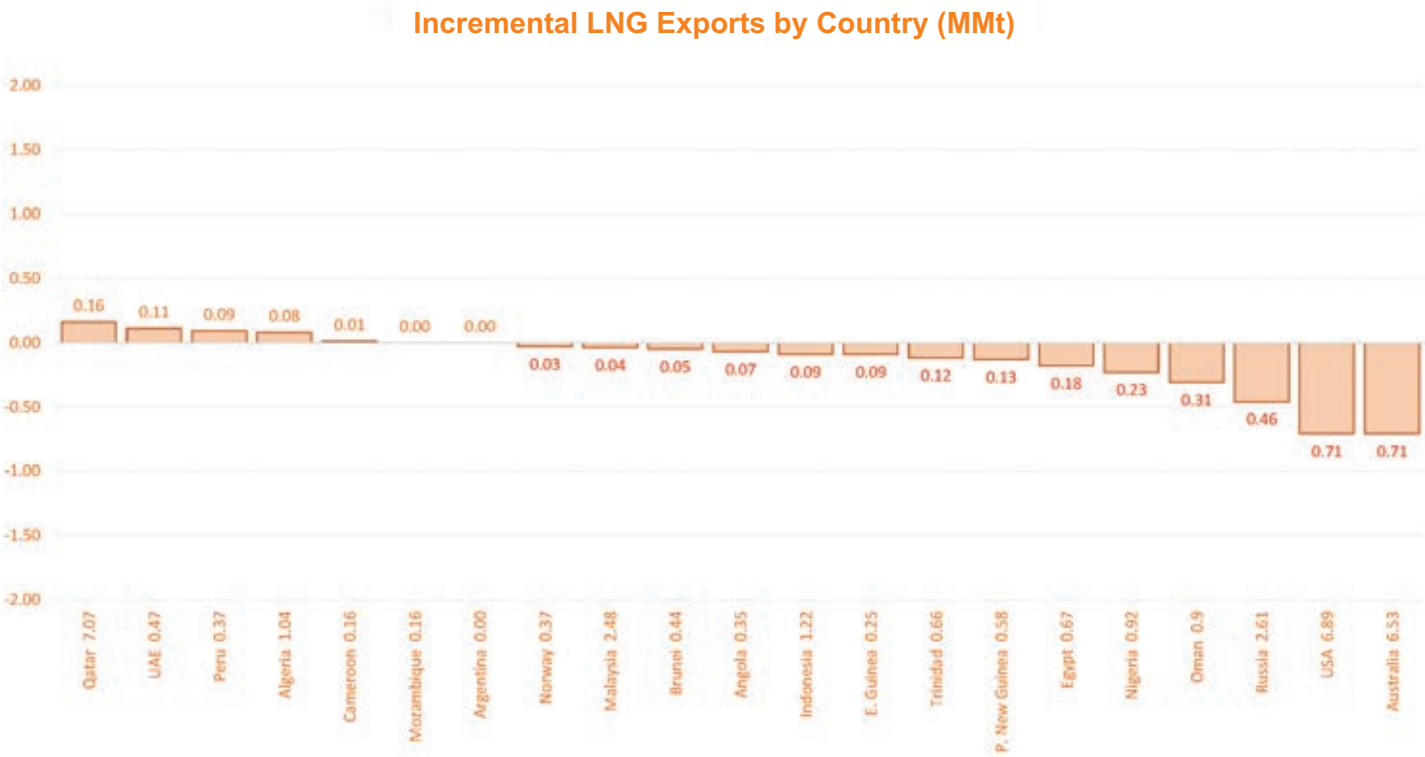
Malaysia saw a decrease in monthly shipments of 0.04mmt (-2 percent), which was led by a 0.05mmt (-2 percent) reduction at Malaysia LNG. The export loss was compounded by the PFLNG Satu facility. The floating plant’s shipments stood at 0.06mmt at the end of January compared to 0.07mmt in December. At the same time, the PFLNG Dua offshore facility increased its December production by 0.02mmt (10 percent) to 0.22mmt in January, our data show. As such, the latter Malaysian export facility produced at 176 percent of nameplate capacity.

Brunei, meanwhile, decreased LNG exports in January by 0.05mmt (-10 percent) to 0.44mmt from 0.49mmt in December. The plant’s exports to Japan and Taiwan were down by 0.10mmt.

Russia & Peru

Elsewhere in the Pacific, Russia’s Sakhalin-2 LNG increased LNG exports by 0.06mmt (7 percent). The plant’s shipments amounted to 0.89mmt in January compared to 0.83mmt in December. January’s performance benefitted from higher exports to China and South Korea, but was tempered by a demand reduction for Sakhalin deliveries of 0.05mmt in China. Nevertheless, the plant continued to operate above nameplate capacity, with annualised utilisation at 111 percent.

Meanwhile, Peru’s Pampa Melchorita plant grew exports following a decrease in shipments in December. Accordingly, shipments of 0.37mmt in January were up by 0.09mmt (32 percent) from the 0.28mmt recorded in December and



Source: LNG Journal

pushed the plant’s capacity utilisation down to 100 percent. The plant typically exports between 0.30mmt and 0.40mmt per month, our historical data show.

Atlantic Basin

In line with negative growth in the Pacific, the Atlantic Basin’s overall shipped LNG had decreased by the end of January, with exports down by 1.73mmt (-12 percent) to 12.36mmt in January. This translated into annualised export capacity utilisation of 80 percent for the Basin.

North Africa & Europe

The amount of LNG shipped from within its northeastern part – comprising the EEA, Russia and North Africa (and not including re-exports) – decreased by 0.47mmt (-13 percent) to 3.13mmt in

January from 3.60mmt in December. Gazprom’s new Portovaya facility decreased exports in January, shipping 0.08mmt (-57 percent) less, whilst at Yamal LNG shipments were down by 0.44mmt (-21 percent) to 1.66mmt. The plant nevertheless continued to produce considerably above nameplate capacity in January. The resulting net decrease for Russian LNG exports from the Atlantic theatre was mainly driven by absent shipments to China and Turkey.

Atlantic Basin exports were also tempered by lower output from Snøhvit LNG in Norway, which shipped 0.03mmt (-8 percent) less to reach 0.37mmt in January following exports of 0.40mmt in December. Negative Norwegian export growth was driven by lower demand in Europe, in particularly Lithuania.

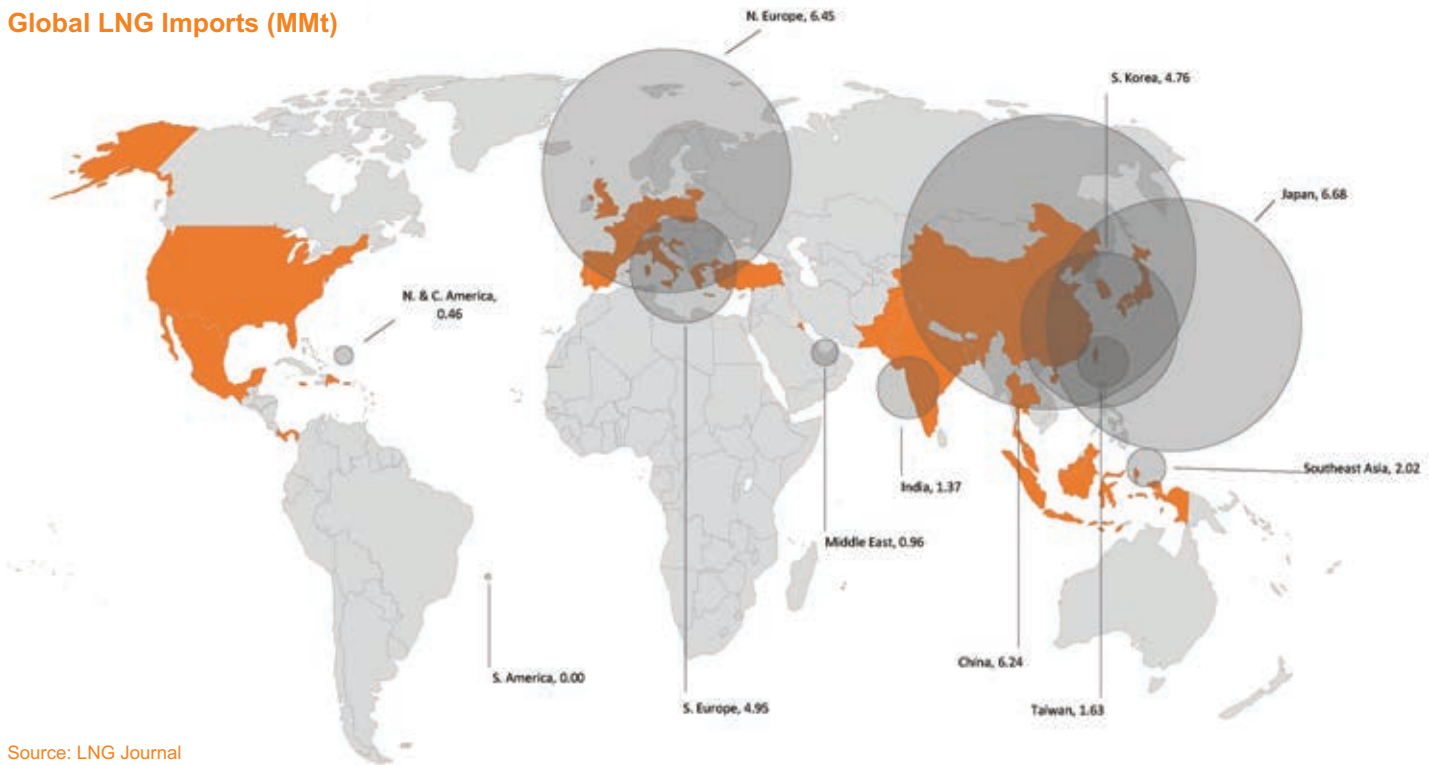
Meanwhile, at 1.04mmt, Algeria

exported 0.08mmt (8 percent) more month-on-month in January. Although Skikda LNG slashed exports by 0.33mmt (-92 percent) to just 0.03mmt, the Arzew plant grew its output by 0.41mmt (68 percent) to 1.01mmt.

West Africa

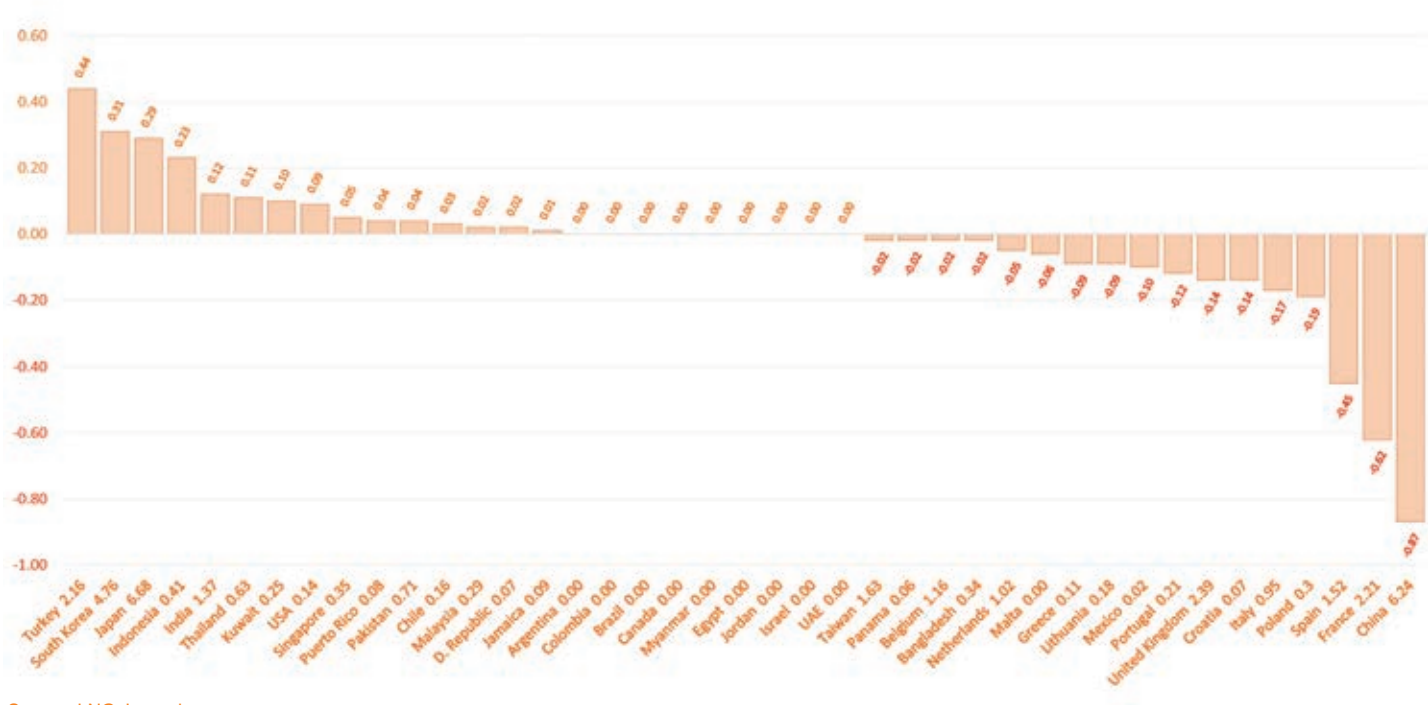
West African exports were down by 0.38mmt (-18 percent) in January as the region’s breadth of offtakers decreased. After higher monthly exports in December, Nigeria did not continue to grow shipments, which instead decreased by 0.23mmt (-20 percent) to 0.92mmt in January. Nigeria’s LNG output thus continued to lag behind previous levels, which left utilisation at only 50 percent, according to our calculations. For comparison, the country’s LNG exports stood at 1.25mmt in July. EG LNG in Equatorial Guinea also decreased exports, which were down by 0.09mmt (-26 percent) to 0.25mmt. The plant thus did not continue to operate above nameplate capacity, with utilisation reduced to 81 percent in January. Similarly, Angola LNG cut exports by 0.07mmt (-17 percent) to 0.35mmt, pegging its capacity utilisation at 81 percent, too. A so-called merchant plant not tied to long-term supply commitments, it usually increases output in line with high-price opportunities. In January, fewer of its exports went to Europe as well as Asia. As such, the drop in West African export levels were barely cushioned by an increase of 0.01 (7 percent) to 0.16mmt from Cameroon’s Kribi FLNG. As in December, Cameroon exported all its LNG to Europe in January. Overall, West African exporters

Global LNG Imports (MMt)



Source: LNG Journal

Incremental LNG Imports by Country (MMt)



Source: LNG Journal

lost market share in Europe – mainly in the United Kingdom, the Netherlands and Portugal – but did not balance that reduction with higher exports to the Pacific.

Americas

Exports from the US Gulf Coast were cut back in January, down by 0.70mmt (-9 percent) to 6.89mmt from 7.60mmt in December. This was partly because Freeport LNG remained offline. Cameron LNG curbed shipments by 0.34mmt (-20 percent) from 0.1.74mmt in December to 1.40mmt in January, pegging capacity utilisation at 124 percent. Concurrently, Cove Point LNG and Sabine Pass LNG cut exports by 0.30mmt (-43 percent) to 0.40mmt from 0.70mmt and by 0.09mmt (-3 percent) to 2.71mmt from 2.80mmt in December, respectively. Negative growth also came from Elba Island LNG, which decreased shipments by 0.07mmt (-33 percent) to 0.14mmt and thus

nameplate capacity again. Exports at Calcasieu Pass LNG, meanwhile, remained steady at 0.73mmt, our data show. As such, month-on-month growth only came from Corpus Christi LNG, which increased exports by 0.09mmt (6 percent) to 1.51mmt in January.

In South America, Atlantic LNG in Trinidad & Tobago saw exports decrease by 0.12mmt (-15 percent) to 0.66mmt in January from the 0.78mmt we recorded in December. Although Atlantic LNG shipments once more gained market share the United States and the Caribbean, these gains were tempered by losses in Europe and the Pacific Basin.

Middle East

Shipments from Middle Eastern plants equally decreased in January after they had rallied in December. Regional LNG exports were down by 0.22mmt (-2 percent) from 9.33mmt to 9.11mmt.

Accordingly, our data showed the Basin’s overall utilisation of operational export capacity (i.e., excluding Yemen) climbing down to 104 percent in January.

The region’s overall negative export growth was pushed by Oman. At 0.90mmt, Omani exports came in 0.31mmt (-26 percent) below their December level of

1.21mmt. In the neighbouring UAE, however, exports were up by 0.11mmt (31 percent) to 0.47mmt from 0.36mmt in December.

Negative month-on-month export

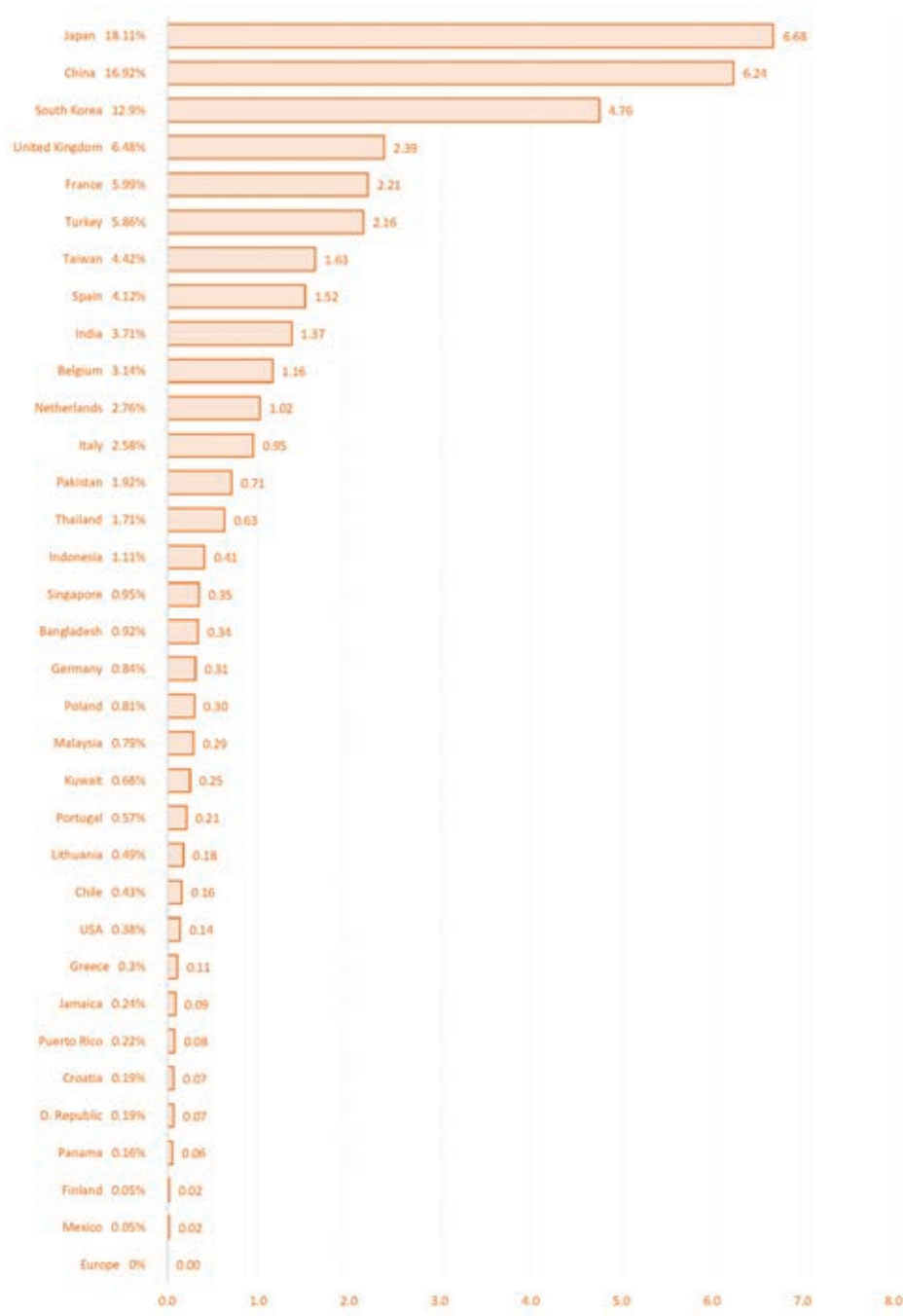
growth in the region also stemmed from Egypt, where the Idku LNG plant shipped only 0.27mmt, down 0.19mmt (-41 percent) from 0.46mmt in December. This negative growth was only cushioned by a slight export increase at the Damietta SEGA plant, which shipped 0.40mmt in January, up 0.01mmt (3 percent) from 0.39mmt in December. The plant thus continued to produce close to nameplate capacity.

Middle Eastern exports were also underpinned by growth in shipments at Qatar’s Ras Laffan LNG complex. The facility increased exports to 7.07mmt, up by 0.16mmt (2 percent) from 6.91mmt in December. In line with the month-on-month increase, the complex continued to produce flat-out. Notably, Qatar’s January trade returned in part to Europe whilst higher exports to the Far East continued.

Imports & Domestic Trade

Global LNG imports were down by 1.09mmt (-3 percent) in January. Demand

Market Share & LNG Imports by Country (MMt)



Source: LNG Journal

Overall, West African exporters lost market share in Europe ... but did not balance that reduction with higher exports to the Pacific.

produced below

growth was strongest in the Pacific Basin, closely followed by the Middle East. Atlantic Basin offtakes, however, were down considerably.

Pacific Basin

Month-on-month Pacific Basin imports had increased slightly by 0.15mmt (1 percent) net in January as South Korea, Indonesia, India and Japan grew their offtakes by 0.95mmt (8 percent) in total to 13.22mmt. This compensated for the combined month-on-month demand decrease of 0.89mmt in China and Taiwan. China's imports decreased by 0.87mmt (-12 percent) to 6.24mmt from 7.11mmt in December whilst Taiwan cut total offtakes by 0.02mmt (-1 percent) to 1.63mmt in January.

Concurrently, the roster of smaller Pacific buyers— including Bangladesh, Chile, Indonesia, Malaysia, Mexico, Singapore and Myanmar – collectively saw imports increase by 0.07mmt (5 percent) to 1.50mmt in January. This was primarily due to demand increases in Singapore and Thailand, where offtakes were up by 0.05mmt (17 percent) to 0.35mmt and by 0.11mmt (21 percent) to 0.63mmt, respectively. Concurrently, Chile saw demand grow by 0.03mmt to 0.16mmt in January. As such, these demand increases were only tempered by negative growth of 0.12mmt (-25 percent) to 0.36mmt in Bangladesh and Mexico. The latter's Manzanillo terminal imported 0.02mmt in January.

Atlantic Basin

In contrast to their Pacific counterparts, LNG imports in the Atlantic Basin decreased considerably. Demand was down by 1.38mmt to 13.05mmt in January compared to 14.43mmt in December, with annualised utilisation of installed capacity at 53 percent, down 5pp month-on-month.

Negative European net demand growth of 1.70mmt (-12 percent) to 12.61mmt was the leading factor. Strong import growth in Turkey by 0.44mmt (26 percent) to 2.16mmt was overshadowed by total negative growth of 2.14mmt stemming from all remaining European buyers, led by France, Spain and Poland.

There was, however, some demand growth in the Americas. The region saw monthly LNG demand increase by 0.14mmt (56 percent) overall as imports stood at 0.44mmt in January compared to 0.25mmt in December. Continued demand in Puerto Rico was an important factor in the region's demand picture. The

country doubled imports of 0.04mmt in December to 0.08mmt in January. Concurrently, demand in the Dominican Republic increased by 0.02mmt (40 percent) to 0.07mmt whilst Jamaica increased offtakes by 0.01mmt (13 percent) to 0.09mmt. The United States also saw offtakes of 0.09mmt in January after no demand in December. As such, regional demand growth was only tempered by a reduction of 0.02mmt (-25 percent) to 0.06mmt in Panama. Colombia, Brazil and Argentina did not

see LNG imports in January, unchanged from December.

Middle East

Middle Eastern LNG demand increased in January. Regional offtakes were up 0.14mmt (17 percent) to 0.96mmt from 0.82mmt in December. Offtake levels were buoyed by higher demand in Kuwait, which saw a 0.10mmt (67 percent) demand increase from 0.15mmt in December to 0.25mmt in January. Concurrently, Pakistan's Port Qasim

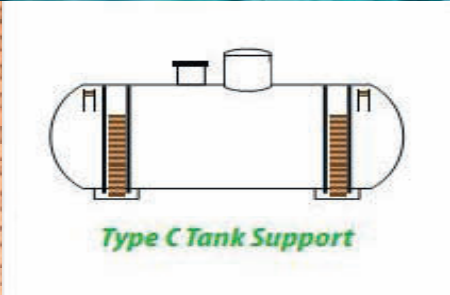
FSRU facilities took in 0.04mmt (6 percent) more LNG in January, pegging imports at 0.71mmt compared to 0.67mmt in December. Jordan, meanwhile, did not import a cargo in January after it had received its most recent delivery in June whilst Egypt's FSRU at Ain Sokhna and Dubai's FSRU were also not seen in the market. As such, the Middle East's annualised import capacity utilisation stood at 20 percent in January, up 3pp month-on-month. ■



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Austenitic stainless steel range launched for LNG industry

A range of high strength austenitic stainless steels has been developed by Cheshire, UK-based N'GENIUS Materials Technology, which are particularly suitable for the LNG sector. Technical Editor Ian Cochran reports.

Global LNG demand is projected to reach 700 mill tonnes per year by 2040 fuelling the need for greater LNG infrastructure, including receiving and export terminals, plus FLNGs and LNGCs.

Since these facilities are being designed with larger capacities and operating under increasingly more challenging conditions, advanced materials technology is required to maximise performance, reduce carbon emissions and optimise through-life costs.

Patent protected in 30 countries worldwide, the N'GENIUS Series is a complete 'family' of high strength austenitic stainless steels offering major improvements, compared to 300 Series stainless steels, and a highly economical alternative to various nickel alloys.

As with conventional austenitic stainless steels, the N'GENIUS Series is claimed to have excellent ductility and toughness at sub-zero and cryogenic temperatures. However, exceptionally higher strength and vastly superior corrosion resistance makes this new family an entirely different proposition, the company said.

By using this technology, LNG piping systems, engineered products, fabricated products and equipment can be developed and manufactured with reduced wall thicknesses, offering the potential to make products and equipment lighter and smaller, significantly reducing topside weight and helping facilities overcome space and height restrictions.

Space savings would also improve accessibility for future servicing and maintenance, repairs, upgrading or replacement work on products and equipment.

In particular, large facilities with extremely heavy topsides, including FPSOs,

FLNGs and upstream fixed platforms, would greatly benefit from the design and construction advantages that the new steels can provide, the company said.

Advantages

The advantages also include the potential to reduce the overall construction time and costs, as well as benefiting from easier handling and lower associated transportation costs.

Inventor, DR CV (Ces) Roscoe, explained: "Some of these larger facilities can have topsides weighing more than 50,000 tonnes, which has a major impact on the design and construction cost of oil, gas and LNG projects.

"The N'GENIUS Series has an infinite range of alloy types, variants and grades and is perfectly suited for all the different material specifications, scopes of work and products, including piping systems, pumps, valves, modules, vessels and tanks.

"Therefore, the potential to optimise the weight and space of all these components, and in turn reduce costs, could be invaluable. It really is the total system material," he stressed.

Weight-saving benefits are achieved from superior wrought mechanical strength properties. For example, the minimum yield and tensile strength of the patented N'GENIUS 304LM4N and N'GENIUS 316LM4N grades are typically 2.5 and 1.5 times higher, respectively, compared to the minimum strength values of conventional 304L and 316L grades.

This enables the series to have significantly higher allowable design stresses than conventional austenitic stainless steels.

Similarly, the higher minimum pitting resistance equivalent (PREN) values for

Wrought Mechanical Properties					
Type	Tensile Strength		Yield Strength		PRE _n
	Min		Min		
	Ksi	MPa	Ksi	MPa	Min
304L	70	485	25	170	18
316L	70	485	25	170	24
N'GENIUS™ 304LM4N	109	750	62	430	30
N'GENIUS™ 316LM4N	109	750	62	430	35

Source: N'GENIUS

the new grades, compared to those for 304L and 316L types, produce significant improvements in localised and general corrosion resistance.

Furthermore, the extensive range of alloy types, variants and grades, which form the 'family' of grades in the series make it suitable for all products, in all service conditions and in the harshest process media environments.

In addition, this technology will also help accelerate the wider implementation of carbon capture and storage (CCS), which fitted on board upstream fixed platforms, FLNGs and FPSOs will lead to extra topside weight, volume and space.

As a result, the reduction in the weight and size of on board CCS systems, would make this 'green' technology become more feasible and play a fundamental role in driving down carbon emissions.

The N'GENIUS Series can be manufactured in both wrought and cast forms for an extensive product range in the LNG, oil and gas industries. These include - pipe, tube, fittings, flanges for piping systems, modules, heat exchangers, umbilicals and line pipe for risers, flowlines, pipelines and manifolds.

It can also be applied to engineering products, including pumps and valves, fabricated products, such as vessels and tanks, and specialist products including casing and tubing for oil country tubular goods (OCTG).

Leading stainless steel product manufacturers will be able to produce the new steels under licence, the company advised.

Speaking with *LNG Journal*, Dr Roscoe said that although higher-value grades are typically more expensive than conventional austenitic stainless steels, they would still be less costly than using nickel alloys. But overall the material that is specified always depends on the application, ie 'horses for courses'.

"Conventional austenitic stainless

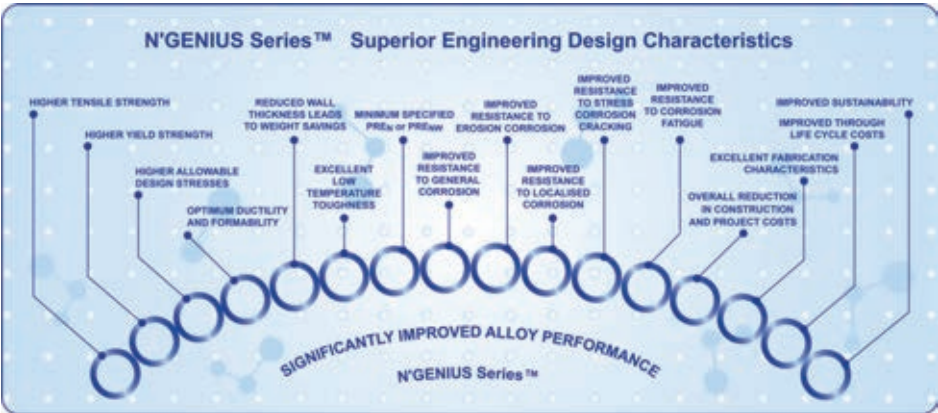
steels are a popular choice because they have been utilised for a long time and are widely available. But where specified, they may require more maintenance over time compared with higher-value materials and would possibly need replacing sooner. So, although the initial CapEx might be greater, the ability to reduce through-life costs in the long run by using a material which performs better and lasts longer could present big savings for projects," he explained.

The main limitation of the most common grades, such as 304L and 316L, is that they have relatively low strength properties. "That's one of the reasons why we claim that N'GENIUS is so superior," Dr Roscoe said.

Its strength properties are comparable with duplex and super-duplex grades but unlike these types of stainless steel, the N'GENIUS Series is perfectly suited for use at the cryogenic LNG temperature of -162°C because of its austenitic composition. Duplex and super-duplex materials suffer from a rapid loss of ductility and toughness in ultra-low temperatures beyond -70°C, but austenitic stainless steels can easily withstand temperatures of down to -196°C.

He further explained that despite N'GENIUS only being made available to manufacture last year, it may not be long before it could be specified for LNG applications. "It could certainly be used for anything that stainless steels are utilised for in the LNG industry and because it's so much stronger, walls of products such as pipes or storage tanks can be made thinner.

"So, on board floating vessels, for example, there's potential to save a lot of topside weight. Some of these FLNGs have a massive topside weight. I think 'Prelude' is about 80,000 tonnes so if you could save even a small percentage of that, it represents a very significant cost saving for the project," Dr Roscoe concluded. ■



Source: N'GENIUS

Five ways LNG will fuel the world's energy transition at scale

LNG remains the only fuel choice available to meet the energy needs of growing economies at scale.

But it's an extremely competitive market. In order to capture the growth potential of LNG, most producers will need to adapt to the top five emerging trends to support energy transition pathways, says Rakhi Oli, Flowserve's Global Strategy and Partnerships Development Leader — LNG/Gas.

Trend 1 - Smaller/modular LNG systems that can scale with demand

The industry is pivoting toward small to mid-size LNG systems or trains, instead of investing in one mega-size train.

This approach reduces risks to investors by building LNG facilities to match current demand. Their modular designs can be easily and affordably expanded as demand grows. The result is a more competitive price per tonne of LNG produced in an optimum timeline. And of course, there can be fewer regulatory hurdles to overcome.

Trend 2 - Digitisation to optimise LNG processes

LNG applications can be challenging because of the cryogenic temperatures and high pressures involved. In addition, LNG processes can emit methane (CH₄), which is 25 times more harmful than carbon dioxide (CO₂) because it holds more heat in the atmosphere.

There is an increasing emphasis from LNG developers on minimising methane emissions. What's needed are technologies that reduce or eliminate fugitive emissions and leakages from critical equipment. That makes emissions reduction facilitated by the digitisation of equipment and processes the second technological trend transforming the LNG industry.

Digital technologies are changing how energy is produced and consumed. Numerous advantages can be gained by embracing the digitisation of the valves, pumps and cryogenic equipment in LNG processes. They include reductions in carbon footprint and total cost of ownership, while enhancing safety and efficiency.

Trend 3 - Floating regasification plants to add flexibility

There is a growing number of floating regasification projects, compared to fixed or land-based regasification units.



Energy transition pathways and emerging LNG trends. Source: Flowserve

Building an onshore terminal is a large, long-term investment, which requires a continuous LNG supply. A floating regasification plant can be built for 40 to 50% less than the cost of a land-based plant, according to Lloyd's Register (LR). They can also be constructed and commissioned in about half the time required for an onshore facility.

As a result, companies can scale up when and where demand grows.

In addition, floating plants provide LNG companies with the flexibility to move the facilities when LNG supplies and demand shift to other regions.

Trend 4 - Better management of energy consumption

Addressing the urgency around energy transition and accelerating actions that de-carbonise brownfield LNG assets and operations are essential to meeting ambitious net-zero goals. That's why LNG plant operators are prioritising efficiency optimisation initiatives at brownfield facilities.

They increasingly rely on vital NPSH and efficiency calculations. Knowledgeable rotating equipment manufacturers who provide these accurate estimates can enable LNG companies to prevent downtime and increase the efficiency of the rotating equipment.

For example, a systematic and comprehensive data-driven flow loop evaluation and optimisation process enables pump systems to function efficiently, minimise noise, and extend the equipment lifecycle. This also can improve

plant productivity and reliability and provide operational savings, compared to traditional methods.

Trend 5 - Lifecycle asset management to improve efficiency

Once LNG facilities are up and running, loss of production for a single day, due to unplanned downtime, can cost millions of dollars. Therefore, LNG companies seek superior reliability, accessibility and maintainability of critical equipment.

Equipment manufacturers can help with lifecycle services designed around an LNG company's key performance indicators (KPIs). They can tailor an equipment maintenance plan that enables plant operators to get the most out of seals, pumps and other flow control systems.

A global network of service capabilities, long-term support and parts availability is equally important to maximise performance, minimise risks, and reduce expenses.

Equipment and partners

The good news is LNG producers have embraced these emerging trends, as have their engineering, procurement, construction and commissioning (EPCC) contractors. Likewise, proven technologies available from knowledgeable partners can help companies significantly reduce their processes carbon footprint.

Expect your partner to offer the right products: pumps, seals, valves and automation. In addition, cohesive execution and support throughout the project lifecycle from critical equipment

suppliers will help LNG producers to meet stringent timelines for the base load development.

Also needed are after sales services and expertise to identify opportunities to further enhance efficiency and cost-effectiveness throughout the LNG value chain.

Therefore, LNG companies should seek a flow control partner who can enable them to shrink their carbon footprint and successfully complete energy transition projects. ■

About the Author



Flowserve's
Rakhi Oli

Rakhi Oli is the Global Strategy and Partnerships Development Leader — LNG/Gas at Flowserve. She brings more than 20 years of multi-functional

experience in developing and executing multi-billion dollar energy infrastructure projects and leading project engineering, technical design and operations.

At Flowserve, she supports developing market penetration strategies; strategic industry partnerships; new markets and product development; stakeholder and industry engagement; and corporate environmental, social and governance (ESG) strategy.

AGDC studies alternative fuel hub

Plans to develop new LNG facilities in Alaska's Cook Inlet offer the potential to drive a raft of LNG fuelling solutions, as well as acting as a testing ground for a range of alternative fuels and energy solutions, according to developer Alaska Gasline Development Corporation (AGDC). Fuelling Editor Malcolm Ramsay has more.

Following approvals by the US Department of Energy, AGDC aims to construct a new LNG export facility near Anchorage, capable of receiving natural gas from the North Slope fields, more than 800 miles away in the far north of Alaska.

As well as acting as a major new LNG export hub, AGDC also wants to explore ammonia and hydrogen production, with a goal to create a production hub for alternative fuels and drive down the cost of fuel imports for Asian and North American vessel operators.

“The Cook Inlet sedimentary basin was the birthplace of the modern oil and gas industry in Alaska,” Tim Fitzpatrick of the AGDC tells LNG Journal. “A phased restart of both idled ammonia units at the existing Nutrien Kenai Plant will yield 3,500 tonnes per day of liquid ammonia, which equates to 610 tonnes per day of hydrogen.”

While LNG is currently the primary choice for shipping lines seeking to switch to lower emission fuels, the longer-term outlook suggests that the landscape will become increasingly fragmented as a range of new ship designs and competing fuels become available.

Supporting the transition

The ability to potentially switch between LNG and ammonia is driving increased interest from ship operators and developers to co-locate ammonia production with existing bunkering infrastructure to benefit from the advantages of both fuels.

Under AGDC's proposed plans for Cook Inlet, natural gas from North Slope will be transported by a new Alaska LNG

mainline pipeline providing as much as 3.5 billion cubic feet of gas per day to southern Alaska. The North Slope fields are the largest oil fields in North America and cover over 200,000 hectares in the Prudhoe Bay region.

This plentiful supply will allow the developers to reinstate existing refining infrastructure in the area and study the ramp up of ammonia in the first instance.

“Ammonia will be produced in Nikiski at the existing Nutrien Kenai Plant [using] very conventional technology utilized throughout the industrialized world,” Fitzpatrick adds, “Prior to shutting down due to lack of feedstock, the Nutrien Kenai Plant manufactured ammonia and urea for about 40 years.”

AGDC is also exploring the potential to produce hydrogen at Cook Inlet, announcing plans in November for a US\$4.6 billion Alaska Hydrogen Hub, capable of producing more than 600 tons per day. AGDC President Frank Richards notes that the “close proximity to U.S. West Coast and Asian markets with rapidly growing hydrogen demands” favour Alaska as a location for these alternative fuels, predicting that the project will act as a “springboard” to launch new fuelling solutions.

Fitzpatrick estimates that Cook Inlet could potentially deliver daily ammonia production of up to 8,900 tonnes per day, based on 1,600 tonnes per day of hydrogen, giving total annual ammonia production of 3.25 million tonnes or 571,000 tonnes of hydrogen.

Fuel flexibility

In 2022, classification society Bureau Veritas approved plans for the world's



Artist's rendition of Alaska LNG facility

first dual-fuelled LNG and ammonia-ready vessel. This design features an integrated GTT Mark III membrane containment tank, located under the main deck, which is compatible with liquid ammonia fuel as well as LNG.

“We are very proud to have developed this new generation of LNG and NH₃-fuelled VLCCs thanks to the expertise of the market's key players. This technology illustrates GTT's ambition to support, with its innovation, the maritime industry in facing the challenges of energy transition,” Adnan Ezzarhouni, General Manager of GTT, said.

This flexibility in vessel design is only likely to increase as new multi-fuel vessels enter the market, in turn reshaping vessel operators' fuel choices as infrastructure offers the potential to switch between fuels easily.

“This concept of multi-fuel VLCC with enhanced endurance not only enables safer and more efficient operations, but also offers greater bunkering flexibility for ship owners and charterers towards a carbon-free future,” Ezzarhouni adds.

In November 2022, Italian classification society RINA granted approval-in-principle (AiP) for an ammonia-fuelled tanker developed by Shanghai Shipyard, which it estimates could reduce the energy efficiency design index (EEDI) by more than 90% compared with a conventional design.

Net zero fuel production

One of the major drawbacks of producing hydrogen from natural gas is the necessary carbon emissions this produces as a by-product but as Fitzpatrick points out the Cook Inlet is uniquely equipped to offset this downside.

“The basin has prolific stratigraphy of depleted reservoirs, saline aquifers, and deep coals beds that are ideal for carbon sequestration. The latest estimate by the Alaska Department of Natural Resources estimates the basin may hold up to 50 gigatons of CO₂ sequestration potential,” Fitzpatrick says.

As a result, AGDC is exploring the use of the region's unique geologic formations for CO₂ sequestration, potentially making the site a net zero, or even carbon negative, producer of fuels.

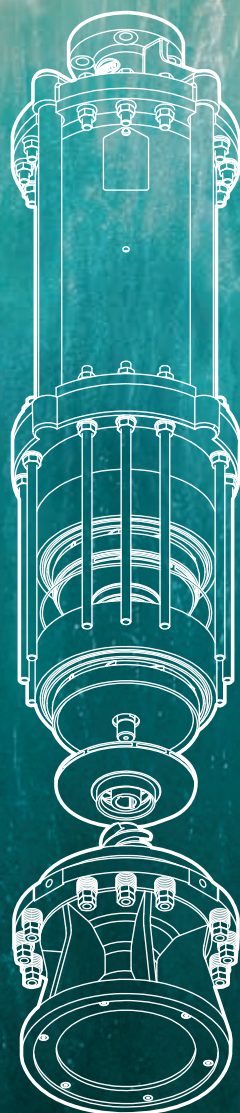
“The ammonia production process included in the Alaska H2Hub concept is at commercial scale and is able to provide an unmatched supply of hydrogen to U.S. and Pacific Rim markets,” Fitzpatrick concludes. “The limitation of scaling this process globally is the availability of natural gas resources and proximity and capacity of CO₂ sequestration basins... commercially sustainable potential future expansion work may include installation of a new autothermal reforming (ATR) plant, additional ammonia storage capacity, and expansion of the existing marine terminal to service higher-capacity cargo tankers.” ■



New facilities could supply LNG fuel to a range of markets

RIDE THE WAVE

Of the LNG marine expansion



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For the Record

ABU DHABI National Oil Company (ADNOC) is proceeding with its plans to offer a minority stake in new subsidiary ADNOC Gas, which consolidates the emirate's gas processing and LNG operations, through an initial public offering on the Abu Dhabi Securities Exchange in 2023.

ADNOC, the leading energy company in the United Arab Emirates, set up the ADNOC Gas subsidiary on January 1 to group its world-scale gas processing operations and gas marketing company.

The new subsidiary combines the operations, maintenance and marketing of the ADNOC Gas Processing and ADNOC LNG units into one consolidated business.

"As ADNOC grows its gas production and processing capacity, the combined scale and capabilities of ADNOC Gas will maximize value and create new opportunities for ADNOC, its partners and the UAE," explained ADNOC in its latest statement on the IPO.

"As a leading global player with capacity of 10 billion standard cubic feet of gas per day, ADNOC Gas will serve a wider range of domestic and international customers with an expanding portfolio of gas products," the parent company explained.

As one the world's leading gas companies ADNOC Gas will operate eight processing sites, both onshore and offshore, and with a pipeline network of over 3,250 kilometres (2,020 miles) and the LNG export plant on Das Island offshore Abu Dhabi.

Existing joint venture partners to ADNOC LNG are Japan's Mitsui & Co, UK major BP and France's TotalEnergies.

The ADNOC Gas Processing unit partners are Shell, TotalEnergies and Thailand's PTT Exploration and Production and they will continue in their respective joint venture partnerships with ADNOC Gas.

Analysts said that the UAE and ADNOC were well placed to take advantage of the growth in natural gas and LNG demand given their significant gas reserves, history of successfully developing gas projects and proven track record as a reliable energy supplier.

"The formation of ADNOC Gas represents another major milestone in unlocking the full value of the UAE's vast natural gas resources and builds on ADNOC's more than 40 years' experience as a leading gas producer," said Ahmed Al-Jaber, UAE Minister of Industry and Advanced Technology and ADNOC's Managing Director and Group Chief Executive.

"In addition to enabling the growth of local industry and manufacturing, ADNOC Gas will play a critical role in delivering ADNOC's broader LNG expansion plans, including in international markets," stated Al-Jaber.

In the run-up to the IPO Ahmed Mohamed Alebri has been appointed as Chief Executive (acting) of ADNOC Gas, Peter Van Driel was named as Chief Financial Officer and Mohamed Al Hashemi is Chief Operating Officer.

CEO Alebri is the former CEO of ADNOC Gas Processing and General Manager of ADNOC Industrial Gases.

CFO Peter Van Driel is a 28-year veteran of Shell, where he served in various key roles in Accounting, Investor Relations, M&A and Finance.

"The company will make further announcement in relation to the intended IPO in due course," added ADNOC.

ADNOC Logistics & Services, a subsidiary of ADNOC, and the Singapore-based company, Atlantic, Gulf and Pacific (AG&P), have signed a charter agreement to use an LNG carrier from the ADNOC fleet as a floating storage unit in India.

The LNG carrier "Ghasha" was built in Japan and is a Moss-type containment vessel with a capacity of around 138,000 cubic metres and is part of ADNOC L&S's diverse operational fleet of more than 300 vessels.

AG&P has signed an agreement with Karaikal Port on the southeast coast of India to develop an LNG import terminal.

Karaikal Port is a deep-water facility in the state of Tamil Nadu and as part of the port's expansion beyond commercial cargoes, it allocated an area within its existing breakwater to develop an LNG terminal to serve power, industrial and other customers in the region.

The LNG terminal when completed in 2024 would be close to the existing Cauvery Basin gas pipeline network owned by Gas Authority of India.

AG&P has said the development of the Karaikal LNG project would complement Indian Oil Corp.'s terminal at Ennore, 300

kilometres to the north and still in the state of Tamil Nadu.

"The charter deal is valid for 11 years with the option of a four-year extension," said a statement from ADNOC L&S.

"This agreement with AG&P builds on a phenomenal period of global expansion for ADNOC L&S as we focus on growth, diversification and unlocking new revenue streams," said Abdulkareem Al Masabi, Chief Executive of ADNOC L&S.

"ADNOC L&S is in the midst of a major renewal project of its LNG fleet and, as we do so, we are repurposing our older vessels to extend their life and generating incremental value," added Al Masabi.

The statement explained that the operations and maintenance of the FSU would be undertaken by ADNOC L&S, while the conversion of the LNG carrier to an FSU will be completed by GAS Entec, an AG&P subsidiary.

"The FSU will be moored alongside a regasification unit, manufactured by the subsidiary," it said.

The integrated terminal will have an initial capacity of 5 million tonnes per annum.

"AG&P is thrilled to work closely with ADNOC L&S to continue to bring energy to important markets," said Joseph Sigelman, Chairman and CEO of AG&P Group.

"We are also proud of AG&P's Gas Entec business, which has become a world leader in LNG technology," added Sigelman.

DNV, the European maritime classification society, said that liquefied natural gas-fuelled vessels led the way among the 275 newbuild orders made during 2022.

There were orders for 222 LNG-powered ships, which was 81 percent of total orders placed with the world's leading shipyards, according to DNV data.

About 74 percent of these orders were for container vessels and Pure Car and Truck Carriers (PCTCs), while product tankers came in third, representing 9 percent of orders.

DNV said that against all the odds 2022 turned out to be almost on a par with the record year of 2021 for LNG-fueled ship orders, which saw 240 LNG-powered vessels ordered.

The Norwegian class society added that the total count of LNG-fuelled ships in operation and on order now stood at 876.

A total of 104 new LNG-fuelled ships entered operation during 2022,

representing 41 percent growth within the sailing fleet.

"A diverse portfolio of LNG-fuelled ships was delivered in 2022, with large crude oil tankers in the lead and container ships in second place," said Martin Wold, Principal Consultant in DNV's Maritime Advisory business.

"Far from all are currently operating fully on LNG fuel but there are geographical pockets where LNG is still competitively priced and being bunkered regularly," explained Wold.

"The underlying growth for LNG fuel is nevertheless very strong and the market will likely return with a boom at some point, with bunkered volumes expected to triple within a very short time span," he added.

Looking ahead DNV expected 2023 to turn out similar to 2022 in terms of newbuild orders for alternative fuels.

Similar to last year, the vast majority of ships ordered with alternative fuels in 2023 is expected to be LNG dual-fuel vessels.

"The elevated price levels for natural gas will continue to delay the widespread adoption LNG as fuel in the marine industry. However, from a big picture perspective delivery times for newbuilds aligns well with when global gas and LNG prices are expected to cool down," said DNV.

ENAGAS, the Spanish natural gas grid and LNG network owner, has reached an agreement with the German utility Uniper for the acquisition of a 20 percent stake in the Dutch BBL Company, owner of a 235-kilometre (146 miles) gas interconnection linking the UK and the Netherlands.

The subsea gas pipeline has a maximum capacity of 15 billion cubic metres per annum of direct flow between Balgzand in the Netherlands and Bacton on the English East Coast in the county of Norfolk.

The BBL-owned pipeline also has 5 Bcm of capacity a year in the reverse direction to the Dutch coast.

Enagás said it would pay around €75 million (\$81.23M) for the stake and the deal was subject to compliance with regulatory conditions.

After the completion of the transaction the shareholder line-up in the BBL pipeline will be Dutch utility Gasunie 60 percent, Belgian grid operator Fluxys with 20 percent and Enagás with its new 20 percent stake.

Gasunie is a stakeholder in the Dutch Gate LNG import terminal in Rotterdam

as well as in the planned German LNG import facility at Brunsbüttel, north of Hamburg.

Fluxys is the owner of the Belgium's Zeebrugge LNG terminal.

"Following the closing of the acquisition, three Transmission System Operators (TSOs) will own this key infrastructure in Europe's security of supply," said Enagás.

"The agreement allows Enagás to advance in its position as one of the main operators to reinforce the security of energy supply in Europe," it added.

"In addition to the usual conditions precedent regarding regulatory approvals, the transaction is subject to a pre-emptive rights of the other existing co-owners of BBL," stated the Spanish company.

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 transshipments to the European Union.

In addition controlling the El Musel terminal and its new role, Enagás is also overseeing the overhaul of the jetty at the Barcelona terminal to increase its ship handling capacity and to enable transshipments from Barcelona to other EU terminals.

ENI, the Italian energy company, signed a contract with China's Wison Heavy Industry shipyard for the construction and installation of a floating liquefied natural gas production unit for offshore the Republic of Congo, the second proposed FLNG venture planned for the West African nation.

Eni said that the latest Congo FLNG unit will have an output capacity of 2.4 million tonnes per annum.

The Milan-based company said that the FLNG hull would be 380 metres long and 60 metres wide and be anchored at a water-depth of around 40 metres.

"It will be able to store over 180,000 cubic metres of LNG and 45,000 cubic metres of liquefied petroleum gas," explained Eni.

"Preliminary activities have already started, with long lead items ordered and the steel was cut on December 20," added the company.

Eni explained that this facility would be the second FLNG to be deployed in the Republic of Congo and was scheduled to enter service in 2025.

The first one will be the "Tango FLNG" with 600,000 tonnes of capacity per annum and previously deployed in Argentina will be scheduled for start-up in 2023.

The Republic of Congo is currently the third-largest oil producing country in sub-Saharan Africa.

It has associated gas from its oil production, while both the FLNG projects are part of the Marine XII gas field project.

The latest Congo projects put Africa in the leadership of global FLNG developments with projects already operating offshore Cameroon in West Africa and Mozambique in southeast Africa.

Other African FLNG projects are currently being developed offshore Nigeria and off the West African nations of Senegal and Mauritania.

The Wison shipyard at Nantong in China has been a pioneer builder of LNG barges for production and regasification.

These were first constructed at the Chinese yard for the Belgian shipping company Exmar.

The "Tango FLNG" first started operations at Bahia Blanca port in Argentina in mid-2019 and a 10-year charter term was agreed before the project was eventually halted amid disagreements.

EQT CORP., the largest producer of natural gas in the United States through hydraulic fracturing, has announced the completion of a programme to eliminate methane emissions from natural gas-powered pneumatic devices in production operations.

As a result of the initiative, EQT said it had reduced its methane emissions by 70 percent in the process.

EQT believes that US LNG has available feed-gas capacity of as much as 55 billion cubic feet per day available from 2030 to replace international coal production at an unprecedented pace and fully funded by the natural gas industry.

EQT's operations are centred on the Marcellus Shale located beneath large areas of Ohio, Pennsylvania, New York and West Virginia.

The company is the leading developer in the Marcellus Shale with over one million gross acres and about 18.0 trillion cubic feet of proved reserves.

EQT also operates Utica Shale well in Pennsylvania and wells and throughout its Ohio acreage with 0.9 trillion cubic feet of proved Ohio Utica reserves.

"Nearly 9,000 pneumatic controllers were replaced or retrofitted on all EQT production locations and compressor stations through a 'fit-for-purpose' technology strategy using primarily electric actuators and air-compressor installations," EQT.

"As part of the initiative, EQT installed 341 air compressors and retrofitted 451 dump assemblies and 381 motor valves to electric actuators," it added.

"The entire conversion process took just 515 days and was completed a full year ahead of schedule," stated EQT.

The company explained that replacing natural gas-driven pneumatic devices, which are used for managing produced fluids in separators, scrubbers and filters, represents a "meaningful opportunity" for reducing methane emissions within the industry.

EQT said that it found natural gas-powered pneumatic devices were the source of 39 percent of the company's 2021 production segment greenhouse-gas emissions.

"We are aggressively addressing methane emission. As the nation's largest natural gas producer, EQT not only delivered on its commitment to eliminate a major source of methane emissions in our operations, we also did it in a cost-effective and expedient way," said Toby Z. Rice, President and Chief Executive of EQT.

"This demonstrates our team's exceptional ability to rapidly evolve EQT's operations through innovation and teamwork and better positions affordable, reliable, clean natural gas as one of the world's most impactful decarbonizing tools," stated Rice.

EQT said it was sharing the rationale and methodology the company used for replacing or retrofitting its natural gas-powered pneumatic devices with other operators and the information is available in a company report.

EXCELERATE Energy, the leading US provider of floating LNG import terminals, saw its floating storage and regasification unit (FSRU), the "Exemplar", arrive at the port of Inkoo in Finland to become a Baltic regional supplier of natural gas.

The FSRU was previously loaded with a partial cargo of LNG to serve as the initial commissioning cargo for the terminal.

The FSRU "Exemplar" has been chartered to Gasgrid Finland Oy for a period of 10 years.

"It will provide flexible, reliable, and secure delivery of regasified LNG to Finland and other Baltic countries," said Excelerate.

Inkoo port is located on the Southern Coast of Finland and provides an optimal deepwater port at close proximity to the pipelines distributing the gas mainly to industrial end-users in the Baltic region.

The developer had made the move to enable independence from Russian pipeline natural gas.

The FSRU capacity alone is sufficient for the gas needs of both Finland and Estonia. Russian gas supplies through the Imatra entry point into Finland have been stopped since May 2022.

Finland already has two onshore LNG terminals at Pori and Tornio. They have been in operation since 2016 and 2018 respectively.

"The arrival of the FSRU 'Exemplar' at the port of Inkoo represents an important milestone for Finland as it prepares to enhance its energy security and bring essential energy infrastructure to the region," said Steven Kobos, President and Chief Executive of Excelerate.

"This is a tremendous accomplishment for everyone involved, and we are proud to have partnered with Gasgrid on this opportunity," added Kobos.

In addition to providing regasification services under the time charter with Gasgrid, Excelerate said that through its recently formed Finnish gas marketing subsidiary, Excelerate Finland Gas Marketing, the US firm has executed an agreement for the sale of commissioning volumes and regasification capacity rights during the commissioning phase.

"Through this agreement, Excelerate Finland will be able to provide natural gas to downstream customers in Finland and other Baltic countries," explained the Houston-based company.

Excelerate explained that the FSRU "Exemplar" departed drydock in Spain on December 6 where it underwent customer-requested winterization upgrades.

"The vessel subsequently procured its cargo from Excelerate's global LNG portfolio via a ship-to-ship transfer with the FSRU 'Excelsior' near Gibraltar," said the company.

"The 'Excelsior' recently completed its 10-year service in Israel and will go on charter to the Federal Republic of Germany in 2023," it added.

The FSRU "Exemplar" is 291 metres long and 43 meters wide. It has a storage

capacity of 150,900 cubic metres of LNG and can provide more than 5 billion cubic metres per annum of regasification capacity.

GASTRADE, has seen more progress on its Greek LNG import project. An affiliated joint venture has held a ceremony to launch the construction of a gas-fired power plant that will help underpin the LNG floating storage and regasification (FSRU) project at the eastern Greek port of Alexandroupolis.

The Alexandroupolis Power Plant is being built by a consortium of Greece's three major energy groups, PPC, DEPA (the Public Gas Corporation of Greece) and Damco Energy, a unit of the Copelouzos Group.

The launch ceremony for the power project was attended by Greek Prime Minister Kyriakos Mitsotakis as well as others involved in supporting the Greek and Balkans region project, including representatives of the Bulgarian and US governments.

The power plant will be directly connected to the FSRU import project led by Greek company Gastrade and with the vessel being provided by one of the world's leading LNG carrier companies GasLog.

“Alexandroupolis is turning into an energy junction of electricity and natural gas networks, with the potential of supplying the domestic market and neighbouring countries in Southeast Europe,” said a statement.

The FSRU will consist of a permanently moored FSRU and a pipeline system of 28 kilometres connecting the floating unit to the Greek National Natural Gas Transmission System (NNGTS).

The vessel will be stationed in the north-eastern part of the Aegean Sea and about 17.6km from the town of Alexandroupolis.

The GasLog vessel will have a storage capacity of 153,500 cubic metres and a nominal gas send-out rate of 625,000 cubic metres per hour.

The new power plant is expected to be operational by the end of 2025. It will be a combined-cycle facility with installed capacity of 840 megawatts, which is approximately the net capacity of three coal-fired plants currently being decommissioned.

“We are here to welcome a project that is changing the energy landscape and Greece is now shielded,” said Christos Copelouzos, Chief Executive of the Copelouzos Group.

“At the same time, a new energy pillar

is being created for Southeast Europe, as our country will be able to export electricity to the neighbouring Balkan states, Bulgaria, North Macedonia and even Serbia,” he added.

“As a Group, we chose the location of the plant here in Alexandroupolis. After all, for years we have been paying special attention to the wider Evros region, fully acknowledging its important geostrategic position,” explained the CEO.

“We are creating infrastructure, which, together with other projects under implementation in the region, such as the FSRU Alexandroupolis, will generate opportunities for the development of the local economy and many new and permanent jobs,” he stated.

“With confidence in Greece and its people, we at Copelouzos Group will continue to develop projects of ‘national identity’. These include investments that are being thoroughly prepared, such as the electrical interconnection between Greece and Egypt and offshore wind farms,” he concluded.

GRAIN LNG, the largest import terminal in Europe and located on the Medway River in the southeast English county of Kent, reported a 60 percent surge in cargo deliveries in the past year when more gas was supplied to the UK and the European Union.

The terminal owned by National Grid Plc saw 91 LNG carriers berthing at the facility from nations such as Algeria, Angola, Nigeria, Peru, Trinidad and the US.

“At times the Grain terminal was able to supply one fifth of UK natural gas demand,” said the company.

The terminal also broke its own unloading record for the final quarter of 2022 with 37 vessels discharging cargoes.

The Grain terminal's previous record of cargo handling had been set in 2011 when 66 ships berthed.

Once offloaded at Grain, the LNG is converted to gas and can then be sent out into the National Transmission System (NTS) throughout the UK or exported into Europe to support neighbouring countries.

“Grain LNG sent over 82 terawatt hours (TWh) into the UK's NTS, compared with 59 TWh in 2021, an almost 40 per cent increase,” said the company.

“During the recent cold spell, the facility broke a series of records, reaching over 90 percent of its capacity, pushing out 600 GWh of gas into the UK's network over the month, compared to between 200 and 400 GWh in a typical December,”

explained Grain LNG.

The UK, which represents around 20 percent of Europe's total LNG import capacity, has also been instrumental in the re-stocking of European gas reserves which are in the region of 100 billion cubic metres.

“In fact, the UK was responsible for filling around 16 percent of Europe's gas reserves this winter,” said the company.

“Where global supply patterns have shifted from a reliance on Russian gas, LNG has filled the hole and become a key enabler for Europe to reach its 90 percent storage target,” it added.

National Grid owns the terminal, infrastructure and storage tanks, and works with a range of customers who use the terminal to import gas from around the world.

Before the start of the Russia-Ukraine conflict, the UK received around 30 percent of LNG from Russia.

However, due to the events of the last 12 months and the invasion of Ukraine this has changed with around a third of the ships coming into the terminal from the US.

“It's been a remarkable year for the team at Grain, as we continue to play a critical role in supporting security of supply both here in the UK and for our European neighbours,” said Grain LNG's Terminal Manager Simon Culkin.

“UK energy security is dependent on a diverse mix of energy generation and sources and LNG is an important part of that,” added Culkin.

“Over the last year we have seen a real uplift in LNG imports from the US and Grain LNG has long been viewed as one of the leading gas terminals in the world,” he stated.

GTT, the French LNG storage technology company, has completed the construction of two full containment tanks for the new Nangang LNG import terminal being constructed by the parent company of Beijing Gas Group at Tianjin port in northeast China.

GTT's order was received from its partner company, China Huanqiu Contracting and Engineering Co. (HQCEC), for the design of eight very large storage tanks each with a capacity of 220,000 cubic metres.

“They are the world's largest onshore LNG storage tanks incorporating the GST® membrane containment technology,” said GTT.

The Paris-based company said the construction schedule remained on track

despite the constraints imposed by the Covid-19 pandemic.

GTT added that the two onshore tanks were now entering the commissioning phase and would be operational in the first half of 2023.

The new Tianjin-Nangang project comprises three phases and will be the third facility to serve the northeast Chinese port supplying the gas needs of Beijing.

The existing facilities currently include the Tianjin North onshore terminal operated by China Petroleum and Chemical Corp. (Sinopec) and had included a separate floating facility when required.

“The construction of these first two onshore tanks marks an important milestone for BGG's LNG terminal in Tianjin,” said Philippe Berterottière, Chairman and Chief Executive of GTT Group.

“These tanks are the first of eight planned for the site and are already the largest onshore tanks in the world equipped with our GST® technology. We thank BGG and the Chinese government for their trust and wish HQCEC every success for this new terminal,” he declared.

GTT said its technology offered many advantages compared with a traditional onshore LNG tank.

This includes safer storage management through integrated monitoring and greater storage capacity for the same footprint.

“This milestone is the reward of five years of assessment, preparation, engineering and actual construction,” said Li Yalan, who is Chairwoman of the Beijing Gas unit of parent company Beijing Enterprises Group.

“We are proud to have evolved this emerging technology into a promising solution for many projects around the world,” added Li, whose is also the current President of the International Gas Union.

“Thanks to this world first, these containment membrane tanks are on their way to becoming the state-of-the-art in LNG storage. We have been impressed by the dedication and passion of GTT and HQCEC to make this world-first a success,” she stated.

INDONESIA has approved a revised plan of development costing \$3.35 billion for the Merakes and Merakes East natural gas fields to serve the nation's main LNG export plant through to at least 2032.

The project fields are operated by

Italian energy company Eni and one is already a supplier since April 2021 for the onshore Indonesian Bontang LNG plant in East Kalimantan province.

The Bontang plant has a nameplate capacity of 11.5 million tonnes per annum.

“The development of this field will provide additional reserves to ensure supply to the East Kalimantan system so that the Bontang LNG facility can operate at an optimal level,” said Dwi Soetjipto, the Chairman of the nation’s Upstream Regulator SKK Migas.

Investment for the Merakes fields was initially set at \$1.3 billion with peak production at 368 million standard cubic feet per day.

Indonesia has two other onshore LNG facilities, the Tangguh plant with 7.6 MTPA and the Donggi-Senoro plant with 2.0 MTPA of output.

The Tangguh plant is operated by UK major BP and is currently undergoing an expansion with the construction of a third Train.

Tangguh began operations in West Papua province in 2009 and has delivered about 1,500 LNG cargoes to global markets.

Another Indonesian LNG project is expected to move forward soon with Japanese energy company Inpex Corp. finalizing its revised development plan for the Abadi project.

Inpex is planning to build an Asia-focused LNG export plant on Yamdena Island in the Tanimbar chain in a joint venture with Shell Plc using feed-gas from the Abadi gas field in the Masela Block of Indonesia’s Arafura Sea.

The liquefaction and export plant could be expected to be operational by around 2028.

Inpex has already completed preliminary front-end engineering and design for a facility with projected annual initial capacity of 10.5 MTPA.

JAPAN has formally retaken from China its position as the World No. 1 LNG importer with more volumes coming from Australia, Russia and its Asian neighbours even as overall deliveries to Japanese terminals fell in 2022 and slumped in December.

While China’s estimated LNG imports dropped by 18.8 percent to 64.15 million tonnes, the official Japanese LNG import volumes for 2022 came to 71.99MT compared with 74.31MT in 2021, showing a fall of 3.1 percent, according to preliminary trade data

from Japan’s Finance Ministry.

China had overtaken Japan in 2021 to become the world’s largest LNG importer with 78.93MT of imports, though has now slipped back because of the economic slowdown and Covid-19 restrictions affecting energy demand.

Japanese monthly LNG imports for December 2022 fell by 13.8 percent to 6.06MT from 7.03MT in the same month of 2021.

The November 2022 LNG shipments to Japan’s network of 37 terminals had also dropped to 5.55MT from 5.86MT in November 2021.

The costs of Japan’s December LNG cargoes increased by 36.8 percent to 817.52 billion yen (\$6.32Bln) compared with 597.53Bln yen (\$4.62Bln) in December 2021, the Ministry data showed.

Japan’s annual LNG costs jumped by 97.5 percent to 8.55 trillion yen (\$64.34Bln) in 2022.

The Finance Ministry data showed that shipments of LNG increased from Australia, Asian countries and from Russia.

Imports from Russia increased by 4.6 percent on the year to 6.87MT from 6.56MT in 2021.

The Russian deliveries cost 82.4 percent more than in the previous year with the 2022 bill from the Russians amounting to 677.5Bln yen (\$5.24Bln).

Japan continued its deliveries of LNG from the Russian Far East export plant at Sakhalin Island even after the Russian invasion of Ukraine in February 2022 as energy security outweighed the Western-led imposition of sanctions against Russia on the energy and financial fronts.

Deliveries from Asian countries like Malaysia, Indonesia and Brunei increased by 9.2 percent to 17.93MT for the year.

Middle East cargo numbers for the year tumbled by 41.5 percent to 6.74MT from 12.20MT in the previous year.

LNG imports from the US dropped by 41.5 percent to 4.13MT compared with 7.07MT in 2021 when they had overtaken Russian delivery numbers for the first time.

The balance of Japan’s LNG imports in 2022 came mainly from Australia and the spot market and with small volumes from Africa included. This delivery segment increased by more than 13 percent and amounted to 36.32MT versus 32.06MT in 2021.

While Japan’s annual LNG imports declined, shipments of thermal coal

during the year increased by 2.5 percent to 115.3MT.

In its energy mix in 2022, Japan has also lagged in increasing nuclear power as previously planned.

Since the Fukushima disaster, only 10 reactors have been given the go-ahead to go back into operation compared with the 54 that were online in 2011 and which supplied around 30 percent of Japan’s energy needs.

A further 21 reactors have been decommissioned since 2011 and will never be re-started.

JGC Corp., the overseas engineering, procurement and construction business of Japan’s JGC Group, said it would head a consortium with South Korea’s Samsung Heavy Industries for construction of a nearshore floating liquefied natural gas (FLNG) project in Malaysia planned by Petronas.

“This facility will be the first nearshore FLNG plant in the world as well as the third floating LNG plant to be constructed for offshore gas fields in Malaysia, with a minimum production capacity of 2 million tonnes of LNG per annum and scheduled for completion in 2027,” said JGC.

“JGC’s main responsibilities will cover the engineering, procurement and commissioning work for the FLNG topside, the associated onshore facilities as well as the management of the overall project,” explained the Japanese company.

JGC added that the consortium partner SHI would be responsible for the FLNG hull EPC work and the modular fabrication of the topside.

JGC’s LNG project energy division JGC Corp. is headed by Farhan Mujib, a former executive of US engineers KBR.

Mujib joined JGC Corp. in May 2020 as the company’s new Senior Executive Vice President for JGC’s EPC unit after working for Houston, Texas-based KBR for 31 years. Mujib has since been promoted to President of JGC Corp.

JGC’s other current or recent LNG work includes the LNG Canada project being constructed by Shell and partners in British Columbia and the successful completion of the Coral South floating LNG venture offshore Mozambique for Italian energy company Eni and partners.

“Since the 1980s, the JGC Group has executed EPC projects for Petronas for all nine Trains at the LNG Complex in Bintulu, Sarawak, which has an annual production capacity of approximately 29 million tons per annum,” explained JGC.

Then in 2021 it successfully completed the Petronas production hull “PFLNG Dua”, a deep-water FLNG facility.

JGC noted that it was also currently performing the FEED for an FLNG project offshore Nigeria.

“We believe that our consortium secured the order for the Petronas FLNG facility project on the basis of JGC’s world-leading project management capabilities and the company’s advanced and proven technologies in LNG plants, accounting for about 30 percent of LNG plants worldwide, as well as SHI’s world-class shipbuilding capabilities in this field,” explained Tadashi Ishizuka, President of JGC parent company JGC Holdings Corp.

“It is our sincere wish to continue to contribute to the realization of planned FLNG plants and LNG plants, with LNG positioned as a key energy transition source,” added Ishizuka.

KANFER Shipping AS, one of the leading companies for small-scale gas solutions based in Norway, has signed an accord on establishing an attractive hub for liquefied natural gas bunkering and small-scale LNG distribution in and out of the Central American nation of Panama.

Kanfer’s accord in the form of a memorandum of understanding has been signed with CB Fenton, a leading ship agency in Panama and part of the Ultramar (Chile), an international maritime group with business activities in the Americas for port and shipping services and logistics.

“The parties have joined forces and are now seeking a partner in the LNG trading space,” they said in a statement.

Panama is among the most important global water ways and a strategic location for bunkering with more than 13,000 ships passing through the locks of the Panama Canal and a significant number of those ships have waiting time before entering the locks.

Kanfer and CB Fenton noted that about 80 percent of the conventional bunkering is done on the Pacific side (Balboa) and for this reason, the companies have agreed to perform a feasibility study for a floating storage unit (FSU) of LNG on the Pacific side of the Canal.

Kanfer and its potential partner said that this FSU would then be a source for smaller ships to supply the growing fleet of dual-fuelled ships with LNG.

They would also distribute the fuel to

power intensive industries and power stations in Central America and the West Coast South America.

“We are delighted to partner with Kanfer for such an innovative service,” said CB Fenton’s Chief Executive Marco A. Guerra.

“An LNG bunkering and distribution hub in Panama is in line with our sustainability strategy and will add value to the trade lanes using the Panama Canal,” explained Guerra.

“Our purpose is to contribute to the quality of life in our region of influence, through facilitating foreign trade,” he added.

Kanfer is now aiming to provide much-needed LNG bunkering services in Panama in addition to its previously announced bunkering services in the Egypt-Mediterranean market covering the Suez Canal and the Red Sea.

“We cannot do anything about the LNG prices, but together we can reduce the infrastructure cost considerably,” said Stig Hagen, Managing Partner at Kanfer.

“We are confident that Panama will be an important LNG bunkering hub and even though LNG is said to be a transition fuel, we will see more of bio-LNG and synthetic LNG in years to come,” added Hagen.

CB Fenton and Kanfer confirmed they were now seeking partners to make the business proposition even more appealing to the industry.

“We believe the right partners shall have experience with bunker trading and/or commodity trading and have know-how about LNG or natural gas,” they added.

“We will actively be seeking such a partner and structure the project to have LNG bunkering and distribution services available in 2025-2026,” they declared.

Kanfer added that it signed a shipbuilding contract in 2021 for two ships plus options.

The company said that these ships also have a unique design for both sea transportation and to be used for floating storage and both solutions could fit the LNG bunkering project in Panama.

MITSUI OSK Lines and a group company, Ferry Sunflower Limited, said that the “Sunflower Kurenai” received its first LNG fuel supply at the Port of Beppu in Oita Prefecture.

LNG fuel was supplied via truck-to-ship and this was the first time this method was used. MOL said the fuelling involved a skid being connected to four tank trucks.

“Unlike a conventional method of receiving fuel supply by connecting a single tank truck to LNG-fuelled vessels, the use of the skid enables the ferry to receive LNG fuel from four tank trucks simultaneously, speeding up the process,” explained MOL.

The LNG fuel was supplied to the tank trucks by Oita Liquefied Natural Gas Co., a Kyuden’s group company.

Niyac Corp. transported the LNG fuel and supplied the volumes to the ferry company.

MOL added that the ferry would be deployed on the Osaka-Beppu route operated by Ferry Sunflower and start commercial service from Osaka to Beppu on January 13, 2023.

“Thereafter, LNG fuel will be supplied when the ferry calls at the Port of Beppu,” said MOL.

“The LNG fuel supplied this time will be used for trial operations ahead of the launch of commercial services,” it added.

MOL, Ferry Sunflower and Kyuden said they would continue to proactively use environment-friendly LNG as they work to de-carbonise shipping.

MOL ordered Japan’s first two LNG-powered ferries from Mitsubishi Shipbuilding in November 2019, the “Sunflower Kurenai” and “Sunflower Murasaki”.

The ferries are equipped with high-performance, dual-fuel engines and will provide passengers with comfortable accommodation and reliable schedules.

Each of the ferries is able to carry 763 passengers and about 136 trucks and vehicles. Their gross tonnage is 17,300 tons and they are able to travel at 22.5 knots.

Ferry Sunflower is chartering the ferries and will use them on the route from Osaka to the spa resort of Beppu and as replacements for vessels currently in service.

The vessel names are derived from the ‘Kurenai Maru’ and ‘Murasaki Maru’, which MOL’s corporate forerunner, Osaka Shosen Kaisha, launched on the Osaka-Beppu route in the 1910s.

The Sunflower company is based in Oita in Kyushu and has offices in other cities such as Kobe, Osaka, Kagoshima and Tokyo.

MOODY’S Investors Service, the US credit ratings agency, said that increasing global demand for natural gas is a growth opportunity for US LNG producers, though delivery depends more on the timely construction of natural gas pipeline infrastructure to

support new US LNG supplies.

Moody’s said in a research note than Europe’s energy crisis, led by the cut-off of Russian supplies to Germany, should keep the LNG market tight until 2025-2026, supporting cash flow generation for US LNG producers.

The report also noted the potential recovery in Chinese domestic demand in 2023 that will bring more competition to the market.

“European demand might accelerate LNG capacity expansion in the US, but that would require long-term offtake commitments from European buyers, even as they are working to reconcile new energy security needs,” said Moody’s.

Most of the announced US LNG growth projects through 2025-2026 have long-term commitments from Asian buyers, the original source of the US LNG boom since the mid-2010s, and international commodity traders stepped up their LNG purchases in 2022.

However, LNG producers require long-term offtake commitments to underpin financing of new LNG infrastructure projects.

The report stated that LNG projects should in turn spur further capital allocation for constructing new pipeline capacity to connect the largest US gas producing regions and new export infrastructure.

These new pipeline projects will need to win permitting approvals from the US Federal Energy Regulatory Commission.

“Today’s peak nameplate capacity of nearly 14 billion cubic feet per day reflects only about one-quarter of the capacity of all announced LNG projects, including several with partial or full FERC approval and 10 bcf per day under construction,” the report added.

The LNG projects include the Corpus Christi plant expansion in Texas and the Port Arthur project as well as others on the Mississippi River and the Brownsville Ship Channel.

Moody’s noted that the Marcellus and Utica shale basins together contributed roughly one-third of US dry gas production, though limited pipeline takeaway capacity has constrained growth for those regions.

In the fourth quarter of 2022, US dry natural gas production stood at 100 bcf, exceeding year-earlier production by 3 percent.

Moody’s said that this was largely due to increased drilling and pipeline expansions in the Haynesville Shale and rising volumes of associated natural gas

delivered by oil producers in the Permian Basin.

Several large US LNG projects now under construction will add significant new capacity by the mid-2020s.

Several of the US pipeline giants have already announced projects that will supply gas to LNG infrastructure. They include Williams Company’s Louisiana Energy Gateway, Energy Transfer’s Gulf Run and Kinder Morgan’s Permian Highway Pipeline expansion.

NAKILAT, whose formal name is Qatar Gas Transport Company said that its LNG fleet of 69 vessels would be undergoing dry-dockings in a phased manner through to August 2025.

“Dry-docking is a mandatory element of the overall ship management process, being a Class and Flag requirement, allowing any sea-going vessel to be certified for operation and tradability,” said Nakilat in its year-end newsletter.

“The dry-docking scope will be executed in line with the Class inspection program for the type of vessel and generally performed on vessels out of the water to check the vessel’s condition and structure integrity,” it added.

Nakilat said its fleet department together with the supply department developed a dedicated procurement strategy consisting of various and separate competitive tenders covering the full scope of standard dry-docking services and maintenance repairs.

Along with the standard maintenance scope, an ambitious upgradation plan was finalized by the fleet technical team to fulfil all the obsolescence requirements known so far.

Various technical feasibility studies were progressed together with the support of the equipment manufacturers.

The required procurements of goods and services allowing finalization of such projects have duly been completed by the fleet and supply teams.

The project’s high level scope consists of salient upgrades which includes the retrofitting of the ballast water treatment system and the replacement of the coldbox onboard the Q-Flex fleet.

The Q-Flex fleet comprises 31 vessels with capacities of between 210,000 and 217,000 cubic metres.

There are also 24 conventional carriers from 145,000 to 170,000 cubic metres capacity and 14 Q-Max ships with capacities between 263,000 and 266,000 cubic metres.

The work on the drydocking schedules

include a full upgrade of the automation system and large upgradation of the of the navigation system on board the LNG fleet as well as life-cycle maintenance on the various other pieces of onboard equipment.

Nakilat also jointly owns one floating storage and regasification unit and four very large gas carriers (VLGCs), bringing its overall fleet strength to 74 vessels.

QATARENERGY, one of the world's largest LNG exporters, has decided to proceed with the \$6 billion petrochemicals joint venture with US partner Chevron Phillips Chemicals near the LNG liquefaction plant at Ras Laffan.

An agreement marking the final investment decision for the project was signed in Doha by Saad Sherida Al-Kaabi, the Minister of State for Energy Affairs and who is also President and Chief Executive of QatarEnergy and Bruce Chinn, President and CEO of Chevron Phillips Chemical.

The companies created a joint venture under the agreement signed on January 8 called Ras Laffan Petrochemicals.

The deal sees QatarEnergy holding a 70 percent share and Chevron Phillips Chemical 30 percent.

"This marks QatarEnergy's largest investment ever in Qatar's petrochemicals sector and the first direct investment in 12 years," explained Al-Kaabi.

"It will double our ethylene production capacity and increase our local polymer production from 2.6 to more than 4 million tons per annum and place the utmost emphasis on sustainable growth and the environment," he added.

QatarEnergy said the Ras Laffan complex is expected to begin production in 2026, includes an ethane cracker with a capacity of 2.1 million tonnes per annum, making it the largest ethane cracker in the Middle East and one of the largest in the world.

The integrated complex will also include two high density polyethylene derivative units with a total production capacity of 1.7 million tonnes per annum.

Originally announced in 2019, the project highlights how Middle East oil producers are expanding further into petrochemicals, used in the production of plastics and packaging materials.

"There is no doubt that this cornerstone investment in Ras Laffan Industrial City marks an important milestone in QatarEnergy's downstream expansion strategy," said Al-Kaabi

"It will not only facilitate further expansion in the downstream and petrochemical sectors in Qatar, but will also reinforce our integrated position as a major global player in the upstream, LNG and downstream sectors," he added.

As part of the joint venture Chevron Phillips Chemical will provide project management services.

The engineering, procurement and construction of the ethane cracker will be executed by a joint venture between Samsung Engineering and CTCI Corporation.

Tecnimont will execute engineering, procurement and construction for the polyethylene units.

The polyethylene units will use Chevron Phillips Chemical's MarTech loop slurry process to produce high-density polyethylene, which will primarily be exported from Qatar.

Polyethylene is used in the production of durable goods like pipes for natural gas and water delivery and recreational products such as kayaks and coolers. It is also used in packaging applications to protect and preserve food and keep medical supplies sterile.

"At Chevron Phillips Chemical, we continue to grow our global asset base where there is access to reliable, affordable feedstock. This investment will help meet global demand for polyethylene products," said Chinn of Chevron Phillips.

SANTOS, the Australian LNG operator, delivered a doubling of annual LNG sales revenues while advancing expansion plans in Australia and Papua New Guinea as prices rose with increasing demand even amid an Asia-Pacific economic slowdown.

Santos operates the Darwin LNG plant in the Northern Territory as well as the Gladstone coal-seam-gas-to-LNG facility in Queensland while also having a large stake in Papua New Guinea LNG and the Oceania nation's expansion project

The company said fourth-quarter LNG sales revenues came to US\$1.27Bln compared with US\$791 million in the prior-year period.

Annual LNG sales income more than doubled for 2022 to US\$4.77Bln from US\$2.21Bln in 2021.

Santos said its three LNG projects shipped 60 cargoes in the fourth quarter, though only six were sold linked to the Japan-Korea Marker spot cargo price, three from Darwin LNG and three from PNG LNG.

Overall fourth-quarter sales revenues

came to US\$1.9Bln, bringing 2022 sales revenue for all oil and gas and energy divisions to a record US\$7.8Bln, up 65 percent on the previous year.

Santos said its average realised LNG price for the quarter was US\$16.92 per MMBtu compared with US\$13.64 per MMBtu in the prior-year quarter.

On an annual basis the LNG price was US\$15.51 per MMBtu versus US\$9.25 per MMBtu in 2021.

"Our increased LNG position in Papua New Guinea following the Oil Search merger has driven our record performance," said Santos Chief Executive Kevin Gallagher.

"The LNG business is expected to remain strong with energy security being a top priority for our trading partners in the region," said the CEO of the Adelaide-based company.

Santos like other Australian energy companies has been defending its corner against government moves to curb natural gas and electricity prices.

"We remain committed to supplying the domestic market at reasonable prices," stated Gallagher.

"The average realised price for East Coast domestic gas for the quarter was US\$7.74 per gigajoule (US\$7.33 per MMBtu), less than half the average realised price for LNG," explained the CEO.

Santos is also coping with bringing onstream backfill feed-gas for Darwin LNG from the Barossa gas field in the Timor Sea.

The company expected the existing Bayu-Undan production for the Darwin plant to end in the weeks ahead.

"Bayu-Undan production was steady compared to the third quarter, however, it is expected to continue to decline and is anticipated to cease in early 2023," said Santos.

"The Barossa project is 55 percent complete but drilling activities are currently suspended awaiting re-submission of the drilling activity environment plan," the company added.

The Santos overall production levels in the fourth quarter were 2 percent lower than the third quarter, primarily due to lower domestic gas volumes after the temporary shutdown of the John Brookes platform in Western Australia and two weeks of unplanned maintenance at the PNG operated assets.

Santos, which owns 42.5 percent of PNG LNG, is also proceeding with the sale of a stake in its shareholding to the PNG-based company Kumul Petroleum,

though completion is advancing slowly.

"The binding conditional offer from Kumul Petroleum to acquire a 5 percent interest in PNG LNG for an asset value of US\$1.4 billion, including a proportionate share of project finance debt, is extended to 30 April 2023," Santos noted.

Santos is also progressing with one of the region's most advanced carbon-capture and storage projects, the Moomba venture in South Australia.

A final investment decision was taken back in November 2021 and plans for the first injection were still on schedule.

"Significant milestones have been achieved on the Moomba CCS project during the quarter with the first two injector wells successfully drilled, cased and suspended," it explained.

"Earthworks at the Moomba Plant were also completed in this period. Key equipment packages continue to arrive with pre-commissioning activities continuing on schedule," said Santos.

"First injection remains on track for 2024 with 40 percent of works complete," it added.

SEMBCORP Marine Ltd, together with its subsidiaries, have celebrated the naming of its first of a series of LNG-hybrid tugs specially designed for domestic service in the shipyards and Port of Singapore.

The Singapore-flagged vessel was christened "JMS Sunshine" by a Lady Sponsor, Ms Wong Lee Lin, former Executive Director of Sembawang Shipyard, a wholly-owned subsidiary of Sembcorp Marine (Sembmarine) and former Head of Repairs & Upgrade at Sembcorp Marine.

As part of the company's maritime fleet renewal with green propulsion vessels, Sembcorp commissioned the design and build of the world's first LNG-hybrid tug in 2018.

Sembmarine plans to build a fleet of tugs to progressively replace the existing diesel-powered fleet operated by Jurong Marine Services (JMS), a wholly owned subsidiary of Sembmarine and a licensed operator of the Maritime and Port Authority of Singapore.

The "JMS Sunshine" was designed by LMG Marin AS, also a wholly-owned unit of Sembmarine.

"The tug is classed by the America Bureau of Shipping and has a Cyber Secure 1 notation to safeguard the asset from growing cyber threats faced by the marine and offshore industry," said the company.

The first of its kind, “JMS Sunshine” runs on LNG with a sizable energy storage system based on a Lithium ion battery.

Sembmarine said this system allows emission-free operation of the tug during idling and low-speed transit.

“It is capable of taking over the energy needs if a spike in power is warranted, and comes equipped with a ‘take-me-home’ reserve capacity to ensure safe return of the tug in the event of engine failure,” added Sembmarine.

The “JMS Sunshine” will be deployed in Sembmarine’s yards for ship manoeuvring, mooring and unmooring operations.

It can also be deployed by ship operators to escort vessels within Singapore port limits.

“We are thrilled to be part of the team bringing green solutions to Singapore waters. The ‘JMS Sunshine’ is the first LNG-hybrid tug that we have worked on and we look forward to conversions of the rest of our tug fleet,” said Gordon Ng, JMS Assistant General Manager.

Simon Kuik, Sembmarine’s head of research and development, noted that emission regulations for marine vessels were getting more stringent every year.

“The ultimate goal is to cut the Group’s greenhouse-gas (GHG) emissions by at least 5 percent by 2050 compared with 2008. To stay ahead of the curve, we invest selectively in innovative design solutions,” explained Kuik.

Wong Weng Sun, Sembmarine President and Chief Executive said the company was delighted to play its part in leading the way towards decarbonisation in Singapore.

“We are also directly contributing to Singapore’s strategy on climate change and decarbonisation and the International Maritime Organisation’s strategy to halve greenhouse-gas emissions by 2050,” stated Wong.

SEMPRA Infrastructure, the US LNG project developer, has entered into a long-term sale and purchase agreement with a unit of German utility RWE AG for volumes from the Port Arthur project in Texas.

Sempra said that RWE Supply & Trading would receive round 2.25 million tonnes per annum LNG from the Port Arthur LNG Phase 1 project under development in Jefferson County in Texas.

This is among Germany’s largest long-term supply deals so far and will help reduce the nation’s future LNG cargo expenditure.

The LNG would be delivered on a free-on-board (FOB) basis for 15 years whereby RWE supplies its own ships.

“We could not be more excited to finalize our agreement with RWE as we continue supporting the energy security and environmental goals of our European customers,” said Justin Bird, Chief Executive of Sempra Infrastructure.

“Because of its scale, location and permitting status, Port Arthur LNG is benefitting from a lot of commercial momentum with nearly all the projected off-take capacity for Phase 1 now under long-term agreements,” added Bird.

Andree Stracke, CEO of RWE Supply & Trading, said the Sempra deal was another important step to diversify Germany’s natural gas supply and energy security.

“Thanks to the LNG supply contract with Sempra Infrastructure, we can also enlarge our international LNG portfolio,” explained Stracke.

Sempra recently announced it has entered into long-term agreements with US major ConocoPhillips, European chemicals company INEOS and French utility Engie for the sale and purchase of a combined 7.3 MTPA of LNG from the proposed Port Arthur Phase 1.

“The company is focused on completing the remaining steps necessary to achieve its goal of making a final investment decision for Phase 1 of the liquefaction project in the first quarter of 2023, with first cargo deliveries expected in 2027,” said Sempra.

The company already operates the Cameron LNG plant at Hackberry in Louisiana and is additionally involved in LNG export ventures in Mexico.

The Port Arthur LNG Phase 1 project has all of its necessary permits and is expected to include two large liquefaction Trains, each with 6.75 MTPA of output, as well as LNG storage tanks and associated facilities for total production of 13.5 MTPA.

“A similarly sized Port Arthur LNG Phase 2 project is also competitively positioned and under active marketing and development,” stated Sempra.

The California-based parent company Sempra has said that development of both phases of the Port Arthur LNG project was contingent upon completing the required commercial agreements obtaining financing among other factors.

SILVERSTREAM Technologies, the London-based leader in air lubrication technology, has signed a deal with China Merchants Energy Shipping (CMES) to

install its system on four Chinese LNG newbuilds being constructed at the Dalian Shipbuilding Industry Company (DSIC) yard in northeast China.

The four Chinese ships with 175,000 cubic metres capacity will be the very first Chinese-owned, Chinese-built LNG carriers to join the global fleet.

The installations will take place over the next two years with work expected to be completed by the end of 2024.

This is in line with DSIC’s building schedule at the yard in China’s northeast Liaoning province on the Yellow Sea Coast and bordering North Korea.

Silverstream has pioneered air lubrication within shipping for more than 10 years and has invested significantly in the research, development and testing of the technology.

The Silverstream® system reduces frictional resistance between the water and the hull surface and this dramatically reduces fuel consumption and associated emissions.

One of its unique features is that it’s the only proven air lubrication technology that can be retrofitted in 10 days or less, as well as being applicable for newbuilds.

“It lasts the lifetime of the ship, is complementary to and can be used in conjunction with other clean technologies and its return on investment is typically between two and five years,” explained Silverstream.

The company said that the order from China further underpinned Silverstream’s track record in the large LNG carrier segment, bringing the company’s total number of contracted LNG ships to 23 vessels, eight of which are already in-service.

The new carriers being built at DSIC are each jointly classed between the China Classification Society and Lloyd’s Register of the UK, the American Bureau of Shipping, Norway’s DNV and France’s Bureau Veritas respectively.

The Silverstream system will cut the vessels’ fuel consumption and emissions by 5-10 percent net and is effective in all sea conditions.

The company explained that it can co-exist onboard with a number of other technological innovations including the Mark III membrane cargo containment system provided by French storage technology company GTT and the LNG dual-fuel propulsion chain.

“We are delighted to announce this new deal with China Merchants Energy Shipping that will see our technology installed on the very first Chinese-owned,

Chinese-built LNGCs in the world,” said Noah Silberschmidt, founder and Chief Executive of Silverstream Technologies.

“It comes thanks to our proven track record of cutting emissions and fuel consumption in one of the shipping industry’s most important operating sectors,” added Silberschmidt.

“The agreement strengthens our cooperation with CMES in LNG ship investment and builds on our already strong relationship with Dalian Shipbuilding Industry Company. We look forward to working on these vessels and deepening the ties between Silverstream’s Shanghai presence and the region’s most important maritime players over the next two years,” the CEO declared.

The DSIC order follows another recent deal with Abu Dhabi National Oil Company to install the latest Silverstream system on six of the first LNG carriers built at China’s Jiangnan shipyard, located northeast of Shanghai.

The installation of Silverstream’s technology on the new LNG vessels comes as part of CMES’s strategy to substantially reduce greenhouse-gas emissions from its operations in the near term.

SNAM, the Italian LNG terminal and natural gas grid operator, and Milan-based energy major Eni have finalized the terms of an agreement for the acquisition by SNAM of a 49.9 percent stake in a newly incorporated Italian company controlling natural gas pipelines connecting Algeria to Italy.

Eni has agreed to sell the stake to SNAM in its subsidiaries Trans-Tunisian Pipeline Company SpA. (TTPC) and Trans-Mediterranean Pipeline Co. (TMPC) for a consideration of €385 million (\$411M) in cash.

The Trans-Tunisian Pipeline runs from Algeria and then connects with the Trans-Med Pipeline to the Italian island of Sicily on onwards to the Italian mainland.

“Snam and Eni are carrying out further actions to complete the closing of the transaction, expected within the first half of January 2023,” said a SNAM statement.

“The transaction will create synergies among the parties’ respective areas of expertise in gas transport on a strategic route for the security of the natural gas supply in Italy,” added the statement.

SNAM is also the operator of two of Italy’s three existing LNG import

terminals and is developing two other projects for floating import terminals off the coast of Ravenna in the eastern Adriatic Sea and near the West Coast port of Piombino, opposite the island of Elba.

Eni has said that the Algerian pipelines transaction would allow the company to free up new resources while at the same time maintaining the management of a strategic infrastructure with SNAM to ensure the security of natural gas supply to the country.

“Gas will play a key role in the transition of energy systems to zero-emission models and it is important to maintain the availability and diversification of supply routes for this resource,” stated Eni.

The agreement also provides for an earn-in and earn-out mechanism to be calculated on the basis of the revenues that will be generated by the pipeline companies.

The TTPC and the TMPC through North Africa to Italy currently generate an average €90M per annum of net income.

Algeria is also Italy's second-biggest gas supplier via the TMPC to the Italian mainland via Tunisia and which has been in operation since 1983.

Italy is also a buyer of LNG volumes along with Spain and nations like France, the UK and Turkey from the Algerian Skikda and Arzew LNG export plants on the Mediterranean Coast.

Spain is also a leading buyer of Algerian gas through the Medgaz pipeline running from the Maghreb nation's gas fields via Beni Saf, a town located west of the Algerian port of Oran, to Almeria in southern Spain.

SONATRACH, the Algerian national energy company, plans to invest more than \$30 billion in the exploration and production of hydrocarbons, notably natural gas, and to upgrade facilities to improve its position in global markets for LNG as well as pipeline gas for Europe.

“As part of Sonatrach's five-year investment plan (2023-2027) the sum of \$40 billion has been set aside and more than \$30Bln will be allocated to exploration and production with the objective of increasing production in the short and medium term and preparing a portfolio of future projects, in particular for natural gas,” explained Sonatrach Chief Executive Toufik Hakkar in his 2023 policy statement.

The Sonatrach CEO said the company also planned, within the framework of the investment plan, to invest more than

\$7Bln in refining, petrochemical and gas liquefaction projects.

“These projects will promote the creation of added value to Algerian resources and will strengthen our export potential,” added Hakkar.

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

“Algeria's objectives through Sonatrach is to become one of the most important sources of gas supply in the world, thanks to our substantial reserves of natural gas and to the recent increases in production,” added Hakkar.

“Discoveries in certain gas fields will generate a significant increase in the volumes of gas available for export, both via gas pipelines and LNG carriers,” stated the CEO.

Hakkar said Sonatrach intended to continue to developing its gas potential with several projects to be commissioned in the next two years.

These include, among others, the Hassi Mouina and Hassi Ba Hamou fields in southwest Algeria and the Isarène and TFT Sud fields in the southeast of the country.

He added that other projects are planned for 2023 and 2024, notably in Hassi R'mel, Hamra, Ohanet and Touat and he said that he invited European countries to commit to long-term gas purchase agreements in guarantee their security of supplies.

Sonatrach also planned to take more action to reduce gas flaring and money was being invested in the recovery of flared gas, through several associated gas recovery projects and the overhaul of facilities, particularly in large production sites such as Hassi Messaoud, which has reduced the flaring rate to 2 percent.

“Other gas flaring recovery projects also concern production sites and LNG complexes and will, in the medium term, achieve the set objectives of reducing gas flaring to less than 1 percent,” said the CEO.

Sonatrach signed a contract in 2022 with two Chinese engineering companies, Sinopec Luoyang Engineering and Sinopec International Petroleum Services Corp., for improvement work at the Skikda LNG plant.

The contracts include the dismantling of two 20-year-old storage tanks and the construction of a new tank of 150,000 cubic metres capacity and the

modernization of the jetty and loading facilities to accommodate larger vessels.

SSY, the London shipbrokers Simpson Spence Young, announced the expansion of its partnerships base with six new additions including from LNG.

SSY said that the new partners are Phillip Tripodakis (LNG - London), Toby English (Sale & Purchase - London), Robert Boles (Tanker Chartering - London), Eugene Quek (Dry Projects - Singapore), Ahmed El Masry (Dry Cargo Chartering - Singapore) and Jordi Maymi (Chemical Chartering - Singapore).

These promotions take the total number of partners at the brokerage to 27.

“We're delighted to welcome the new partners to the team in recognition of the substantial contribution they have made to our business,” said Stanko Jekov, SSY Managing Partner.

“It's no secret that shipping and shipbroking is changing- it's entering a very interesting and dynamic phase,” he added.

“I strongly believe that the ambition, drive and talent of our new partners will enable us to positively contribute to that change even further and have a very real and positive impact as we drive our business forward,” stated Jekov.

Shipping spot charter rates for LNG dropped again in the past week as the Northern Hemisphere winter season progresses towards its conclusion at the end of March.

West of Suez shipping spot charters for LNG vessels fell by another \$30,000 per day to be at \$120,000 per day.

Vessel spot rates for East of Suez declined by a further \$5,000 per day to be at around \$150,000 per day.

One-year charter rates for the most modern vessels fell by around \$2,000 a day to \$171,000 per day.

Established in 1880, SSY is the world's largest independent shipbroker and has offices in 21 cities.

It has over 400 employees and covers 10 major markets from LNG chartering and projects to ship sale and purchase deals.

TECHNIP Energies, the leading LNG and energy project company, said a consortium which it heads has been awarded a pre-construction services agreement (PCSA) related to the onshore facilities for the Hail and Ghasha Gas Development Project in Abu Dhabi in the United Arab Emirates.

Technip's partners in the contract are South Korea's Samsung Engineering and Italian firm Tecnimont SpA.

Hail & Ghasha is a conventional gas development located in shallow water in the emirate of Abu Dhabi and is operated by Abu Dhabi National Oil Company (ADNOC).

The fields lie in the Ghasha Concession block in water depth of around 328 feet and are expected to start commercial production in 2025.

“The PCSA phase follows the successful completion of an updated front-end engineering and design (FEED) for the entire development, executed by Technip Energies,” said Technip.

“This next phase covers early project activities for onshore facilities, such as initial detailed engineering and procurement services of critical long lead items,” explained Technip.

The PCSA scope of work also includes the preparation of “an open book cost estimate” for the project delivery of the onshore scope, which will be considered as part of the final investment decision-making process.

“We are honoured to be trusted by ADNOC to continue from the successful FEED execution to the initial activities for the onshore facilities for this important gas growth project and to prepare an open-book cost estimate for project delivery,” said Arnaud Pieton, Chief Executive of Technip Energies.

“This reinforces Technip Energies' long-standing relationship and trust developed over the last four decades with ADNOC, supported by our long-term presence in Abu Dhabi,” added Pieton.

“Together with our joint venture partners, Samsung Engineering and Tecnimont, we will utilize our global experience on mega project execution and open book estimate conversions to transparently and diligently work with ADNOC and their international concession partners to continually optimize the project and successfully meet their requirements,” declared the CEO.

The multi-billion-dollar Hail and Ghasha project is also seen as playing a vital role in meeting the UAE's gas self-sufficiency objectives.

ADNOC's partners in the project with a concession term of 40 years include Italy's Eni, Germany's Wintershall Dea and Austria's OMV.

UNIPER, the German utility that was saved from bankruptcy by Germany's Federal Government after the halting of

Russian pipeline gas supplies, imported its first US LNG cargo to the floating import facility at the North Sea port of Wilhelmshaven.

The LNG carrier “Maria Energy”, with 162,000 cubic metres of capacity and owned by Tsakos Energy Navigation, delivered the shipment from the Calcasieu Pass export plant in Louisiana owned by Venture Global.

“The successful delivery of the first full LNG cargo to the Uniper terminal in Wilhelmshaven is a testament to the strong partnership between Uniper, Venture Global and Tsakos Energy Navigation,” said Niek den Hollander, Uniper Chief Commercial Officer.

“The use of LNG as a reliable energy source is crucial for the security of supply for Germany,” added Den Hollander

“We are committed to contributing our part by bringing more LNG to the European market and especially Germany via the Wilhelmshaven and Brunsbüttel regasification terminals,” he stated.

Venture Global Chief Executive Michael Sabel said he was proud to supply the first full cargo of LNG ever delivered to Germany.

The shipment had been lifted on December 20 from the US plant near Lake Charles in Louisiana.

“As strategic partners, we look forward to providing long-term security of energy supply to our allies through the continued delivery of clean and reliable US LNG,” added Sabel.

The LNG cargo delivered forms part of the commissioning process at the Wilhelmshaven terminal.

Uniper said that commercial operations at Wilhelmshaven were expected to start in mid-January 2023.

Uniper's Wilhelmshaven facility had been formally opened during a ceremony on December 17, 2022.

It is based on the deployment of the floating storage and regasification unit (FSRU), the “Höegh Esperanza”, with capacity to import around 4.5 million tonnes per annum of LNG.

The German Government had to bail-out Uniper in September 2022 and it was essentially nationalised.

The Berlin government increased its holding to 98.5 percent of the company and the Government also invested €8 billion (\$8.5Bln) of new working capital

Uniper also had to repay a loan of €4Bln to the then parent company, the Finnish energy group Fortum.

Uniper had also taken out a loan to

finance the cancelled Nord Stream II pipeline under the Baltic Sea from Russia to Germany.

The utility wrote off these investments as a result of economic sanctions by Western countries following Russia's invasion of Ukraine

US Department of Energy monthly LNG export data published in January 2023 showed the UK, France, Turkey, Japan and the Netherlands receiving the most cargoes and the most expensive shipments departing from a Louisiana plant.

The DoE data issued on January 17 and giving the prices, numbers and trends through November 2022 showed that the total number of US cargoes delivered worldwide since March 2016 now amounted to 4,144 shipments, or 13,255.7 billion cubic feet of natural gas.

A further 1,246 ISO containers of LNG have been shipped to nations in the Caribbean and Latin America from ports in Florida. In November, one ISO was even shipped to Germany.

The US dispatched 94 full LNG cargoes in November 2022 compared with 96 cargoes in October 2022 and 99 shipments in November 2021.

Shipments from the Cameron LNG plant in Louisiana, operated by the California-based utility Sempra through its LNG projects unit Sempra Infrastructure, cost the most for an eighth straight month through November 2022.

Cargoes lifted from the Cameron facility cost an average of \$14.82 per million British thermal units in November, which was lower than the Cameron price in the previous month of \$18.38 per MMBtu.

The Cameron price in September 2022 was a record US high from the export point of \$19.89 per MMBtu.

The combined average price at the export point including the four other plants, with Freeport off stream and Calcasieu Pass not yet in the full data stream, was \$11.27 per MMBtu for November versus \$13.78 per MMBtu for the previous month.

The year-to-date price from the export points for all six plants combined was \$11.53 per MMBtu.

The average prices for each of the four other included plants (from the export point) from highest to lowest in November 2022 were: Corpus Christi in Texas \$10.36 per MMBtu (\$12.42 October, 2022); Cove Point (Maryland) \$10.10 per MMBtu (no October cargoes); Elba Island

(Georgia) \$9.62 per MMBtu (\$12.53, October); and Sabine Pass (Louisiana) \$9.26 per MMBtu (\$10.50, October).

The Sabine Pass plant remained the volume leader in November 2022 with six Trains on stream and supplying 35 cargoes followed by Cameron 33, Corpus Christi with 16, Cove Point 6 and Elba Island 4.

The Venture Global Calcasieu Pass plant on the Gulf Coast of Louisiana was still yet integrated into the DoE pricing data system.

However, of the 11 cargoes that departed from Calcasieu Pass in November, five went to the UK, three to France, one to the Netherlands, one to Poland and one to China.

The top five countries of destination, representing 55.9 percent of total US LNG exports in November 2022 were the United Kingdom (82.8 Bcf), France (50.7 Bcf), Turkey (31.4 Bcf), Japan (24.4 Bcf) and the Netherlands (20.6 Bcf).

The list of the Top 10 countries of destination overall since 2016 through November 2022 showed two Asian nations, South Korea and Japan leading and with Spain consolidating its third place position while France moved up to tie with China for fourth place.

The top 10 recipients of US LNG by overall numbers of cargoes at the end of November 2022 were: 1) South Korea 487 cargoes. 2) Japan 354. 3) Spain 322; 4-equal) China and France 287; 6) UK 279; 7) Brazil 217 (includes split cargoes) 8) The Netherlands 209; 9) India 182 and 10) Turkey 179.

Vessel-borne delivery prices are also given for the US territory of Puerto Rico.

Shipments to Puerto Rico in November had cost an average of \$9.38 per MMBtu, down from \$10.71 per MMBtu in October.

US LNG had been received in vessels by 43 different countries through November 2022. This includes ISO containers carried by cargo ships.

The US has sent ISO containers to Caribbean and Latin American nations such as Barbados, the Bahamas, Jamaica, Haiti, Antigua and Barbuda and to Nicaragua.

A total of 28 containers were delivered in November with the recipients being the Bahamas 16, Jamaica eight, Antigua and Barbuda two and one was sent to Barbados.

The 28th ISO container shipment from the US in November went to Germany on the cargo vessel “Singelgracht”, according to the data.

The ISO volumes during the month were in containers shipped by American

LNG Marketing and Eagle LNG Partners from the Florida ports of Fort Lauderdale and Miami.

VARO ENERGY Group has acquired control of Dutch company Bio Energy Coevorden BV a leading European producer of biogas made from waste, and aims to double production as it forecasts a 10-fold rise in Bio-LNG demand in Europe by countries like new LNG importer Germany.

Varo, which is a fuel marketer and refiner based in the Swiss city of Zug, is itself co-owned by global commodities firms Carlyle and Vitol.

The company has acquired 80 percent of Bio Energy Coevorden, known as BEC, from the current Dutch owners.

Those owners, Stak Grisbe and the Van Drie Group, will continue to hold 15 percent and 5 percent respectively of the business.

Varo gave no indication of who much was paid for Bio Energy Coevorden and said it expected the transaction to be completed in February.

The acquisition is the latest in the biogas and Bio-LNG sector with previous buy-outs being completed by the UK's BP and US major Chevron Corp.

“As a result of this acquisition, the largest by Varo since 2015, and with Varo's and BEC's ongoing investment, the company is well placed to meet growth in European demand for both biomethane, which is expected to increase three-fold by 2030 across Europe and bio-LNG, which is expected to grow 10-fold in Germany alone by the end of the decade,” said the Varo acquisition statement.

Biogas is generated by breaking down agricultural waste, such as manure on farms and other organic material, in specially built digesters and waste facilities or landfill sites.

The result of this process is the production of biogas, which is then further processed to produce Bio-LNG which can be used as liquid fuel or can be burnt like biogas to generate electricity.

“Developing the largest biogas manufacturing facility in Northern Europe we will double the current facility's capacity from 300 gigawatt hours (GWh) to 650 GWh by 2026. After the expansion, the site will be among the three largest biogas facilities in Europe,” stated Varo.

“Biogas has an important role to play in providing customers in harder-to-abate sectors such as heavy-duty transportation and shipping with a cost-competitive and

low-carbon fuel supply,” added the Varo statement.

Analysts note that Europe is an attractive market for biogas and Bio-LNG as it benefits from high domestic feedstock availability as well supportive government policies and investment incentives.

“BEC’s established sourcing channels and world-class biogas production and construction expertise, combined with Varo’s existing feedstock sourcing, operations and trading capabilities create a strong platform to scale the biofuels business across Europe,” added the statement.

Varo’s Chief Executive Dev Sanyal said the transaction was a significant step towards accelerating the company’s strategy of building a leading position in biogas in Europe.

“The combination of this platform along with Varo’s integrated business model will not only contribute to our strategic growth but will also be highly value-accretive to Varo,” explained Sanyal.

“Large-scale biogas facilities have an important role in accelerating Europe’s energy transition, offering an alternative to conventional fuels at scale with emissions 90 percent lower than natural gas as well as allowing refineries to replace their natural gas consumption with biomethane products,” added the CEO.

VENTURE GLOBAL, the US operator of the Calcasieu Pass LNG export plant in Louisiana and developer of three other plants in the US Gulf Coast state, has signed a sales and purchase agreement with a key Singapore-based Japanese trading firm.

Venture Global said the deal was

signed with, Inpex Energy Trading Singapore Ltd, a unit of Inpex Corp., the operator of the Ichthys LNG export plant in Australia’s Northern Territory and the developer of a project in Indonesia.

The US company, based in Arlington, Virginia, said the SPA was for 1 million tonnes per annum of LNG over 20 years.

The volumes will come from the CP2 LNG project being developed near the site of the existing Calcasieu Pass facility and where construction is expected to start in 2023.

Venture Global said Inpex joined other future CP2 LNG customers including ExxonMobil Corp., Chevron Corp., German utility EnBW and New York-based New Fortress Energy.

“Venture Global is delighted to welcome Inpex, Japan’s largest gas exploration and production company, as a customer at CP2 and to expand our customer base in Asia,” said Venture Global Chief Executive Michael Sabel.

“We are honored to provide security of LNG supply to this key market and look forward to supporting Inpex as it delivers our competitive lower-carbon energy to the region,” stated Sabel.

Inpex said the deal with Venture Global enabled it to expand its global portfolio.

In addition to operating the Ichthys plant at Bladin Point near Darwin with partner TotalEnergies, Inpex is also developing an LNG export project in Indonesia with Shell plc.

“This agreement will enable the Inpex Group to procure LNG from the United States on a long-term basis, expand its LNG supply capacity and diversify its supply sources to further contribute to the stable supply of energy,” said Hiroshi Kato, Executive Officer and Senior Vice

President of Global Energy Marketing at Inpex.

Venture Global’s Calcasieu Pass plant in Cameron Parish in Louisiana, located south of the city of Lake Charles, shipped its first cargo at the start of March 2022.

The Calcasieu Pass facility comprises 18 small-scale modular liquefaction Trains each with 0.626 million tonnes per annum of capacity and configured in 9 blocks for total nameplate output of 11.26 MTPA.

However, Venture Global has plans for more future output of about 60 MTPA of LNG export capacity.

The company’s three other projects, including CP2, are each expected to have nameplate capacity of around 20 MTPA.

They include the Plaquemines plant being built on the shore of the Mississippi River south of New Orleans and the Delta LNG project.

WHITEHAWK Energy, the US company with royalty and field assets covering 475,000 gross acres in the Marcellus Shale, has agreed to acquire natural gas assets primarily located in the Haynesville Shale from where more feed gas will flow to US Gulf Coast LNG plants.

Whitehawk’s main Marcellus production and cash flow is linked to natural gas operators EQT Corp., Range Resources and CNX Resources. Royalties are provided as a percentage of the resource sales of producers.

The company, based in Philadelphia, said it signed a definitive agreement to acquire up to \$105 million of natural gas assets primarily located in the northwest Louisiana area of Haynesville Shale.

“The Haynesville ‘Royalties’ are focused in the core of the basin, representing some of the highest quality

natural gas reserves in the United States,” said WhiteHawk.

Its position will cover 375,000 gross acres in the Haynesville Shale.

The Haynesville assets are being actively developed by natural gas operators Southwestern Energy, Chesapeake Energy, Aethon Energy Management and Comstock Resources.

Marcellus acreage

“WhiteHawk’s management expects the Haynesville royalties to be a strong complement to the company’s existing high-quality natural gas assets,” the company explained.

“During 2022, WhiteHawk acquired natural gas royalty assets covering 475,000 gross acres in the Marcellus Shale focused in Greene and Washington Counties in Pennsylvania,” it added.

With this acquisition WhiteHawk said it would have interests in over 2,300 producing horizontal wells across the two pre-eminent natural gas basins in North America.

The company said that the “diversified position” would benefit from sales points in both the Northeast and Gulf Coast regions.

“The acquisition of the Haynesville royalties is an excellent next step for WhiteHawk,” said Daniel C. Herz, Chief Executive of WhiteHawk.

“With these assets, WhiteHawk is continuing to execute on its business plan of acquiring mineral and royalty interests in the highest quality natural gas basins,” explained Herz.

“Natural gas continues to be a core element of the global economy and is needed to offer affordable energy for heating homes and further drive energy security for the United States and our allies,” stated the CEO. ■

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LNG Import Terminals

Explanatory Notes

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

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

Country	Location (Project)	Owners	Start up	Tanks	Storage Capacity
Belgium	Zeebrugge	Fluxys	1987	4	380,000
Canada	Canaport Saint John	Irving Oil, Repsol	2009	3	480,000
Chile	Quintero	ENAP, Metrogas, Enagas	2009	3	334,000
	Mejillones	Engie, Ameris Capital AGF	2010	1	175,000
China	Beihai LNG, Guangxi	Sinopec	2015	4	640,000
	Dalian	PetroChina	2011	3	480,000
	Dapeng ND Guangdong	CNOOC	2018	4	640,000
	Dongguan, Guangdong	Jovo Group	2013	2	160 000
	Fujian LNG (Xiuyu)	CNOOC, Fujian I&D Corp.	2008	2	640,000
	Guangdong	CNOOC,BP	2006	3	480,000
	Haikou, Hainan LNG	CNOOC	2014	3	480,000
	Jiangsu Binhai LNG	CNOOC	2022	4	880,000
	Ningbo, Zhejiang	CNOOC, Zhejiang Energy	2012	3	480,000
	Pinghu LNG	Z. H. Clean Energy	2022	2	160,000
	Qidong, Jiangsu	Guanghui Energy	2018	1	60,000
	Qingdao, Shandong	Sinopec	2014	3	480,000
	Rudong	PetroChina	2011	3	530,000
	Shanghai	CNOOC, Shenergy Group	2009	3	495,000
	Shanghai, Mengtougou	Shanghai Gas	2008	3	120 000
	Shenzen, Diefu	CNOOC	2016	2	320,000
	Tangshan, Hebei	PetroChina	2013	3	480,000
	Tianjin North	Sinopec	2017	2	320,000
	Yuedong, Guangdong	CNOOC	2016	2	320,000
	Zhoushan Zhejiang	Enn Group	2018	2	320,000
	Zhuhai, Gaolan	CNOOC	2013	3	480,000
Dominican Republic	Punta Caucedo	AES Andres	2003	1	160 000
Finland	Pori	Gasum Skangas	2016	1	30,000
	Tornio	Gasum Skangas	2018	1	30,000
France	Fos Tonkin	Elengy	1972	3	150,000
	Montoir-de-Bretagne	Elengy	1980	3	360,000
	Fos Cavaou	Engie, Total	2010	3	330,000
	Dunkirk LNG	EDF, Fluxys, Total	2016	3	570,000
Gibraltar	Gasnor	Shell	2018	1	5,000
Greece	Revithoussa	DEPA	2000	3	225,000
India	Dabhol	GAIL, NTPC (Ratnagiri Gas & Power)	2009	3	480,000
	Dahej	Petronet LNG	2004	4	592,000
	Hazira	Shell India, Total	2005	2	320,000
	Kochi, Kerala	Petronet LNG	2013	2	320,000
	Mundra	Gujarat State Petroleum, Adani Group	2018	2	320,000
	Kamarajar (Ennore), Tamil Nadu	Indian Oil, DFC, ICICI Bank	2019	2	360,000
Indonesia	Arun	Pertamina	2015	5	507,000
Italy	Panigaglia	Snam	1969	2	100,000
	Porto Levante (offshore GBS)	ExxonMobil, Qatar Petroleum, Edison Gas	2009	2	250,000
Jamaica	Montego Bay	New Fortress	2018	1	7,000
Japan	Negishi	Tokyo Gas	1969	14	1,180,000
	Sodegaura	Tokyo Gas JERA Co. Inc	1973	35	2,660,000
	Ohgishima	Tokyo Gas	1998	4	850,000
	Higashi-Ohgishima	JERA Co. Inc.	1984	9	540,000
	Futtsu	JERA Co. Inc.	1985	10	1,360,000
	Yokkaichi LNG	JERA Co. Inc.	1988	4	320,000
	Kawagoe	JERA Co. Inc.	1997	6	840,000
	Yokkaichi Works	Toho Gas	1991	2	160,000
	Chita LNG Joint	Toho Gas, Chubu Electric	1978	4	300,000
	Chita LNG	Toho Gas, Chubu Electric	1983	7	640,000
	Chita - Midorihama	Toho Gas	2001	3	600,000
	Senboku I	Osaka Gas	1972	4	180,000
	Senboku II	Osaka Gas	1977	18	1,585,000
	Himeji	Osaka Gas	1984	8	740,000
	Himeji LNG	Kansai Electric	1979	7	520,000
	Yanai	Chugoku Electric	1990	6	480,000
	Niigata	Nihonkai LNG, Tohoku Electric	1984	8	720,000
	Oita	Oita Gas, Kyushu Electric	1990	5	460,000
	Tobata	Kitakyushu LNG	1977	8	480,000
	Fukuoka	Saibu Gas	1993	2	70,000
	Sodeshi	Shizuoka Gas	1996	3	337,200
	Hatsukaichi	Hiroshima Gas	1996	2	170,000
	Kagoshima	Nippon Gas	1996	2	136,000
	Shin-Minato	Sendai City Gas	1997	1	80,000
	Nagasaki	Saibu Gas	2003	1	36,000

LNG Import Terminals (continued)

Country	Location (Project)	Owners	Start up	Tanks	Storage Capacity
Japan (continued)	Sakai	Kansai Electric, Cosmo Oil	2006	3	420,000
	Mizushima	Nippon Oil, Chugoku Electric	2006	2	320,000
	Sakaide	Shikoku Electric, Cosmo Oil	2011	1	180,000
	Ishikari LNG	Hokkaido Gas, Hokkaido Electric	2012	2	380,000
	Okinawa	Okinawa Electric Power	2012	2	280,000
	Naoetsu	Inpex	2013	2	360,000
	Joetsu	JERA Co. Inc.	2011	3	540,000
	Hachinohe LNG	Nippon Oil	2015	2	280,000
	Hitachi LNG	Tokyo Gas	2015	1	230,000
Korea	Soma Fukushima	Japan Petroleum Exploration	2017	1	225,000
	Boryeong	GS Energy, SK E&S	2017	3	200,000
	Incheon	Kogas	1996	20	2,880,000
	Kwangyang	POSCO SK E&S	2005	4	530,000
	Pyeong-Taek	Kogas	1986	23	3,360,000
	Samcheok	Kogas	2014	3	600,000
	Tong-Yeong	Kogas	2002	17	2,620,000
	Jeju	Kogas	2019	2	90,000
Kuwait	Al Zour LNG	KIPIC	2021	8	1,800,000
Malaysia	Pengerang Johor	Petronas Gas	2017	2	400,000
Mexico	Altamira	Vopak, Enagas	2006	2	300,000
	Energia Costa Azul	Sempre LNG	2008	2	320,000
	Manzanillo	Samsung, Kogas, Mitsui	2012	2	300,000
Netherlands	Gate LNG	Gasunie, Royal Vopak	2011	3	540,000
Panama	Costa Norte	AES	2018	1	130,000
Philippines	Pagbilao LNG	Energy World Corp.	2017	1	130,000
Poland	Swinoujscie	Baltic Gaz System	2015	2	320,000
Portugal	Sines	REN Atlantico	2004	3	390,000
Puerto Rico	Penuelas	EcoElectrica	2000	1	160,000
Singapore	Singapore	Singapore Energy Authority	2013	3	540,000
Spain	Barcelona	Enagas	1969	8	840,000
	Huelva	Enagas	1988	5	610,000
	Cartagena	Enagas	1989	5	587,000
	Bilbao	Enagas, EVE	2003	3	450,000
	Sagunto	GNF, Osaka Gas, Oman Oil	2006	4	600,000
	Mugardos, El Ferrol	Reganosa, Sonatrach, Sojitz Corp.	2006	2	300,000
	El Musel, Gijón,	Enagas	2013	2	300,000
Sweden	Lysekil	Gasum	2014	1	30,000
	Nynashamn	AGA Gas	2011	1	20,000
Taiwan	Yung-An	CPC	1990	6	690,000
	Tai-Chung	CPC	2009	5	800,000
Thailand	Map Ta Phut	PTT LNG	2011	2	320,000
Turkey	Marmara Ereglisi	Botas	1994	3	255,000
	Izmir	EgeGaz	2006	2	280,000
USA	Everett	Suez LNG NA	1971	2	155,000
	Lake Charles	Shell, ETE	1982	4	425,000
	Freeport	Freeport LNG Development	2008	2	320,000
	Golden Pass, TX	Qatar Petroleum, ExxonMobil	2010	5	775,000
	Pascagoula, MS	Gulf LNG, Kinder	2012	2	320,000
UK	Isle of Grain	National Grid	2005	8	1,000,000
	South Hook	ExxonMobil, Qatar Petroleum, Total	2009	5	775,000
	Dragon LNG, Milford Haven	Shell, Petronas	2009	2	310,000

LNG Import Terminal Projects

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

LNG FSRU Import Facilities

Country	Location (Project)	Owners	Start up
Argentina	Escobar GasPort	Excelerate/Enarsa	2011
Bangladesh	Moheshkhali	Excelerate, PetroBangla	2018
	Cox's Bazar	Summit Power International, Excelerate Energy	2019
Brazil	Pecem, FSRU	Petrobras	2009
	Guanabara Bay FSRU	Petrobras	2009
	Salvador, Bahia FSRU	Petrobras	2013
	Porto Sergipe FSRU	Golar LNG/Stonepeak	2020
	Porto do Acu FSRU	GNA	2020
China	Tianjin FSRU	CNOOC, Hoegh, various	2013
Croatia	Hrvatska LNG	Hrvatska Elektroprivreda Plc, Plinacro Ltd	2021
Colombia	Cartagena FSRU	Promigas, Sociedad Portuaria El Cayao	2016
Egypt	Ain Sokhna, Suez	EGAS, BW Gas	2015
Finland	Inkoo FSRU	Gasgrid Finland	2022
Germany	Wilhelmshaven FSRU	Uniper	2022
Germany	Lubmin FSRU	Deutsche ReGas	2022
Ghana	Tema LNG	Helios/GNPC	2021
Greece	Revithoussa FSU	DESFA	2022
Indonesia	Lampung	Hoegh LNG, PGN LNG	2014
	Nusantara (Jakarta Bay)	Golar LNG, Pertamina	2012
	Benoa LNG	PT Pertagas Niaga	2016
	Amurang	Karadeniz	2020
	Jawa Satu FSRU	Pertamina	2021
Israel	Hadera Gateway	Israel Electric	2013
Italy	Livorno	OLT Offshore LNG Toscana	2013
Jamaica	Old Harbour	Golar FSRU, New Fortress	2019
Jordan	Aqaba, Jordan	Golar LNG	2015
Kuwait	Mina Al-Ahmadi	KPC	2009
Lithuania	Klaipeda	Klaipedos Nafta Hoegh LNG	2014
Malaysia	Malacca FSRU	Petronas	2012
Malta	FSU Armada Mediterrana	ElectroGas	2016
Myanmar	Thanlyin	CNTIC Vpower	2020
Pakistan	Port Qasim	Excelerate, Engro Corp	2015
	Port Qasim	BW-Mitsui, PGP Consortium	2017
Russia	Kaliningrad FSRU	Gazprom	2020
Turkey	Aliaga FSRU, Turquoise FLNG	Etki LNG	2016
	Dortyol FSRU Terminal	Botas	2018
UAE	Ruwais, Abu Dhabi	Gasco (UAE)	2016
	Jebel Ali Port, Dubai	DSA (UAE)	2010

LNG Export Projects

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

LNG Exporters

Country	Location/Project	Shareholders	Start up	Liquefaction		Storage	
				Trains	capacity (nominal) mtpa	No. of tanks	Total capacity m³
ABU DHABI (UAE)	Das Island (Adgas)	ADNOC, Mitsui, BP, Total	1977 1994	2 1	3.2 2.5	3	240,000
ALGERIA	Arzew	Sonatrach GL4Z	1964	3	1.1	3	35,000
	Arzew	Sonatrach GL1Z	1978	6	7.8	3	300,000
	Arzew	Sonatrach GL2Z	1980	6	8.0	3	300,000
	Arzew	Sonatrach	2014	1	4.7		
	Skikda	Sonatrach GL1K II	1980	3	3.0	5	308,000
	Skikda	Sonatrach (rebuild)	2013	1	4.5		
ANGOLA	Soyo	Sonangol, Chevron, BP, ENI, Total	2012	1	5.2	2	370,000
AUSTRALIA	Karratha	NWS Woodside, Shell, BHP	1989	2	5.0	4	260,000
		(BP, Chevron	1992	1	2.5	1	130,000
		(Mitsubishi/Mitsui)	2004	1	4.4	1	130,000
		NWS partners	2008	1	4.4	1	130,000
		Darwin (Bayu Undan) ConocoPhillips, Santos, Eni, Inpex, TEPCO, Tokyo Gas	2006	1	3.5	1	188,000
	Australia Pacific LNG	ConocoPhillips, Origin Energy, Sinopec	2016	2	7.5	2	320,000
		Gladstone LNG Santos, Petronas, Total, Kogas	2015	2	7.8	2	280,000
		Gorgon LNG Chevron, Shell, ExxonMobil	2016	3	15.6	2	360,000
		Pluto LNG Woodside, Tokyo Gas, Kansei	2012	1	4.8	2	240,000
		QCLNG Shell, CNOOC	2014	2	8.0	2	280,000
		Wheatstone LNG Chevron, Woodside, Kuwait (KUFPEC), Jera, Kyushu	2017	2	8.9	2	300,000
		Ichthys LNG Inpex Corp., Total	2018	2	8.9	2	330,000
		Prelude FLNG Shell, Inpex, Kogas CPC	2019	1	3.5		
BRUNEI	Lumut	Brunei/Shell/Mitsubishi/Total	1972-74	5	7.2	3	176,000
CAMEROON	Hilli Episeyo FLNG	Kribi Perenco	2018	1	1.2	1	125,000
EGYPT	Damietta	Union Fenosa, EGPC, EGAS	2004	1	5.0	2	300,000
	Idku	EGPC, EGAS, Shell, Total, Petronas	2005	2	7.2	2	280,000
EQ.GUINEA	Bioko Island	Marathon, Sonagas, Mitsui, Marubeni	2007	1	3.4	2	272,000
INDONESIA	Bontang I	Pertamina, VICO, JILCO, Total	1977	2	5.2	5	635,000
	Bontang II		1983	2	5.2		
	Bontang III		1989	1	2.8		
	Bontang IV		1993	1	2.8		
	Bontang V		1997	1	2.8		
	Bontang VI		1999	1	3.0		
	Sulawesi LNG	Medco Energi, Pertamina, Mitsubishi	2015	1	2.0	1	170,000
	Tangguh	BP, MI Berau, CNOOC, Nippon, LNG Japan	2008	2	7.6	2	340,000
MALAYSIA	Bintulu (MLNG Satu)	Petronas, Sarawak, Mitsubishi	1983	3	8.1	4	260,000
	Bintulu (MLNG Dua)	Petronas, Shell, Sarawak, Mitsubishi	1995	3	7.8	1	65,000
	Bintulu (MLNG Tiga)	Petronas, Shell, Sarawak, Mitsubishi, Nippon Oil	2003	2	6.8	1	120,000
	Bintulu Train 9	Petronas	2016	1	3.6		
	Kanowit FLNG	Petronas	2016	1	1.2		
MOZAMBIQUE	Coral Sul FLNG	Eni-led consortium	2022	1	3.4	1	174000+
NIGERIA	Bonny Island	NNPC, Shell, Total, Eni	1999	2	6.4	2	168,400
		Nigeria LNG (formed by above)	2002	1	3.2	1	84,200
		Nigeria LNG	2006	2	8.2		
		Nigeria LNG	2008	1	4.1	1	84,200
NORWAY	Snøhvit/Melkoya	Equinor, Total, Petoro	2007	1	4.2	2	280,000
OMAN	Oman LNG	Oman Govt., Shell, Total, Korea LNG	2000	2	7.1	2	240,000
		Mitsubishi, Mitsui, Partex and Itochu					
		Oman Govt., Oman LNG Union Fenosa, Osaka Gas, & Itochu	2006	1	3.7	2	240,000
PAPUA NEW GUINEA	PNG LNG	ExxonMobil, Oil Search, Santos, JX Nippon Oil	2014	2	6.9	2	320,000
PERU	Peru LNG	Hunt Oil, Shell, Marubeni, SK Group	2010	1	4.4	2	260,000
QATAR	Qatargas 1-T1&2	QP, ExxonMobil, Total, Marubeni, Mitsui	1997	2	6.4	4	340,000
	Qatargas 1-T3	QP, ExxonMobil, Total, Marubeni, Mitsui	1999	1	3.1		
	Qatargas II-T1	QP, ExxonMobil	2009	1	7.8		
	Qatargas II-T2	QP, ExxonMobil, Total	2009	1	7.8	8	1,160,000
	Qatargas III-T1	QP, ConocoPhillips, Mitsui	2010	1	7.8		
	Qatargas IV-T1	QP, Shell	2010	1	7.8		
	RasGas I- T1&2	QP, ExxonMobil, Kogas, Itochu, LNG Japan	1999	2	6.6		
	RasGas II- T3	QP, ExxonMobil	2004	1	4.7		
	RasGas II- T4	QP, ExxonMobil	2005	1	4.7	6	840,000
	RasGas II- T5	QP, ExxonMobil	2007	1	4.7		
	Rasgas III – T6	QP, ExxonMobil	2009	1	7.8		
	Rasgas III – T7	QP, ExxonMobil	2010	1	7.8		
RUSSIA	Sakhalin Island	(Sakhalin Energy) Gazprom, Shell, Mitsui, Mitsubishi	2009	2	9.6	2	200,000
	Yamal LNG Siberia	Novatek, Total, CNPC, Silk Fund	2017	3	16.5	4	640,000
TRINIDAD & TOBAGO	Point Fortin Train 1	BP, Shell, CIC, NGC	1999	1	3.0	2	204,000
	Train 2	BP, Shell	2002	1	3.3	1	160,000
	Train 3	BP, Shell	2003	1	3.3	1	160,000
	Train 4	BP, Shell, NGC	2005	1	5.2	1	160,000
USA	Cheniere Sabine Pass	Cheniere Energy	2016	5	22.5	5	800,000
	Cove Point LNG	Dominion Energy	2017	1	5.3	7	695,000
	Cheniere Corpus Christi	Texas Cheniere	2018	3	15.0	3	480,000
	Cameron Hackberry	Sempra, Total, Mitsui, Mitsubishi	2019	2	9.8	3	480,000
	Elba Island Georgia	Kinder Morgan, EIG Energy	2019	10	2.5	5	535,000
	Freeport LNG, Texas	Freeport LNG	2019	2	10.2	3	483,000
	Calcasieu Pass LNG	Venture Global	2022	18	11	2	400,000
YEMEN	Bal-Haf	Yemen LNG, Total, Yemen Gas, Hunt Oil, SK Group, Hyundai	2009	2	6.7	2	320,000

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World LNG Carrier Fleet

LNG Carrier	Capacity m³	Registered Owner	Builder	Delivery	Flag	Power Plant	Cargo System	No. of Tanks	Original Project	Hull Number
Aamira	268,000	Nakilat SHI 1753 Inc.	Samsung	Apr-10	M. Islnds.	Diesel	TZ Mk. III	10	Qatargas IV	1753
Abadi	135,000	Tost Two (NBD) Sendirian Berhad	Mitsubishi	May-02	Brunei	Steam	Moss	5	Lumut	2163
Adam LNG	162,000	Oman Shipping Co.	HHI	Jul-14	Malta	Diesel	TZ Mk. III Flex	4	Oman LNG	2584
Adamastos	170,800	Shin Doun Kisen Co. Ltd.	HHI	Aug-21	Malta	X-DF	TZ Mk. III Flex	4	Portfolio	3109
Adriano Knutsen	180,000	Knutsen OAS Shipping	HHI	Jul-19	Spain	ME-GI	TZ Mk. III Flex	4	Corpus Christi	2963
Al Aamriya	210,168	J5 Nakilat No.1 Ltd.	Daewoo	May-08	M. Islnds.	Diesel	GT NO 96	5	RasGas III	2249
Al Areesh	148,786	Al Areesh LLC	Daewoo	Jan-07	Bahamas	Steam	GT NO 96	4	RasGas II	2239
Al Bahiya	210,100	Nakilat DSME 2286 Inc.	Daewoo	Dec-09	M. Islnds.	Diesel	GT NO 96	5	Qatargas IV	1726
Al Bidda	137,339	Mitsui O.S.K. Lines	Kawasaki	Nov-99	Japan	Steam	Moss	5	Qatargas I	1470
Al Daayen	148,853	Seaspirit Leasing	Daewoo	Mar-07	Bahamas	Steam	GT NO 96	4	RasGas II	2240
Al Dafna	268,000	Nakilat SHI 1726 Inc.	Samsung	Oct-09	M. Islnds.	Diesel	TZ Mk. III	10	RasGas	1726
Al Deebel	145,000	Peninsula LNG Transport No. 3	Samsung	Nov-05	Bahamas	Steam	TZ Mk. III	4	RasGas II	1442
Al Gattara	216,200	Overseas LNG H1 Corp.	HHI	Nov-07	M. Islnds.	Diesel	TZ Mk. III	4	Qatargas II	1791
Al Ghariya	210,150	Neptora Schiffsbetriebsgesellschaft mbH & Company ts Julia KG	Daewoo	Dec-07	Bahamas	Diesel	GT NO 96	4	Qatargas II	2248
Al Gharrafa	216,200	Overseas LNG H2 Corp.	HHI	Jan-08	M. Islnds.	Diesel	TZ Mk. III	5	Qatargas II	1792
Al Ghashamiya	217,591	Nakilat SHI 1696 Inc.	Samsung	Apr-09	M. Islnds.	Diesel	TZ Mk. III	10	Qatargas III	1696
Al Ghuwairiya	263,300	Nakilat Al Ghuwairiya Inc.	Daewoo	Dec-08	M. Islnds.	Diesel	GT NO 96	5	Qatargas II	2255
Al Hamla	216,200	Overseas LNG S2 Corp.	Samsung	Feb-08	M. Islnds.	Diesel	TZ Mk. III	4	Qatargas II	1606
Al Hamra	137,000	Al Hamra Ltd.	STX	Nov-96	Liberia	Steam	Moss	4	Das Island	1332
Al Huwaila	217,000	Al Huwaila Inc.	Samsung	May-08	Bahamas	Diesel	TZ Mk. III	10	RasGas III	1643
Al Jasra	137,227	Mitsui O.S.K. Lines	Mitsubishi	Jun-00	Japan	Steam	Moss	5	Qatargas I	2117
Al Jassasiya	145,700	Venice Maritime Inc.	Daewoo	May-07	Bermuda	Steam	GT NO 96	4	RasGas II	2243
Al Karaana	210,100	Nakilat DSME 2284 Inc.	Daewoo	Oct-09	M. Islnds.	Diesel	GT NO 96	4	Qatargas III	2284
Al Kharaitiyat	216,300	Nakilat HHI 1909 Inc.	HHI	Jun-09	M. Islnds.	Diesel	TZ Mk. III	4	Qatargas III	1909
Al Kharsaah	217,000	Al Kharsaah Inc.	Samsung	Jun-08	Bahamas	Diesel	TZ Mk. III	10	RasGas III	1644
Al Khattiya	210,150	Nakilat DSME 2283 Inc.	Daewoo	Jul-09	M. Islnds.	Diesel	GT NO 96	4	Qatargas IV	2283
Al Khaznah	135,496	Al Khaznah Inc.	Mitsui E&S	Jul-94	Liberia	Steam	Moss	5	Das Island	1390
Al Khor	137,354	Mitsui O.S.K. Lines	Mitsubishi	Nov-96	Japan	Steam	Moss	5	Qatargas I	2089
Al Khuwair	217,000	Al Khuwair Inc.	Samsung	Jun-08	Bahamas	Diesel	TZ Mk. III	10	RasGas III	1646
Al Mafyar	266,000	Nakilat SHI 1697 Inc.	Samsung	Apr-09	M. Islnds.	Diesel	TZ Mk. III	5	Qatargas III	1697
Al Marrouna	149,539	Seaspirit Leasing	Daewoo	Sep-06	Bahamas	Steam	GT NO 96	4	RasGas II	2238
Al Mayeda	266,000	Nakilat SHI 1694 Inc.	Samsung	Jan-09	M. Islnds.	Diesel	TZ Mk. III	5	Qatargas III	1694
Al Nuaman	210,100	Nakilat DSME 2285 Inc.	Daewoo	Dec-09	M. Islnds.	Diesel	GT NO 96	4	Qatargas III	2286
Al Oraiq	210,200	J5 Nakilat No.3 Ltd.	Daewoo	Jun-08	M. Islnds.	Diesel	GT NO 96	18	RasGas III	2250
Al Rayyan	137,420	Mitsui O.S.K. Lines	Kawasaki	Mar-97	Japan	Steam	Moss	5	Qatargas I	1445
Al Rekayyat	216,293	Nakilat HHI 1910 Inc.	HHI	Jun-09	M. Islnds.	Diesel	TZ Mk. III	4	Qatargas III	1910
Al Ruwais	210,150	Neptana Schiffsbetriebsgesellschaft mbH & Company ts Alexandra KG	Daewoo	Aug-07	Bahamas	Diesel	GT NO 96	4	Qatargas II	2245
Al Sadd	210,200	Nakilat DSME 2265 Inc.	Daewoo	Mar-09	M. Islnds.	Diesel	GT NO 96	12	Qatargas III	2265
Al Saffliya	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

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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



CARRIER FLEET

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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
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

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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

CARRIER FLEET

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Value from maritime data



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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
Global Sealine	174,000	Jackar Shiptrade SA	Daewoo	Dec_21	M. Islnds.	ME-GI	–	–	US Portfolio	2503
Global Star	173,400	Hai Kuo Shipping 2119G Ltd.	Daewoo	Jan-21	M. Islnds.	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. Islnds.	Diesel/Gas-Electric	TZ Mk. III Flex	4	Spot	2027
Golar Celsius	160,000	Golar Hull M2026 Corp.	Samsung	Oct-13	M. Islnds.	Diesel/Gas-Electric	TZ Mk. III Flex	4	Spot	2026
Golar Crystal	159,800	Golar LNG	Samsung	Sep-14	M. Islnds.	–	TZ Mk. III Flex	4	Spot	2022
Golar Frost	160,000	Golar LNG	Samsung	Oct-14	M. Islnds.	Diesel/Gas-Electric	TZ Mk. III Flex	4	Portfolio	2055
Golar Glacier	162,000	Golar LNG	Hyundai Samho	Nov-14	M. Islnds.	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. Islnds.	DFDS	TZ Mk. III Flex	4	Spot	S659
Golar Maria	145,700	Golar LNG 2234 LLC	Daewoo	Jun-06	M. Islnds.	Steam	GT NO 96	4	Spot	2234
Golar Penguin	160,000	Golar LNG	Samsung	Sep-14	M. Islnds.	–	TZ Mk. III Flex	4	Spot	2023
Golar Seal	160,000	Golar Hull M2021 Corp.	Samsung	Sep-13	M. Islnds.	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

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

CARRIER FLEET

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Value from maritime data



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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

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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 Bohemia	174,000	SNC Cantica Lease	HHI	Nov-22	–	X-DF	TZ Mk. III Flex+	4	Portfolio	3187
Orion Monet	174,000	Jupiter 3 Ltd	Samsung	Apr-22	Liberia	–	–	4	–	2319
Orion Sea	170,852	Meridian 23 Ltd.	Samsung	Jan-22	Liberia	X-DF	TZ Mk. III	4	Portfolio	2336
Orion Sun	174,000	Meridian 24 Ltd.	Samsung	Jul-22	Liberia	X-DF	–	4	Portfolio	2337
Ougarta	170,000	Hyproc Shipping Co.	HHI	Mar-17	Algeria	DFDS	TZ Mk. III Flex	4	Arzew	2814
Pacific Arcadia	145,400	Bahamas LNG Shipping	Mitsubishi	Oct-14	Bahamas	–	Moss	4	PNG LNG	MHISB 2289
Pacific Breeze	180,000	"K" Line - Kawasaki Kisen Kaisha	Kawasaki	Mar-18	Japan	TFDE	Moss	4	Ichthys	1718
Pacific Enlighten	145,400	Pacific Hope Shipping	Mitsubishi	Mar-09	Panama	Steam	Moss	4	North West Shelf	2236
Pacific Mimosa	155,300	NYK Line	Mitsubishi	Mar-18	Japan	Reheat Steam Turbine	Moss	–	Wheatstone	2316
Pacific Notus	137,006	Pacific LNG Shipping	Mitsubishi	Sep-03	Bahamas	Steam	Moss	5	Darwin LNG	2176
Palu LNG	159,800	Cardiff LNG	Daewoo	Nov-14	Malta	TFDE	GT NO 96 L03	4	Spot	2400
Pan Africa	174,000	Teekay LNG Partners	Hudong Zhonghua	Jan-19	H.K., China	TFDE	GT NO 96	4	QCLNG	1666A
Pan Americas	174,000	Teekay LNG Partners	Hudong Zhonghua	Jan-18	H.K., China	TFDE	GT NO 96	4	QCLNG	H1664A
Pan Asia	174,000	Teekay LNG Partners	Hudong Zhonghua	Sep-17	H.K., China	TFDE	GT NO 96	4	QCLNG	1663A
Pan Europe	174,000	Teekay LNG Partners	Hudong Zhonghua	Jul-18	H.K., China	TFDE	GT NO 96	4	QCLNG	H1665A
Papua	170,000	Mitsui O.S.K. Lines	Hudong Zhonghua	Nov-14	H.K., China	–	GT NO 96	4	PNG LNG	H1670A
Patris	174,000	Chandris Group	Daewoo	Jan-18	Liberia	ME-GI	GT NO 96 GW	4	Freeport	2460
Pearl LNG	174,000	Cardiff LNG Delta Owning LLC	Samsung	Aug-20	Malta	X-DF	NO-96-GW+PRS	4	Portfolio	2275
Pioneer Spirit	138,121	M & S Shipping 3 S.A.	Daewoo	Jul-05	Bahamas	Steam	GT NO 96	4	Das Island	2219
Point Fortin	154,200	Los Halillos Shipping Co.	Koyo Dockyard	Jan-10	Panama	Steam	TZ Mk. III	4	Portfolio	2263
Portovenere	65,000	LNG Shipping S.p.A.	Sestri Ponente	Apr-97	Italy	Steam	GT NO 96	4	Portfolio	5910
Portovyy	138,107	Monteriggioni Inc.	Daewoo	Aug-03	Belgium	Steam	GT NO 96	4	Portfolio	2213
Prachi	162,000	India LNG Transport Company No. 4 Ltd.	HHI	Nov-16	Singapore	Diesel/Gas-Electric	TZ Mk. III Flex	–	Gorgon	2633
Prima Concord	138,267	BG Group	Samsung	May-04	Bermuda	Steam	TZ Mk. III	4	Singapore	1428
Prism Agility	180,000	SK Shipping	HHI	May-19	Panama	X-DF	TZ Mk. III Flex	4	Portfolio	2937
Prism Brilliance	180,000	SK Shipping	HHI	May-19	Panama	X-DF	TZ Mk. III Flex	4	Portfolio	2938
Prism Courage	176,462	Millenaire Financement 12 SASU	HHI	Oct-21	Panama	X-DF	TZ Mk. III Flex	4	Portfolio	2939
Prism Diversity	176,400	HHIENS4 Shipholding SA	HHI	Jun-22	M. Islnds.	X-DF	–	4	–	3145
Pskov	170,200	Sovcomflot	STX	Sep-14	Liberia	–	GT NO 96	4	Portfolio	1911
Puteri Delima	130,400	Puteri Delima S.Bhd.	STX	Jan-95	Malaysia	Steam	GT NO 96	4	MLNG II	30F
Puteri Delima Satu	137,100	MISC	Mitsui E&S	Oct-02	Malaysia	Steam	GT NO 96	4	MLNG III	1506
Puteri Firus Satu	137,100	Puteri Firus S.Bhd.	Mitsubishi	Aug-04	Malaysia	Steam	GT NO 96	4	MLNG III	2177
Puteri Intan	137,100	Puteri Intan S.Bhd.	STX	Aug-94	Malaysia	Steam	GT NO 96	4	MLNG II	30E
Puteri Mutiara Satu	137,100	MISC	Mitsui E&S	Apr-05	Malaysia	Steam	GT NO 96	4	MLNG III	1562

CARRIER FLEET

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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
Seapeak Yamal	174,000	Teekay LNG Partners	Hyundai Samho	Jan-19	Bermuda	ME-GI	TZ Mk. III Flex	–	Freeport	S857
Seishu Maru	138,000	Mitsui O.S.K. Lines	Mitsubishi	Sep-14	Bahamas	–	Moss	4	PNG LNG	2297
Seri Alam	145,572	MISC	Samsung	Jul-05	Malaysia	–	TZ Mk. III	4	Bintulu	1502
Seri Amanah	145,709	MISC	Samsung	Mar-06	Malaysia	Steam	TZ Mk. III	4	Bintulu	1503
Seri Anggun	145,731	MISC	Samsung	Oct-06	Malaysia	Steam	TZ Mk. III	4	North West Shelf	1589
Seri Angkasa	145,130	MISC	Samsung	Dec-06	Malaysia	Steam	TZ Mk. III	4	Bintulu	1590
Seri Ayu	145,894	MISC	Samsung	Oct-07	Malaysia	Steam	TZ Mk. III	4	Bintulu	1591
Seri Bakti	152,944	MISC	Mitsubishi	Apr-07	Malaysia	Steam	GT NO 96	4	Gladstone	2220
Seri Balhaf	152,000	MISC	Mitsubishi	Jan-09	Malaysia	Steam	GT NO 96	4	Bontang	2223
Seri Balqis	152,000	MISC	Mitsubishi	Mar-09	Malaysia	Steam	GT NO 96	4	NLNG	2224
Seri Begawan	152,900	MISC	Mitsubishi	Nov-07	Malaysia	Steam	GT NO 96	4	Bintulu	2221
Seri Bijaksana	152,300	MISC	Mitsubishi	Apr-08	Malaysia	Steam	GT NO 96	4	Bintulu	2222
Seri Camar	150,000	MISC	HHI	Feb-18	Malaysia	Ultra Steam Turbine	Moss	4	Pacific Northwest	2732
Seri Camellia	159,800	MISC	HHI	Sep-16	Malaysia	Ultra Steam Turbine	TZ Mk. III Flex	4	Pacific Northwest	2729
Seri Cemara	150,200	MISC	HHI	Apr-18	Malaysia	Ultra Steam Turbine	Moss	4	Portfolio	2735
Seri Cempaka	162,000	MISC	HHI	Aug-17	Malaysia	Ultra Steam Turbine	TZ Mk. III Flex	4	Pacific Northwest	2731
Seri Cenderawasih	162,000	MISC	HHI	Feb-17	Malaysia	Ultra Steam Turbine	Moss	4	Pacific Northwest	2730
Sestao Knutsen	136,947	Norspan LNG IV AS	Navantia Cadiz	Oct-07	Spain	Steam	GT NO 96	4	Portfolio	331
Sevilla Knutsen	173,400	Norspan LNG VI AS	Daewoo	May-10	Spain	Diesel/Gas-Electric	GT NO 96	4	Portfolio	2269
Shagra	268,000	Nakilat SHI 1751 Inc.	Samsung	Nov-09	M. Islnds.	Diesel	TZ Mk. III	10	Qatargas IV	1751
Shahamah	135,496	Shahamah Inc.	Kawasaki	Oct-94	Liberia	Steam	Moss	5	Das Island	1438
Shandong Juniper	135,269	Shell Bermuda (Overseas) Ltd.	Mitsubishi	Feb-04	Singapore	Steam	Moss	5	Peru LNG	2183
Shaolin	174,400	United Prosperity LNG Shipping Co Ltd	Hudong Zhonghua	Oct-22	H.K., China	X-DF	–	4	Portfolio	H1831A
Shen Hai	147,200	Shanghai LNG Shipping Co.	Hudong Zhonghua	Dec-12	H.K., China	Steam	GT NO 96	4	Bintulu	H1621A
Shinshu Maru	180,000	Mitsui O.S.K. Lines	Kawasaki	Feb-19	Japan	DERST (aka STaGE)	Moss	4	Freeport	1734
Simaisma	145,889	Greenwell Corporation	Daewoo	Jul-06	Bermuda	Steam	GT NO 96	8	RasGas II	2235
Singapore Energy	138,000	Sea Breeze Leasing	Samsung	Feb-03	Isle of Man	Steam	TZ Mk. III	4	Portfolio	1416
SK Audace	174,000	Milestone LNG Transport	Samsung	Aug-17	Panama	X-DF	TZ Mk. III Flex	4	Portfolio	2080
SK Resolute	180,000	Milestone LNG Transport	Samsung	Nov-17	Panama	X-DF	TZ Mk. III Flex	4	Ichthys	2081
SK Serenity	174,000	SK Shipping	Samsung	Feb-18	South Korea	TFDE	KC-1	4	Sabine Pass	2153
SK Spica	174,117	SK Shipping	Samsung	Mar-18	South Korea	TFDE	KC-1	–	Sabine Pass	2154
SK Splendor	138,370	Optima Leasing	Samsung	May-00	Panama	Steam	TZ Mk. III	4	Oman LNG	1258
SK Stellar	138,375	Stellar Shipholding	Samsung	Dec-00	Panama	Steam	TZ Mk. III	4	RasGas I	1259
SK Summit	138,003	Omnia Enterprises	Daewoo	Aug-99	Panama	Steam	GT NO 96	4	RasGas I	2202
SK Sunrise	138,306	Methane Navigation S.A.	Samsung	Aug-03	Panama	Steam	TZ Mk. III	4	RasGas II	1405
SK Supreme	138,225	Celeste Maritime	Samsung	Feb-00	Panama	Steam	TZ Mk. III	4	RasGas I	1207
SM Albatross	174,000	SMKLC LNG3 SA	HHI	Jul-22	Panama	X-DF	TZ Mk. III Flex+	4	Portfolio	3185

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



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

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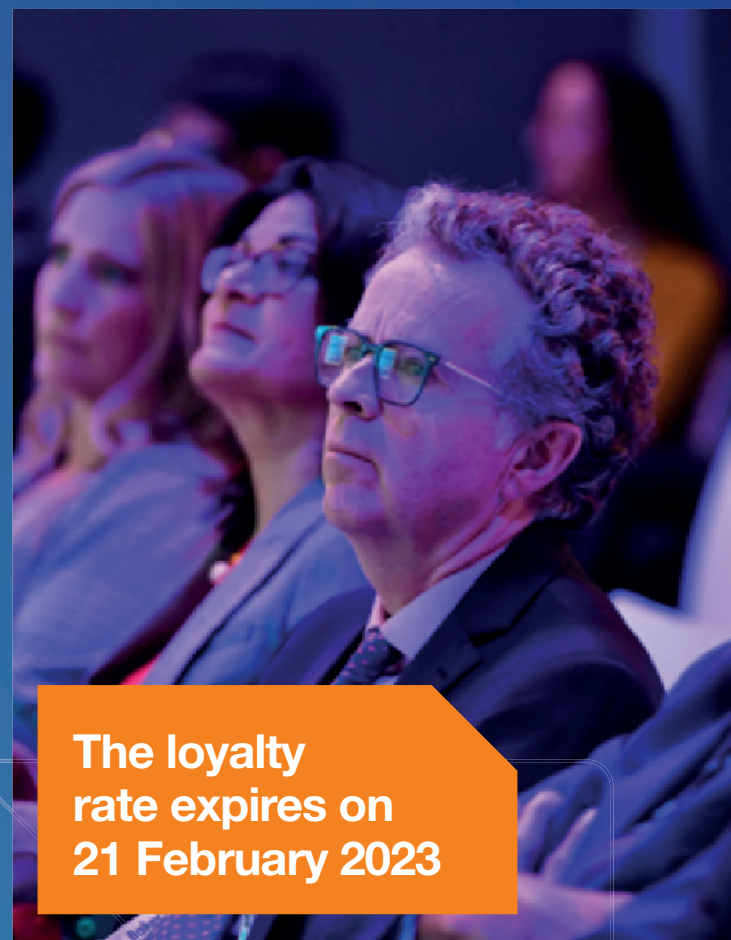


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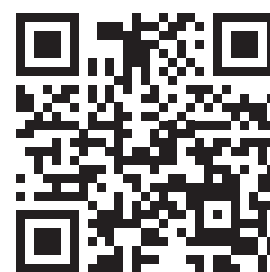
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