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Argentina again at forefront of renewed South American push to monetise gas reserves

Argentina put itself again at the forefront with its LNG export ambitions as established South American producers are stagnating. The prize seems to be the lucrative European market but economic issues remain. Markets Editor Alexander Wilk has more.

Since the 1990s, Argentina has been a frontrunner of South American gas producers seeking to unlock international gas markets to monetise their gas resources. Discussions concerning natural gas trade across South America date back to the 1950s, but cross-border gas market integration only started with the Yabog pipeline between Bolivia and Argentina in the early 1970s. The pipeline remained the only cross-border gas pipeline in the region until the mid-1990s. Trade volumes only grew significantly following the discovery of abundant Argentinian gas reserves in the 1980s. Looking to monetise its own gas supplies, seven pipelines were built between Argentina and Chile between 1996 and 2001. Additionally, exports to Uruguay started in 1998 and to Brazil in 2000.

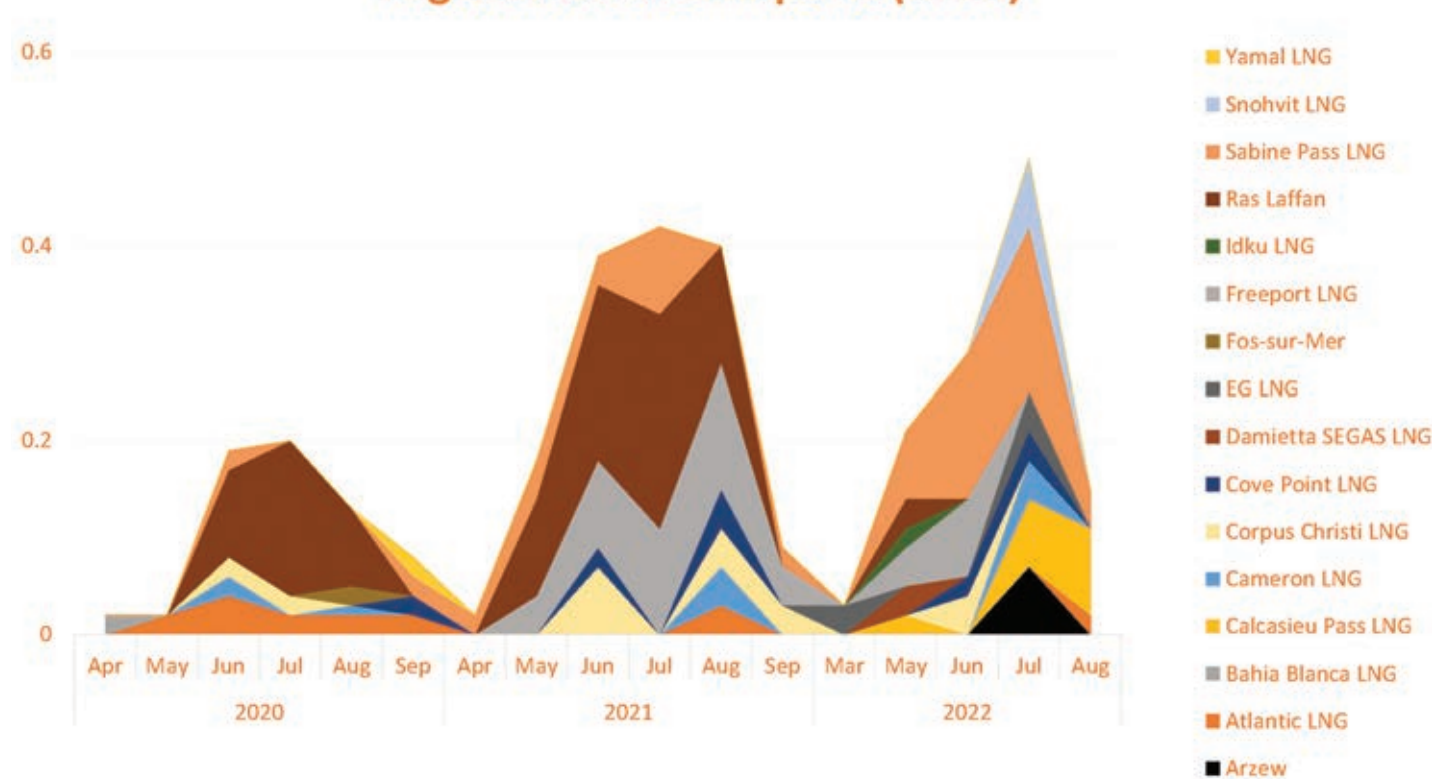
Success in pipeline gas trade notwithstanding, Argentina has struggled to gain a permanent foothold in the global LNG market as an exporter. Things started off well in 2019 as the country began shipping its first batch of cargoes from the Tango FLNG barge. However, the coronavirus pandemic hit the Argentine economy – including the gas sector – hard and amid falling LNG prices in 2020 national hydrocarbon champion YPF issued a force majeure notice for its Tango FLNG project. Although Tango reportedly targeted sales to Asia, it only ever shipped LNG to Brazil and Europe, our data show. The shipments comprised surplus production during the warmer months of October to April.

Ironically, LNG exports in Europe now seem to be the ticket for a revival of

Argentina's LNG export ambitions. Europe's gas crunch earlier in the year proved a powerful incentive to the Argentine government to pursue even larger LNG export projects as Germany, Finland, France and the Netherlands have scrambled to quickly add new FSRU capacity.

The Argentine government decided to revive a project to build a large-scale LNG export plant targeting gas-starved European gas markets. European governments initially rested considerable hopes on the United States and Qatar being able to plug the gap left by a decision to halt Russian pipeline gas supplies. However, our data show that US production has already reached capacity as Freeport remained offline at the time of writing. Qatar's QP has also

Argentinian LNG Imports (MMt)





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highlighted it would be unable to quickly increase supplies to Europe. Additional supplies that have been agreed with Germany, for instance, remain relatively small.

Re(new)ed attempt

YPF, Argentina’s national hydrocarbon champion, has been conducting preliminary studies to find a path towards rebuilding its LNG export capacity after Tango’s demise. This approach is to go hand-in-hand with ongoing plans to grow gas production in the country’s giant Vaca Muerta shale play. There are also projects underway to increase pipeline capacity, according to YPF’s CFO Alejandro Lew. "We are doing the technical studies to be prepared," he added at an Americas Society and Council of the Americas energy conference in December 2021.

The vision outlined by Lew at the time would build on Argentina’s initial attempt to enter the LNG market as an exporter. However, unlike during its FLNG times, domestic gas production has had some recovery and prices had increased, encouraging YPF to revive plans for exporting LNG. Moreover, Argentina’s period of low demand is when demand is highest in the Northern Hemisphere. "The market was lacking the right price signals for the natural gas resources to be developed," Lew said, adding that the prevailing high price environment has supported production growth.

Argentina’s president Alberto

Fernandez recently underscored his government’s policy and gave new credence to Lew’s plans by saying "[...] we are meeting the objective that we set for ourselves: not leaving Vaca Muerta’s gas in the ground, extract it as fast as we can, use what we need, then export the rest and collect profits”.

European interest

Unsurprisingly, considering surging European LNG demand, the Spanish government has been among the first to launch talks with Argentina on rebuilding and expanding LNG trade with Europe. The Spanish Prime minister Pedro Sánchez met with Fernández to hold discussions in May that included Argentina's potential role as an energy supplier.

However, this remains a vision into Argentina’s future as the country is currently heavily dependent on LNG imports and Bolivian pipeline gas every winter. To increase exports, production and supply out of Vaca Muerta must still grow and midstream capacity be built. "The problem is that right now we have some bottlenecks in terms of natural gas pipelines to be able to further increase production out of Vaca Muerta to supply gas during wintertime," Lew said at the end of 2021. Government data as of November this year still show gas production is struggling to achieve sustained strong growth.

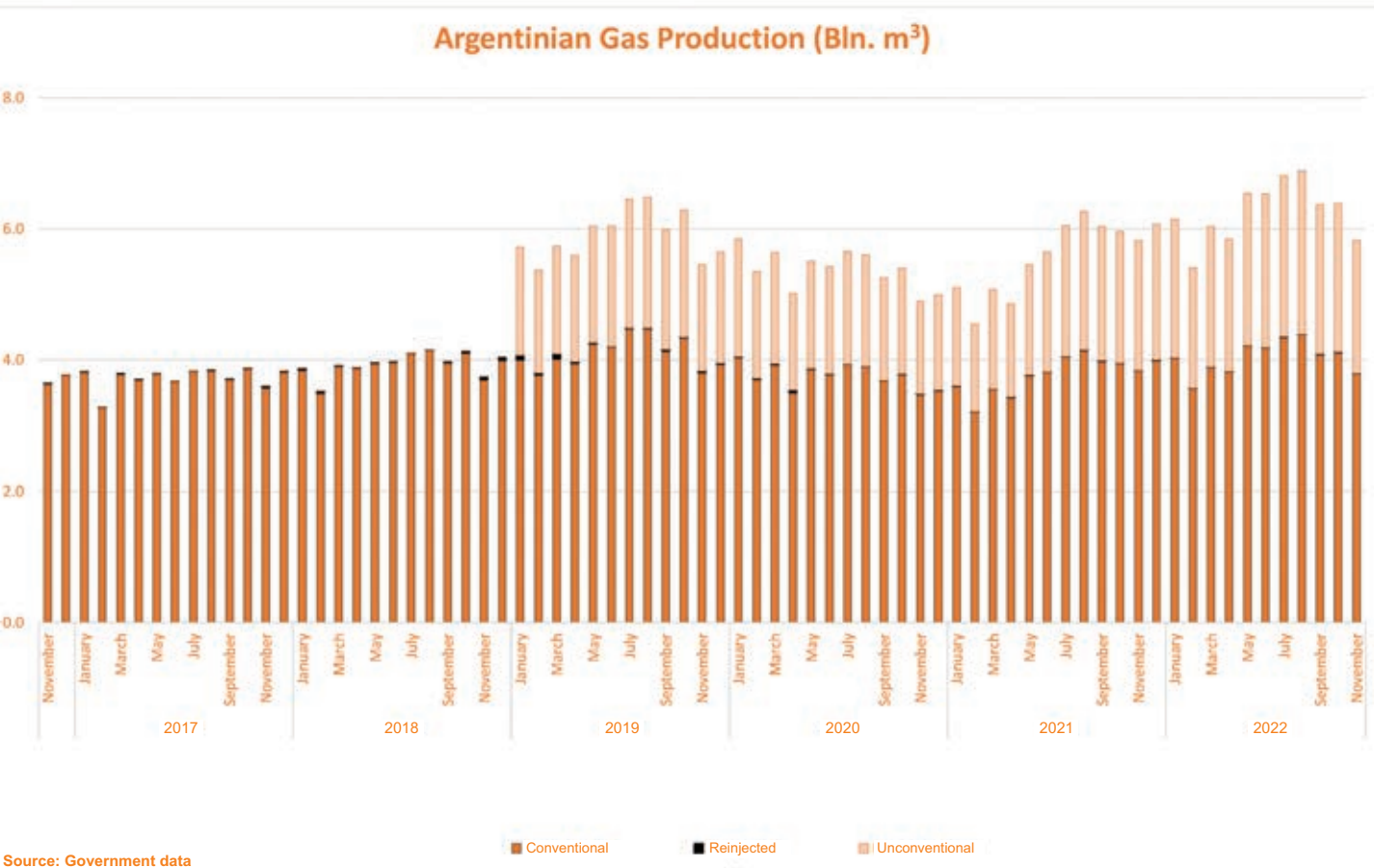
The Argentinian government hopes to change that by the winter of 2023 with a

US\$3.5 billion project to increase gas pipeline capacity out of Vaca Muerta by 44 million cu m/d, including with a new pipeline under the Transport.Ar plan. The pipeline project is adding to expectations that producers can eventually harness Vaca Muerta for exporting gas globally. "We do have the resources and we do have the opportunity down the road to potentially export LNG," Lew commented on the project.

Argentine foreign minister Santiago Caffiero also said the new, IEASA-tendered Néstor Kirchner pipeline would expand the country's export possibilities by connecting the Vaca Muerta play with the port town of Bahía Blanca, where once the Tango FLNG barge was moored and the new onshore liquefaction project would be built. "This [pipeline] will give Argentina energy self-sufficiency," Cafiero said, allowing the country to become "a net exporter of liquefied natural gas."

Preliminary agreements

Apart from pipeline capacity expansions, plans for gas liquefaction facilities are also being pushed along. YPF had already tabled plans for an onshore facility when it worked on the Tango FLNG project in 2019. The small FLNG barge was supposed to be a placeholder until a US\$5bln onshore liquefaction plant could be built. Whilst concrete details of the onshore project remain scarce, the renewed scheme seems to be a revival of the initial 2019 proposal, but with new partners and more capital. YPF and



Malaysian energy champion Petronas signed an LNG feasibility study on 1 September 2022 to assess the viability of a US\$10bln export plant on the Atlantic coast. Its initial capacity was pegged at around 5 million tonnes per annum (mtpa) although the project could ultimately be expanded to 25mtpa. Nevertheless, the project partners cautioned that construction would take time and did not provide a start-up year. The government's hopes in 2019 were for such a plant to be operational by 2026.

Concurrently, US FSRU specialist Exceleerate said it could install an LNG trading hub in Argentina by 2025. The project, which would be Exceleerate's first liquefaction plant, is planned in conjunction with Transportadora de Gas del Sur (TGS). Like the YPF/Petronas proposal, it aims to take advantage of the resources of the vast Vaca Muerta shale gas play, according to Argentinian news outlet Rio Negro. "We believe that Argentina has high potential," Gabriela Aguilar, Exceleerate's Argentine general manager and vice-president for Latin America, said during a visit to the Expedient FSRU, Argentina's main LNG import node. She highlighted that Exceleerate views the project not just as a liquefaction plant but as a project that could stabilise gas sales throughout the year. A final investment decision (FID) is expected in 1Q 2023. This project outline is reminiscent of the expansionist outlook offered by former YPF chairman Daniel Gonzalez, who maintained Argentina needed a liquefaction plant to absorb excess domestic production and bridge seasonal spikes by effectively soaking up excess supply, mimicking the effect of a gas storage facility.

For an export terminal to become viable, Argentina must first break its seasonal reliance on LNG imports.

Vaca Muerta

The centrepiece of Argentina's national gas strategy and the main driver for any LNG exports has always been the Vaca Muerta play, a huge shale play in northern Patagonia with 300 Tcf of gas resources. "In Argentina we have been blessed with Vaca Muerta," Lew previously said. "It is a tremendous resource of shale gas and also of oil."

Development of the Vaca Muerta play began in 2012 after shale gas production grew rampantly in the United States. Although overproduction and a lack of pipeline infrastructure quickly depressed US prices at the wellhead, LNG exports

became the shale gas industry's saving grace as they broadly stabilised the Henry Hub price.

As we have highlighted before, whether this plan will come to fruition will to a large extent depend on foreign direct investment – not only in gas liquefaction infrastructure but also the Vaca Muerta play itself where constant drilling is likely required to stave off rapid production decline on an individual well level typical for shale gas wells – just like in the United States. The difference, however, is that US drillers, unlike Argentine companies, have had access to ultra-cheap debt for years.

US LNG exports reached a record high in December, according to our data, on the back of persistent growth in shale gas production seeking lucrative foreign markets. A protracted rise in production from the Marcellus, Permian Basin and other large US shale gas plays has kept US natural gas prices well below those in Europe and Asia. This has incentivised domestic production to find channels to markets abroad where prices are significantly higher.

Capital demand & currency restrictions

Argentina initially hoped to be able to rely on its Vaca Muerta shale play to not only meet the bulk of domestic demand but also establish its role as a regional gas exporter – both via pipeline and the Tango FLNG plant starting in 2019. However, sustained drilling campaigns and rapid large-scale investment have not come to pass. Among other factors, Argentina's economy has been severely affected by the coronavirus pandemic, which hampered the persistent drilling necessary for sustained shale gas production from Vaca Muerta and fuelled rampant inflation. The only silver lining was that reduced economic activity also led to less gas demand growth, and expensive LNG imports during Argentina's peak demand period of May–July did not have to increase, according to our data. In 2021, Argentina imported 1.50mmt of LNG via 56 cargoes, mainly from Qatar and the United States but also from Trinidad & Tobago. Total imports in 2022 trailed their 2021 counterparts by 0.33mmt as the country paid up to US\$45.64/mmBtu between May and July compared to a price ceiling of US\$14.05/mmBtu the previous year, government data show. Planned imports in August did not materialise, according to our data.

Vaca Muerta itself is seen as a Permian-level asset in terms of its natural gas potential, but investment has failed to materialise at the necessary scale. A resulting infrastructure backlog built up over the past decade is adding to Argentina's capital demands.

Argentine foreign currency restrictions have continued to weigh on the country's economy. The country's central bank – BCRA – has tightened capital controls to preserve foreign reserves by limiting importers' access to hard currency to pay for imported goods and services immediately, with payment deferrals lasting up to a year.

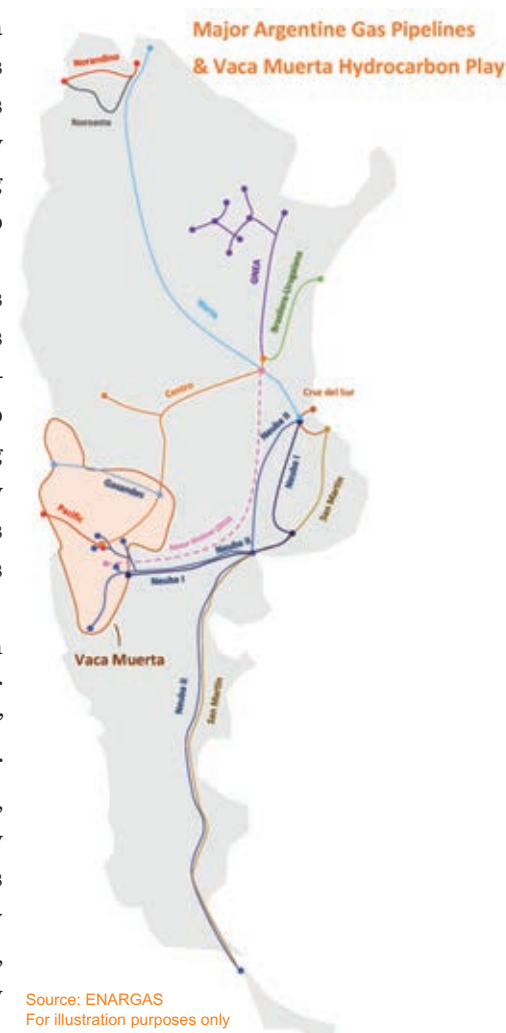
The BCRA states that the policy is in response "to the extraordinary needs for foreign currency to meet energy imports" during the austral winter among other causes. Seasonal energy imports aside, other factors affecting the economy include a parallel exchange rate that has reached record highs in 2022, slow economic growth, and increased inflation, which the official INDEC statistics agency assessed at 92.4 percent in November.

As such, whilst energy sector equipment is exempt from currency restrictions, auxiliary investments are still being impacted. Previous attempts at loosening these restrictions have failed politically. A major hydrocarbons reform bill championed by finance minister Martín Guzmán and president Fernández did not pass in September last year.

Rest of Americas

Whilst Argentina has kept the embers of its vision to becoming a sizeable LNG exporter going, production and exports from Trinidad & Tobago and Peru have stagnated. Trinidad is struggling with declining gas reserves at its mature gas fields whilst unappealing fiscal terms and proximity to sanctioned Venezuela make exploration and development drilling difficult. Peru's LNG industry, on the other hand, has previously suffered from tensions resulting from higher taxation demand and threats of nationalisation by the government. The current high price environment in Europe has led to these demands being set aside for the time being in favour of flat-out production. However, a gas supply crunch in 2022 highlighted the precarious nature of feedgas supply to the country's Pampa Melchorita plant.

Meanwhile, new LNG export projects are on the table in Suriname, Guyana and Mexico. However, with the exception of Semptra Energia's Costa Azul export



project, the proposals there still have some way to go before becoming a reality. A financing gap, similarly stringent fiscal terms to Argentina and local content policies in Suriname and Guyana have slowed project advancement. In Mexico, foreign investors are usually required to partner with a local entity.

Concluding thoughts

The geopolitical shift in Europe has led to new opportunities for South America's LNG export ambitions. Europe's initial hopes rested on additional supplies from the United States and Qatar but there are limits to how far these can stretch. This has rekindled hopes in Argentina and enticed YPF and others to make yet another run at turning the country into a net LNG exporter for good. The government is certainly keen to monetise Argentina's gas resources to prop up an ailing economy plagued by currency shortages and high inflation. But therein lies the rub as the country continues to struggle with the same complex of issues that, some progress notwithstanding, has so far hindered the rapid infrastructure development hoped for. To date, no new LNG facility has reached its FID stage and the government will have to show construction of its new Néstor Kirchner pipeline is progressing as planned or risk losing investor confidence. ■

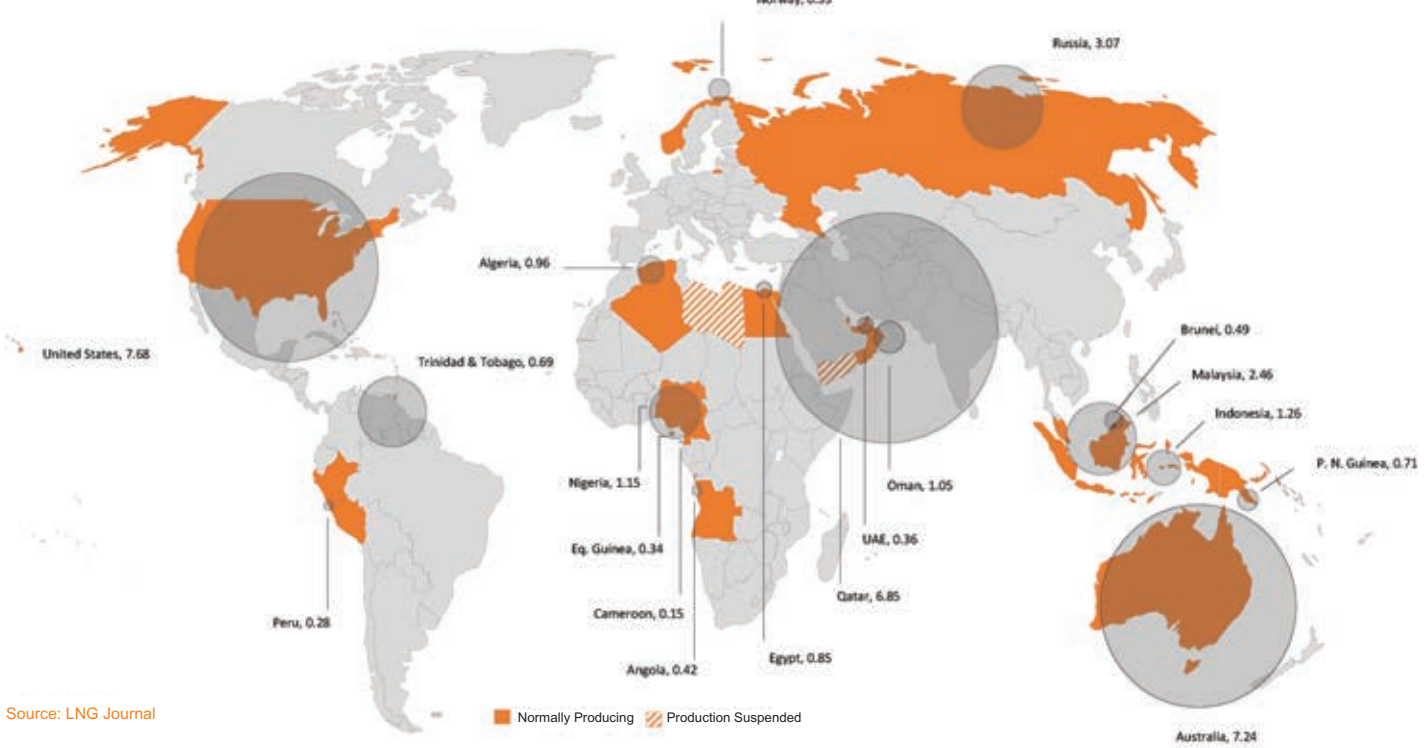
December markets buoyant

Our December data highlight continued strong export growth whilst also pointing to ever-strengthening demand in Europe, our Markets Editor Alexander Wilk reports.

Our data showed global LNG trade had continued to grow in December. The shipped amount of 36.55mmt represented net growth of 4.91mmt (16 percent) from the 31.64mmt shipped in November. We thus also recorded strong year-on-year export growth of 3.49mmt (10 percent). The improvement in December performance was due to an export boost among Atlantic Basin producers, led by the United States and Russia. Additionally, export growth from Oman and the UAE underpinned export growth in the Middle East.

Meanwhile, there was strong global net demand growth despite considerable demand decreases among some key Pacific and European importers – namely India and the Netherlands. Chinese demand surged, as did offtakes in South Korea and Japan. Concurrently, Europe’s demand vortex persisted with the United Kingdom, France and Italy in particular pushing up regional offtakes. The arrival of new FSRU capacity in Germany also added to demand.

Global LNG Exports (MMt)



Source: LNG Journal

Exports

In December, 36.55mmt of global exports for the month represented a significant increase of 4.91mmt (16 percent) from 31.64mmt in November. Pacific Basin

shipments were up by 0.24mmt (2 percent) to 13.43mmt whilst Atlantic Basin exports saw a boost of 2.22mmt (19 percent) to 13.96mmt. Monthly export growth also came from the Middle East, where shipments were up by 0.40mmt (5 percent) to 9.11mmt.

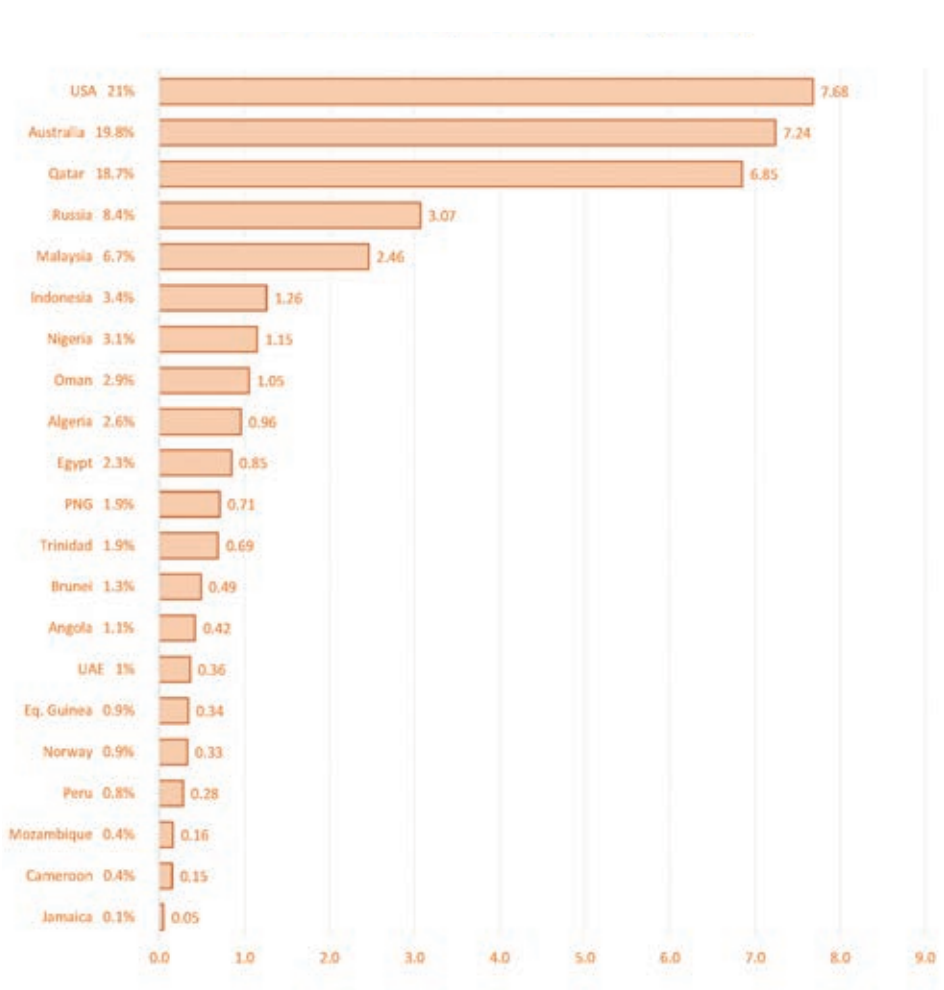
Queensland Curtis LNG and Gladstone LNG. Wheatstone LNG curtailed exports by 0.22mmt (-21 percent) to 0.83mmt after it had shipped 1.05mmt in November. Australia Pacific LNG and Pluto LNG, meanwhile, decreased shipments by 0.13mmt (-15 percent) to 0.71mmt and by 0.08mmt (-14 percent) to 0.51mmt, respectively. Gladstone and Queensland Curtis LNG decreased exports only slightly by 0.02mmt (-3 percent) to 0.68mmt and 0.01mmt (-2 percent) to 0.59mmt, respectively. Overall, Australian shipments to Japan grew steeply in December, up 0.70mmt (30 percent) to 3.03mmt. This went a long way to compensate for export reductions to China, Taiwan and South Korea amounting to 1.16mmt. Notably, 0.55mmt of Australian LNG still had to declare their destination in the Pacific at the time of writing.

Offshore, Shell’s Prelude FLNG barge was again seen in the market following no shipments in November. The barge exported a single cargo of 0.06mmt aboard the Methane Becki Anne to Singapore.

Southeast Asia

North of Australia, Papua New Guinea’s PNG LNG also saw shipments increase month-on-month by 0.06mmt (19 percent) to 0.71mmt in December from to 0.65mmt in November. PNG LNG gained market share in Japan, but this growth was

Market Share & LNG Exports by Country (MMt)



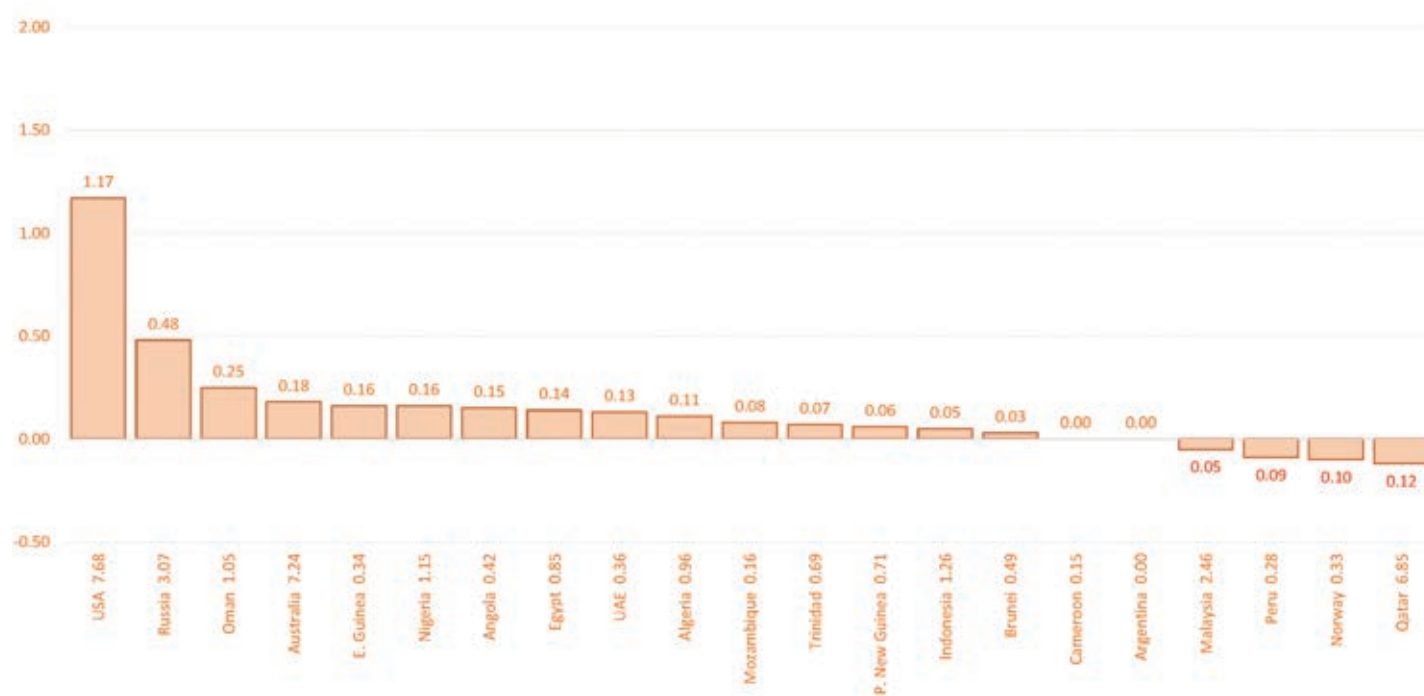
Source: LNG Journal

tempered by a reduction in exports to China, Taiwan and South Korea. At 125 percent, the plant continued to operate above nameplate capacity, our calculations showed.

In neighbouring Indonesia, the amount of LNG shipped per month also grew. Exports were up by 0.05mmt (4 percent) to 1.26mmt in December from 1.21mmt recorded in November. The Tangguh plant maintained monthly output at 0.59mmt, which also meant it continued to produce at 93 percent of nameplate capacity. The Bontang plant also kept shipments broadly steady at 0.44mmt month-on-month, producing at 50 percent of installed capacity. However, the Donggi-Senoro LNG plant increased LNG exports by 0.06mmt (35 percent) to 0.23mmt in December, producing at 138 percent of installed capacity. Although isolated exports to Malaysia and Turkey did not reoccur in December alongside an export reduction to Taiwan, there was Indonesian export growth to China, Japan and South Korea totalling 0.24mmt.

In contrast, Malaysia saw a decrease in monthly shipments of 0.05mmt (-2 percent), which was led by a 0.14mmt (67 percent) production at PFLNG Satu. The floating plant's shipments stood at 0.07mmt at the end of December compared to 0.21mmt in November. At the same time, the PFLNG Dua offshore facility increased its November production by 0.06mmt (43 percent) to 0.20mmt in December, our data show. Meanwhile, Malaysia LNG kept exports broadly steady at 2.19mmt, up only marginally by 0.03mmt (1 percent) month-on-month. As such, the latter two Malaysian export facilities produced at or

Incremental LNG Exports by Country (MMt)



Source: LNG Journal

above nameplate capacity as they gained market share in China in December.

Brunei, meanwhile, also increased LNG exports in December by 0.03mmt (7 percent) to 0.49mmt from 0.46mmt in November. Doubling exports to Japan to 0.42mmt allowed the country to compensate for reductions to China, South Korea and Malaysia.

Russia & Peru

Elsewhere in the Pacific, Russia's Sakhalin-2 LNG slightly decreased LNG exports by 0.02mmt (-2 percent). The plant's shipments amounted to 0.83mmt in December compared to 0.85mmt in November. December's performance benefitted from higher exports to Japan but was overshadowed by a total demand reduction for Sakhalin deliveries of 0.08mmt in South Korea and China. Still,

the plant continued to operate above nameplate capacity, with annualised utilisation at 104 percent.

Meanwhile, Peru's Pampa Melchorita plant decreased exports following a spurt in exports in November. Accordingly, shipments of 0.28mmt in December were down by 0.09mmt (-24 percent) from the 0.37mmt recorded in November and pushed the plant's capacity utilisation down to 76 percent. The plant typically exports between 0.30mmt and 0.40mmt per month, our historical data show.

Atlantic Basin

In contrast to moderate growth in the Pacific, the Atlantic Basin's overall shipped LNG had increased steeply by the end of December, with exports up by 2.22mmt (19 percent) to 13.96mmt in December. This translated into

annualised export capacity utilisation of 90 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) – increased by 0.51mmt (17 percent) to 3.53mmt in December from 3.02mmt in November. Gazprom's new Portovaya facility kept exports steady, shipping 0.14mmt, whilst at Yamal LNG shipments were up by 0.50mmt (31 percent) to 2.10mmt. The plant thus continued to produce considerably above nameplate capacity in December. The resulting net increase for Russian LNG exports in the Atlantic theatre was driven by steep demand growth in Europe led by France and the Netherlands.

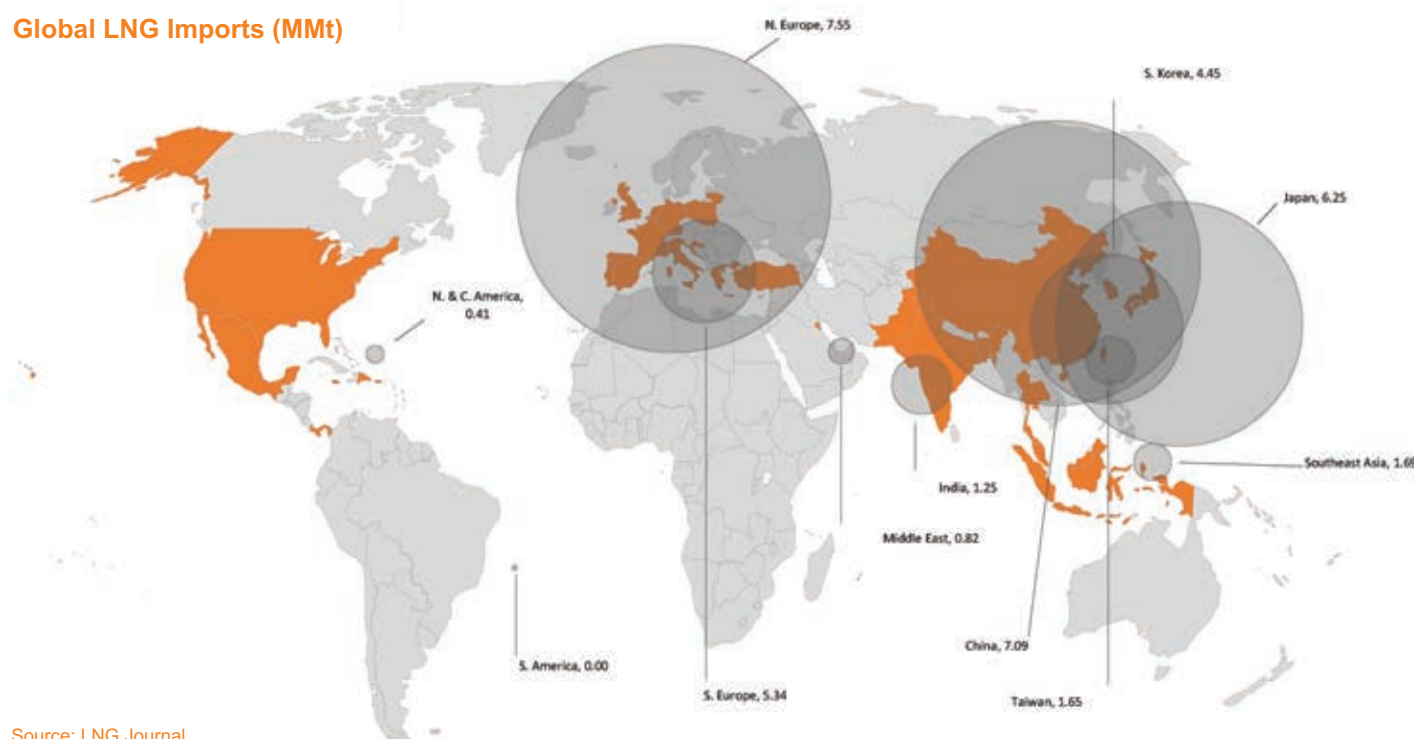
Concurrently, at 0.85mmt, Algeria exported 0.11mmt (13 percent) more month-on-month in December. Although Arzew LNG decreased exports by 0.08mmt (-12 percent) to 0.60mmt, the Skikda plant grew its output by 0.19mmt (112 percent) to 0.36mmt.

Export growth in Russia and Algeria was only tempered by lower output from Snøhvit LNG in Norway, which shipped 0.10mmt (-23 percent) less to reach 0.33mmt in December following exports of 0.43mmt in November. Negative Norwegian export growth was driven by lower demand in Europe, in particularly Lithuania.

West Africa

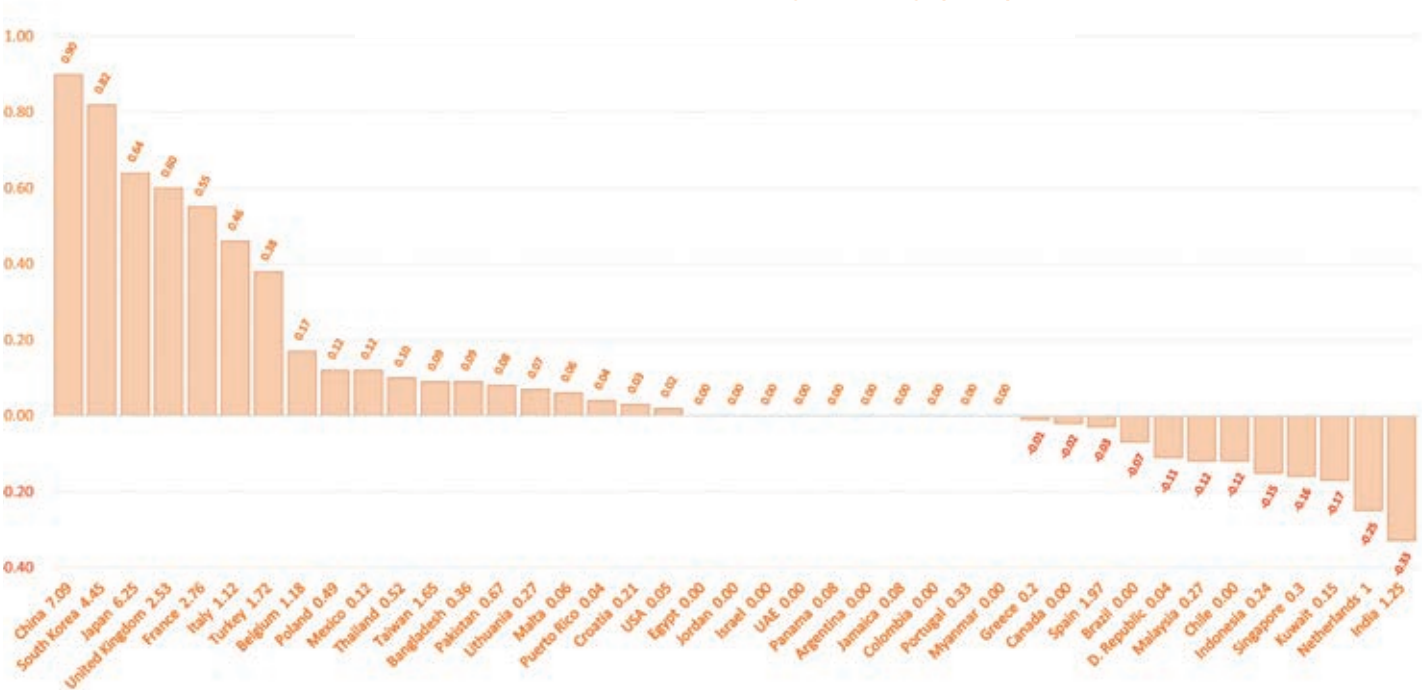
West African exports were up by 0.47mmt (30 percent) in December as the region's

Global LNG Imports (MMt)



Source: LNG Journal

Incremental LNG Imports by Country (MMt)



Source: LNG Journal

breadth of offtakers increased. After higher monthly exports in November, Nigeria continued to grow shipments to 1.15mmt in December. Export growth notwithstanding, Nigeria’s LNG output still lagged behind previous levels, which left utilisation at only 62 percent, according to our calculations. For comparison, the country’s LNG exports stood at 1.25mmt in July. Angola LNG also increased exports, which were up by 0.15mmt (56 percent) to 0.42mmt. A so-called merchant plant not tied to long-term supply commitments, it usually increases output in line with high-price opportunities. In December, all its exports went to Europe whereas in previous years its main market had been Asia. Concurrently, Cameroon’s Kribi FLNG maintained its monthly exports at 0.15mmt. Like Angola, Cameroon exported all its LNG to Europe. West African export growth was also underpinned by EG LNG boosting exports by 0.16mmt (89 percent) to 0.34mmt in December from 0.18mmt in November. The plant thus operated well above nameplate capacity at 110 percent in December. Overall, West African exporters gained market share in Europe – mainly in the United Kingdom, the Netherlands and Spain – but reduced exports to the Pacific, mainly China and Taiwan.

Americas

Exports from the US Gulf Coast grew robustly in December, up significantly by 1.17mmt (18 percent) to 7.68mmt from 6.51mmt in November even as Freeport LNG remained offline. Overall active US capacity utilisation thus stood at 129

percent. Cove Point LNG once again boosted shipments by 0.29mmt (71 percent) from 0.41mmt in November to 0.70mmt in December, pegging capacity utilisation at 146 percent. Concurrently, Corpus Christi LNG and Cameron LNG grew exports by 0.22mmt (18 percent) to 1.42mmt from 1.20mmt and by 0.24mmt (16 percent) to 1.74mmt from 1.50mmt in November, respectively. Growth also came from Sabine Pass LNG, which increased shipments by 0.22mmt (8 percent) to 2.81mmt and thus produced well above nameplate capacity. Exports at Calcasieu Pass LNG also added to US LNG export growth with an increase of 0.20mmt (33 percent) to 0.80mmt. Finally, Elba Island maintained monthly exports at full capacity, shipping 0.21mmt in December.

In South America, Atlantic LNG in Trinidad & Tobago saw exports increase by 0.07mmt (11 percent) to 0.69mmt in December from the 0.62mmt we recorded in November. Although Atlantic LNG shipments gained market share in Europe and the United States, these gains were tempered by losses in the Pacific Basin and the Caribbean.

Middle East

Shipments from Middle Eastern plants equally rallied in December after they had decreased in November. Regional LNG exports were up by 0.40mmt (5 percent) from 8.71mmt to 9.11mmt. Accordingly, our data showed the Basin’s overall utilisation of operational export capacity (i.e., excluding Yemen) climbing to 104 percent in December.

The region’s overall export growth was underpinned by Oman and the UAE. At 1.05mmt, Omani exports come in

0.25mmt (31 percent) above their November level of 0.80mmt. In the neighbouring UAE, exports were up by 0.13mmt (57 percent) to 0.36mmt from 0.23mmt in November.

Month-on-month export growth in the region also stemmed from Egypt, where the Idku LNG plant shipped 0.46mmt, up 0.18mmt (64 percent) from 0.28mmt in November. This growth compensated for a slight export reduction at the Damietta SEGA plant, which shipped 0.39mmt in

December, down 0.04mmt (-9 percent) from 0.43mmt in November. However, the plant continued to produce close to nameplate capacity.

Middle Eastern export growth was only tempered by a slight reduction in shipments at Qatar’s Ras Laffan LNG complex. The facility decreased exports to 6.85mmt, down by 0.12mmt (-2 percent) from 6.97mmt in November. The month-on-month reduction notwithstanding, the complex continued to produce flat-out. Notably, Qatar’s December trade pivoted away from Europe and towards the Middle East, the Pacific Basin, and the Far East. Asian destinations were led by China, Taiwan and Thailand. Conversely, Belgium and the United Kingdom received significantly less LNG from Qatar in December.

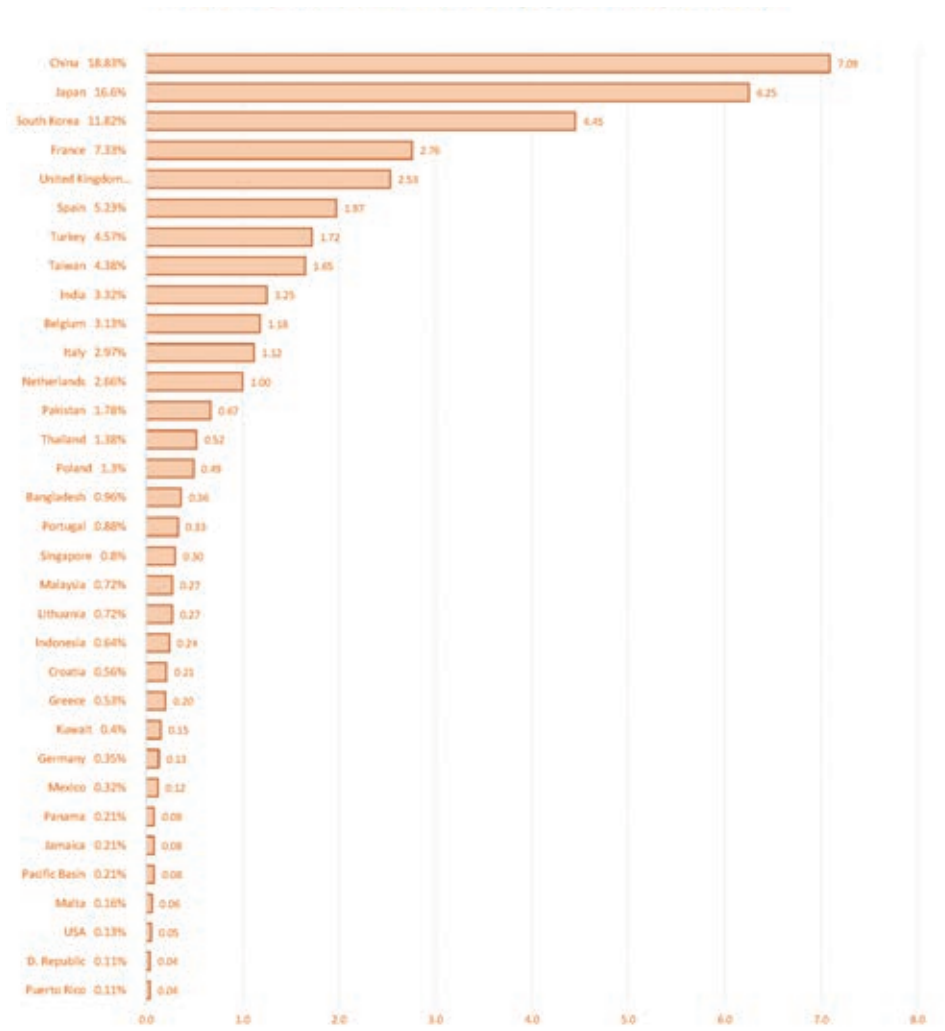
Imports & Domestic Trade

Global LNG imports were up by 3.94mmt (12 percent) in December. Demand growth was strongest in the Atlantic Basin, closely followed by the Pacific Basin. Offtakes in the Middle East, however, were down slightly.

Pacific Basin

Month-on-month Pacific Basin imports had increased by 1.96mmt (9 percent) net in December as South Korea, China and

Market Share & LNG Imports by Country (MMt)



Source: LNG Journal

Japan grew their offtakes by 2.36mmt (15 percent) in total to 17.79mmt. As such, the combined month-on-month demand decrease of 0.96mmt elsewhere in the Pacific could not negate that growth. South Korea's imports increased by 0.96mmt (26 percent) to 4.60mmt from 3.64mmt in November whilst China and Japan boosted total offtakes by 1.23mmt (10 percent) to 13.01mmt in December.

Concurrently, the roster of smaller Pacific buyers— including Bangladesh, Chile, Indonesia, Malaysia, Mexico, Singapore and Myanmar – collectively saw imports decrease by 0.25mmt (-19 percent) to 1.19mmt in December. This was primarily due to demand decreases in Singapore and Indonesia, where offtakes were down by 0.15mmt (-38 percent) to 0.24mmt and by 0.18mmt (-38 percent) to 0.30mmt, respectively. Concurrently, Chile saw demand vanish, having imported 0.13mmt in November. Malaysia also decreased offtakes by 0.12mmt (-31 percent) from 0.39mmt in November. As such, these demand reductions were only cushioned by growth of 0.11mmt (41 percent) to 0.38mmt in Bangladesh as well as two rare imports totalling 0.12mmt in Mexico.

Atlantic Basin

Concurrent with their Pacific counterparts, LNG imports in the Atlantic Basin also increased considerably. Demand was up by 2.07mmt to 14.26mmt in December compared to 12.48mmt in November, with annualised utilisation of installed capacity at 58 percent, up 4pp month-on-month.

Robust European net demand growth of 2.15mmt (18 percent) to 14.05mmt was the leading factor. Strong import growth in the United Kingdom, France and Italy – which together increased imports by 1.61mmt (34 percent) to 6.41mmt – was complemented by total growth of 0.83mmt in Turkey, Belgium, Poland, Lithuania, Malta and Croatia. Meanwhile, Portugal saw broadly steady monthly demand of 0.33mmt. However, the Netherlands, Greece and Spain cut offtakes by 0.29mmt (-8 percent) to 3.17mmt in December.

There was, however, no demand growth in the Americas. The region saw monthly LNG demand decrease by 0.14mmt (-37 percent) overall as imports stood at 0.24mmt in December compared to 0.38mmt in November. The lack of Brazilian demand was an important factor in the region's demand picture. The

country imported 0.07mmt in November. Concurrently, demand in the Dominican Republic decreased by 0.11mmt (-73 percent) to 0.04mmt whilst Panama and Jamaica kept offtakes steady at 0.08mmt, respectively. Offtakes of 0.02mmt in Canada in November also did not reoccur in December. As such, fresh demand of 0.04mmt in Puerto Rico and 0.02mmt in the United States could only temper negative net demand growth in the region. Colombia and Argentina did not see LNG imports in December.

Middle East

Middle Eastern LNG demand decreased in December. Regional offtakes were down 0.09mmt (-10 percent) to 0.82mmt from 0.91mmt in November. Offtake levels were weighed down by lower demand in Kuwait, which saw a 0.17mmt (-53 percent) demand decrease from 0.32mmt in November to 0.15mmt in December. Concurrently, Dubai's FSRU was not seen in the market in December after it had last imported a cargo of 0.06mmt in October. Only Pakistan's

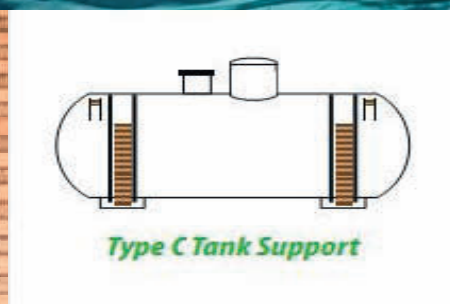
Port Qasim FSRU facilities took in 0.08mmt (14 percent) more LNG in December, pegging imports at 0.67mmt compared to 0.59mmt in November. Jordan, meanwhile, did not import a cargo in December after it had received its most recent delivery in June whilst Egypt's FSRU at Ain Sokhna was also not seen in the market. As such, the Middle East's annualised import capacity utilisation stood at 17 percent in December, down 2pp month-on-month. ■



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Environmental regulations and compliance options for the LNGC fleet

A gradual tightening of permitted carbon emissions pose challenges for steam powered LNGCs, writes Rene Laursen, Director – Fuels & Technology, ABS Global Sustainability, Denmark.

The impact of the IMO's Energy Efficiency Existing Ship Index (EEXI) is already being felt across the industry and is posing significant challenges to shipowners and operators.

However, compliance with EEXI is a technical measure requiring one-time certification. More challenging is the Carbon Intensity Indicator (CII), which is an operational measure mandating year-to-year operational efficiency improvement.

CII creates a downward trajectory for a ship's carbon intensity, which is the value of carbon emissions generated by a unit of transport work, equivalent to one nominal tonne of cargo carried over a nautical mile. The CII assigns an 'energy efficiency' rating to all ships (from A to E).

CII reporting

When specifically considering the requirement to report CII data by LNGCs already in operation, reliance on gas will be even more important than it is today. Fall-back operation on fuel oil will give a CO2 penalty when CII data is reported.

A small number of LNGCs feature newer 2-stroke dual fuel engines and have implemented increased redundancy with gas use, though only one engine maker has introduced this thus far. With a cylinder cut-out in gas fuel mode, the uptime on gas can be maintained, so we will probably see such solutions be implemented for other engine manufacturers in the future.

Besides redundancy within the engine

itself, we have seen additional redundancy in the fuel supply system, especially LNG pumps, boil-off gas (BOG) compressors, gas sensors and gas fuel filters, to secure an uninterrupted operation on gas. Over the last decades, this redundancy has seen full implementation in almost all new LNGCs.

For CII reporting, BOG burnt in the gas combustion unit (GCU) will also need to be reported. If a failure happens in the gas system, this will result in the engine system falling back into fuel oil operation, meaning that higher volumes of BOG will be sent to the GCU, further increasing the CII carbon penalty.

For older LNGCs, which do not have the luxury of full redundancy, it will be a daily challenge to stay continuously in operation on gas. A well-trained crew with enough spare parts will be a must for keeping those ships within CII compliance.

Engine types

To help owners understand the impact of CII, ABS has created a compliance scenario based on the LNGC fleet equipped with steam turbines (Figure 1), equipped with dual fuel diesel-electric (Figure 2) and equipped with 2-stroke engines (Figure 3).

The CII prediction in Figure 1 shows that 100% of steam turbine vessels will have a hard time complying with the CII and will sit in category D&E in 2030. Steam LNGCs – which represent one-third of the LNG fleet (27 mill cu m out of 86 mill cu m in total) are the least

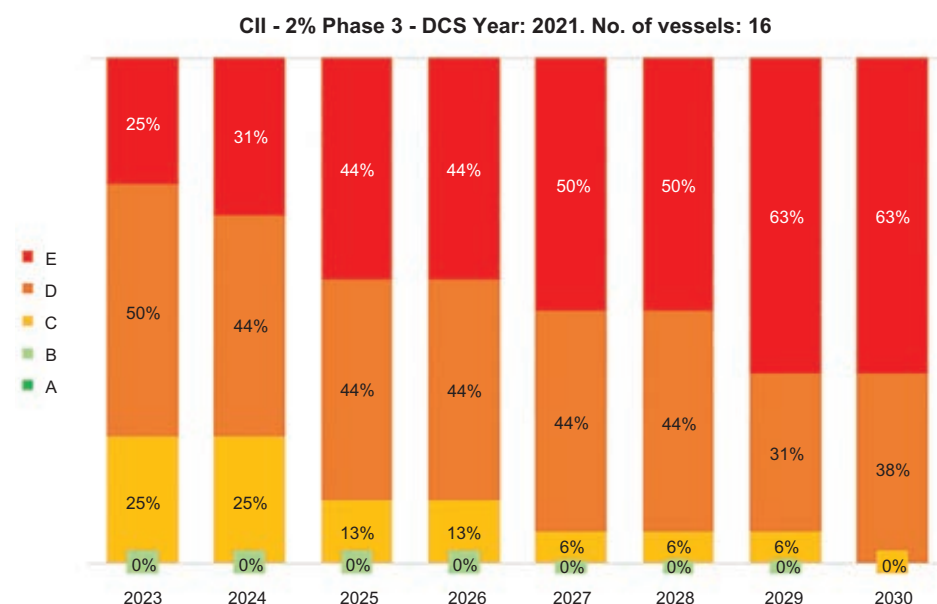


Figure 1. Source: ABS

efficient of the ships operating in the gas fleet today. To become compliant with EEXI regulations, steam-powered LNGCs will have to reduce their engine MCR by roughly 50% using a shaft power limitation solution (SHaPoLi).

However, these ships already operate with about this power level so applying SHaPoLi and reducing speed is not a practical solution, both due to the operational requirements of the LNG trade, but also due to the performance of the steam plant, which becomes very inefficient at reduced power/speed levels.

The EEXI regulations as proposed cannot be met as steam vessels do not operate the same way as the diesel vessels (for which the main concepts of EEXI have been developed) and there is no simple technical fix that can change them to make them compliant.

To do so would require major changes to those ships, requiring either:

- 1) Carbon Capture** – at present, there is no proven technology for marine applications available and no ports are equipped to receive CO2. There are carbon pre-capture technology options, that turns CO2 into solid carbon, which might be easier to handle in port. It will however require that hydrogen can be blended into gas and burned in the steam boiler. The expectation is that this is technical feasible, but it will require testing to verify it.
- 2) Installation of reliquefaction systems** – this may help in managing BOG, but it will take energy to run and will not improve the overall fuel efficiency of the steam plant or reduce emissions. But we could see this

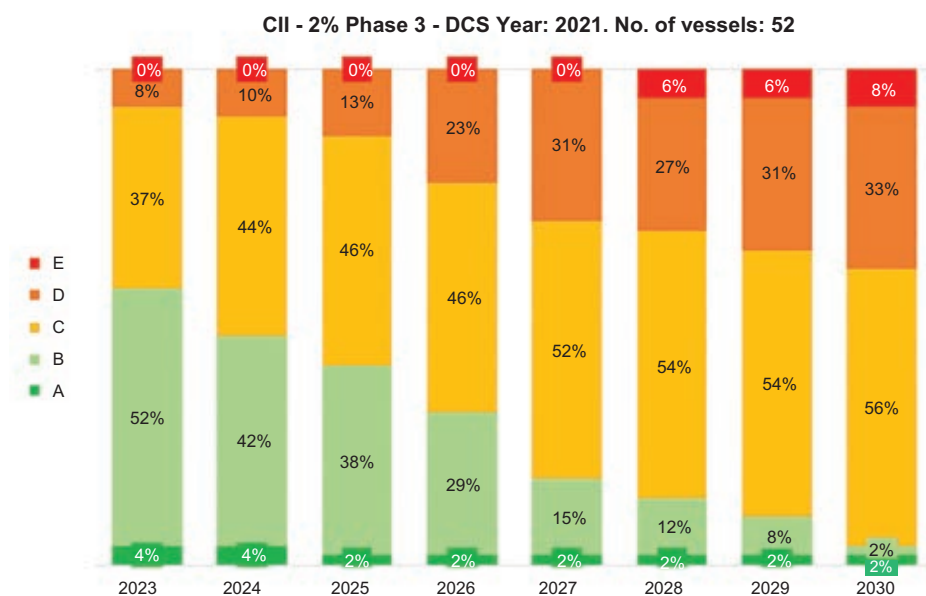


Figure 2. Source: ABS

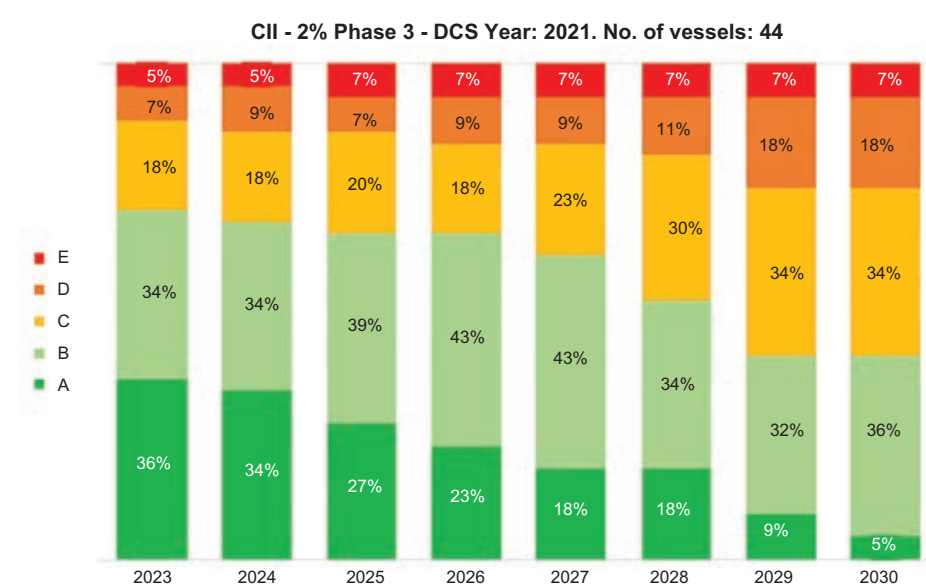


Figure 3. Source: ABS

solution being combined with the use of either ammonia or hydrogen blended into the gas going to the boilers.

3) Re-engine to convert to a dual fuel diesel vessel using LNG. This would cost double digit millions and is not foreseen as an economic solution. Adding a single 2-stroke DF engine seems to be the cheapest of the options, but it is a larger conversion, and it is not without financial and technical risks to complete such a project.

A combination of 1, 2 and 3 is of course also an option.

DFDE LNGCs

Some 40% of DFDE LNG carriers (Fig 2)

will be in category D and E by 2030.

These ships constitute a little less than one-third of the LNGC fleet, and what we can see from the reporting is that many operate on fuel oil during the ballast voyage leg.

To achieve a better CII rating will require that the amount of gas used is maximised. If this does not have enough effect, DFDE carriers will also need to reduce speed during the ballast leg to save fuel.

However, reducing speed during the laden leg is not practical as DFDE carriers already operate solely on BOG and a reliquefaction system is typically not installed on those ships.

If they reduce speed further, the BOG

will have to be burned in the GCU instead, so lowering the speed will have the opposite effect, in that more carbon will be emitted.

High methane slip

Four-stroke engines burn natural gas using the Otto cycle and they have relative high methane slip levels that most likely will be penalised in the CII. Methane oxidation catalysts designed to reduce methane slip from the exhaust gases are under development by several manufacturers and it is possible that such a system will be available for retrofit.

Some 25% of LNGCs equipped with 2-stroke engines (Fig 3) will be in category D and E in 2030. These vessels are the

latest standard, and while they are the most efficient of the three segments, they constitute a little more than one third of the fleet – though this share is growing rapidly.

Many of these ships are equipped with full reliquefaction, which means it is possible for them to reduce speed without burning additional BOG in the GCU.

Many of them are operating on fuel oil instead of gas, so improving the CII rating becomes easy, as most are dual fuel, so they can simply just switch to natural gas. Several of the 2-stroke engines burn natural gas using the Otto cycle, so also suffer from relatively high methane slip levels that most likely will be penalised in the CII. ■

Co-operative to produce modularised LNG solutions

As the world's LNG producers and developers look to 'fast track' onshore facilities to cater for the surge in demand, modular systems are being introduced onto the market. Technical Editor Ian Cochran reports.

For example, engineering and technology companies, Technip Energies and Baker Hughes have signed a Memorandum of Understanding (MoU) to co-operate on the development of a new 1 and up to 2 mill tonnes per annum LNG modularised solution for the onshore market.

To reduce time-to-market for LNG to meet today's energy demand, this joint development aims to provide an additional offering to the two companies' respective proprietary LNG modularised solutions - Baker Hughes' LNG Mid-scale Modular Solution (MMS), with a production capacity of 0.8 - 1 mill tonnes, and Technip Energies' SnapLNG with a production capacity of 2 - 3 mill tonnes per annum.

This agreement recognises the important growth in mid-size LNG, as demand increases for modular LNG projects capable of generating more gas capacity, the companies said.

Arnaud Pieton, Technip Energies CEO, said: "Co-operating in advancing technology in LNG with our long-term partner Baker Hughes is an important step for the energy industry and for our clients.

"The combination of our expertise, modular approach and references will enable shorter delivery times and better

affordability. Importantly, it reflects Technip Energies' commitment to deliver low-emission liquefaction solutions through electrification and the elimination of fugitive emissions to accelerate the energy transition," he said.

Lorenzo Simonelli, Baker Hughes' Chairman and CEO, added: "This agreement is a milestone in our relationship with Technip Energies, and it is mutually beneficial to both companies, leveraging our respective technology expertise and proven track record in the LNG space while maximising benefits for our customers.

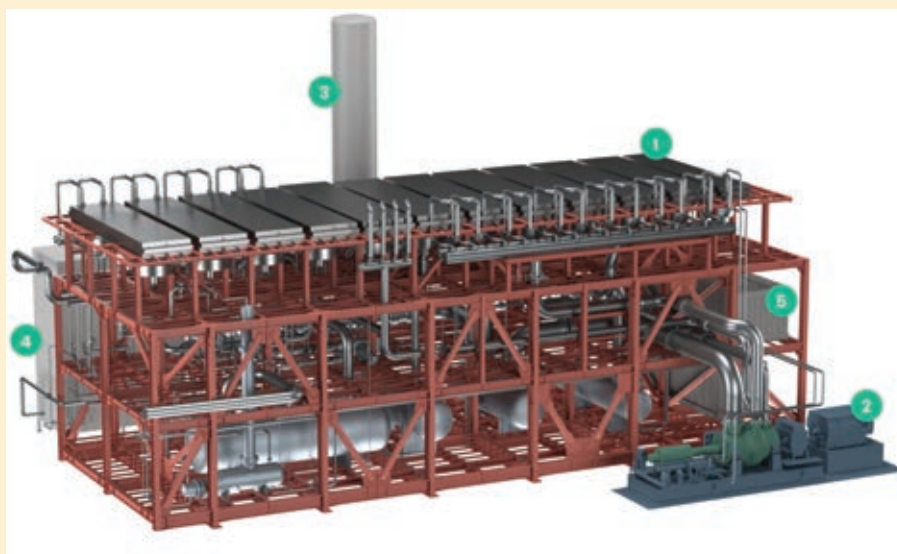
"LNG will continue to play a key role to solve the energy trilemma, and the ability to accelerate time-to-production through modularised solutions can be a differentiator," he said.

Technip Energies' patented SnapLNG is a modularised compact and fully electrified solution for production of around 2 - 3 mill tonnes per annum. This solution is claimed to provide greater certainty around both costs and scheduling. It covers liquefaction, as well as the necessary pre-treatment and utility units.

SnapLNG highlights Technip Energies' experience of more than a decade in successfully designing and delivering LNG modular projects and is particularly suited for low-to-zero carbon footprint LNG developments, the company claimed.

Plug-and-play

As for Baker Hughes, the company has provided plug-and-play modular



Baker Hughes' MMS seen on test

solutions for LNG for over 10 years, catering for different-sized projects.

The company said that its 1 mill tonnes per annum range LNG MMS provides a flexible, standardised, and scalable solution for lowering the carbon footprint of the liquefaction process and enables a faster time to LNG.

Baker Hughes emphasised that many LNG reserves around the world - both accessible and remote - are too small to be economically viable with the traditional large-scale, stick-built approach to engineering and construction.

With pre-constructed turnkey LNG modules that minimise risk and give the operator total control over business growth strategies, these reserves can be monetised.

Modules can be quickly commissioned and scaled up by adding one or more at a time.

Each module weighs 3,000 tonnes

and has a footprint of 1,300 sq m. Driven by an electric moto-compressor, the liquefaction process produces zero emissions.

The liquefaction modules come with a process module, an electric moto-compressor, a surge vessel, a cold box for up to 1 mill tonnes LNG production, and an e-room.

Each block can power up to three liquefaction modules—with up to four LM9000 gas turbines (including a spare) and one SC2-19 steam turbine.

The LM9000 can meet CCGT requirements and power-generation integration with renewables.

Baker Hughes also revealed that it is currently developing a battery pack that will eliminate the need for the gas turbines spinning reserve.

The company's MMS manufacturing plant is at Avenza in Italy, some 1.5 km from the port of Carrara. The site covers 240,000 sq m and is being expanded. ■

Port of Antwerp-Bruges plans multi-fuel future

Authorities at the Port of Antwerp-Bruges envisage LNG playing an increasingly central role as the port transitions to become a truly multi-fuel site, with major investments reshaping much of the hinterland. Fuelling Editor Malcolm Ramsay has more.

The Belgian ports of Antwerp and Zeebrugge agreed to merge in early 2022, creating the unified Port of Antwerp-Bruges, the largest export port in Europe, and major investments in new infrastructure are now planned, reshaping bunkering and energy use at the site.

“Port of Antwerp-Bruges is one of the largest bunkering ports in the world. As such, we want to play a pioneering role in the integration of carbon-neutral fuels in the bunkering market and become a multi-fuel port by 2025,” Jacques Vandermeiren, CEO Port of Antwerp-Bruges, told LNG Journal, adding that the authority plans to introduce “a high-quality licensing system and a digitisation path” as it further expands LNG bunkering.

Following merger of operations at Antwerp and Zeebrugge, the combined super-port has throughput of around 280 million tonnes per year and handles more than 200 LNG vessel calls per year.

For the first nine months of 2022, the port posted strong growth in LNG volumes, with an increase of 66.5% as compared to growth of 13.3% in liquid bulk more generally. In total, 215 LNG ships called at Zeebrugge during the same period, compared to just 121 during the first nine months of 2021.

“The growth in LNG throughput confirms the important position of Port of Antwerp-Bruges in that segment,” Dirk De fauw, Mayor of the City of Bruges and Vice-Chairman of Port of Antwerp-

Bruges, comments. “Together with the new investments, this will continue to strengthen our international position.”

Europa Terminal renewal

One of the largest investment projects for the newly combined port will be the renewal of the quayside and terminal at Europa Terminal. Scheduled to take nine years in total, this major infrastructure project will be carried out in three phases and is aimed at creating a sustainable and climate-neutral port.

Under the proposals, a quayside will be constructed with a new orientation to ensure sufficient distance between passing ships and the terminal. This new layout will also protect the nearby Galgenschoor nature reserve.

“As a world-class port, it is essential that we continue to play at the highest level and are able to accommodate the biggest ships. We are, however, aware of the impact of our activities on the surrounding area and local residents. That is why we are committed to reducing mooring emissions, among other things. With a new efficient and sustainable terminal, we are building the port infrastructure of the future,” Vandermeiren notes.

Channel deepening work will increase the draught from 13.5 to 16 metres, with Dutch dredging firm Boskalis leading a consortium that includes engineering specialists Artes-Roegiers, Artes-Depret, and Herbosch-Kiere.

“It is a strategic project for the future



The multi-fuel *Baltic Enabler*

of the port,” a spokesperson for the consortium commented. “It is technically complex and will be carried out in phases without too much disruption to container traffic. It will be a technical and operational feat, but one that we can handle thanks to our extensive expertise. Sound agreements have also been made about this with Port of Antwerp-Bruges and PSA.”

In November 2022, the port inaugurated the first world’s largest ice-rated ConRo vessel, the *Baltic Enabler*. Weighing 28,000 deadweight-tonnes, the icebreaker is owned by Swedish shipping line Wallenius Sol, and runs on LNG alongside alternative gas fuels. It will be joined by sister vessel *Botnia Enabler*.

Calling the port “the economic engine of Flanders”, Annick De Ridder, Port Alderwoman of the City of Antwerp and Chairwoman of the Board of Directors of Port of Antwerp-Bruges said, “the unified port cherishes the ambition to become the energy gateway to Europe as a ‘green port’.

First methanol tug

As part of this mission, the newly combined port is exploring a range of alternative fuels beyond LNG and in November 2022 converted its first tugboat to operate on methanol.

“This will allow our tugboat to run largely on methanol, when it’s finished, reducing its CO2 emissions significantly. It is yet another important step towards greening our fleet,” a spokesperson for the port authority said. “Methatug is part of the European Fastwater project, which aims to demonstrate the feasibility of methanol as a sustainable fuel. It also

illustrates our ambition to become a multi-fuel port by 2025.”

Conversion work was carried out by Belgian engine manufacturer Anglo Belgian Corporation (ABC), which was also responsible for installation of methanol tanks and pipes. Methanol is increasingly touted as a competitor for LNG amongst shipping lines, with container line Maersk announcing a multi-billion-dollar programme that will see it adding the first methanol-powered boxships to its fleet this year.

Multi-fuel future

The Fastwater project is funded by the European research and innovation program Horizon 2020 and includes Belgian engineering company Multi, which carried out feasibility studies, Swedish shipbuilder Scandinaos, which designed vessel modifications, and German firm Heinzmann which is adapting the injectors.

Alongside, methanol and LNG the port of Antwerp-Bruges is also exploring transport of more experimental fuels and gases such as hydrogen and carbon dioxide. Belgian prime minister Alexander De Croo is a keen supporter of hydrogen and see the port as a key part of government strategy to “become a European leader in hydrogen and [turn] Belgium into a leading, continental hub for hydrogen.”

The port is also set to receive €144.6 million to develop the Antwerp@C CO2 Export Hub - new infrastructure designed to enable industrial users in the area to transport, liquefy and export their emitted CO2 to permanent storage sites. ■



Port of Antwerp-Bruges

For the Record

ARGENTINA said it was prepared to follow through with a pledge to remove investment uncertainties for foreign energy companies, especially in the construction of liquefaction natural gas export plants as the South American nation moves to develop its huge shale-gas reserves.

International companies including US majors see huge potential for Argentina from feed-gas brought to the coast from the huge Vaca Muerta shale basin containing one of the world's largest unconventional gas reserve.

Economy Minister Sergio Massa said in a speech to business leaders that the Government in Buenos Aires was preparing an LNG investment bill to send to Congress.

The Minister was accompanied at the event by the Secretary of Industry and Productive Development José de Mendiguren and the Secretary of Energy Flavia Royon,

Also present was Pablo González, President of Argentine state energy company Yacimientos Petrolíferos Fiscales (YPF), which has various LNG development and shale gas and oil projects planned and had previously overseen the nation's small-scale trial in LNG exports.

"If one looks at the reports of the most prestigious analysts in the energy sector, they envisage that in the next few years we are not only going to stop being importers of our energy, we are going to be a big player with our product," declared Minister Massa

Massa said he hoped Congress would discuss the LNG Bill in the coming sessions. He stated that the Bill on investments in LNG plants was necessary to help the nation monetize its huge reserves and become a net energy exporter as import costs rise.

The Minister admitted that the consequences of the war in Ukraine had been having a big impact on Argentina's energy import costs for all fuels and fertilizers.

"This final result of the year on the impact of the war shows us a negative balance of between US\$3.70billion

according to the IMF and US\$5.20Bln, according to Argentina," said Massa.

He said that Argentina must honour its commercial commitments just as the counter-parties must honour theirs.

Argentina has previously had the "Tango FLNG" production vessel at the Bahai Blanca port in Argentina to briefly be an LNG exporter.

The "FLNG Tango" vessel formally started its operations in Argentina in mid-2019 and a 10-year charter term began in September 2019 with Belgian shipping company Exmar.

The winter season then started in the Southern Hemisphere and liquefaction activities were stopped by YPF in May 2020.

Exmar first announced a YPF "force majeure" for the vessel on June 25, 2020, amid a dispute over various issues and the vessel departed.

"We need a great national agreement which in the next 30 years would bring core values such as fiscal balance, competitiveness, accumulation of reserves and economic development with inclusion," stated Massa.

The minister highlighted various possibilities whereby citizens and businesses had to advance with new measures that have "a full impact on the energy field and the knowledge economy" in Argentina.

BP, the UK major, said the Cassia C natural gas development in the Caribbean nation of Trinidad & Tobago had safely delivered first gas and given a boost to feed-gas resources for the Point Fortin export plant in Trinidad.

The Cassia C project is BP's first offshore compression platform and its biggest offshore facility.

BP said the project would enable the production of low-pressure gas resources from the Greater Cassia Area.

The platform is BP's 16th offshore facility and is connected to the existing Cassia hub which lies about 35 miles off Trinidad's southeast coast.

"Cassia C is expected to produce, at peak, about 200-300 million standard cubic feet a day of gas," said the UK company.

"Production will go towards meeting the BP Trinidad & Tobago unit's gas supply commitments and will be important to sustaining LNG and petrochemical industries," said BP.

David Campbell, the President of BP's Trinidad unit said the first gas from Cassia C was important for the

nation's resource availability.

"This first offshore compression facility will allow us to unlock new resources and bring much-needed gas to market," explained Campbell.

"I am immensely proud of the teams which have been working hard to bring this facility online," he stated.

Ewan Drummond, BP senior vice president for projects, production, and operations said it was a great achievement to deliver the project.

"Cassia C is a great example of BP's resilient hydrocarbons strategy in action - providing the energy the world needs now and helping us invest in the energy transition," added Drummond.

BP said that the Cassia C platform's jacket - its legs and supporting frame - was built at Trinidad Offshore Fabricators (TOFCO) and installed in 2020.

Its topside structure was built in the McDermott fabrication yard at Altamira in Mexico and was installed in 2021.

BP added that the Cassia C project was an important step in the nation's Area Development Plan, which includes a combination of exploration, development projects and activities focused on maximizing production from the available acreage.

"First gas from Cassia C follows the recent sanction of the Cypre development and the execution of the gas supply agreement with the National Gas Company," explained BP.

BP operates projects in about 680,000 acres off Trinidad's East Coast and its Caribbean subsidiary now has 16 offshore platforms and two onshore processing facilities.

CAMERON LNG, the US plant operated by Sempra, has signed an accord with power company Entergy Louisiana to negotiate the terms and conditions for a new electric service agreement (ESA) to reduce the liquefaction and export plant's Scope 2 emissions from the electricity it purchases from Entergy.

Entergy Louisiana is a subsidiary of Entergy Corp. and provides electric services to more than 1 million customers in 58 parishes in the US Gulf Coast state as well as natural gas services to more than 94,000 customers in Baton Rouge, Louisiana.

"Entergy Louisiana is a critical partner in our efforts to reduce our overall direct and indirect greenhouse-gas emissions," said Whit Fairbanks, President of

Cameron LNG located in Hackberry, Louisiana.

"Cameron LNG strives to provide its customers with LNG that has the lowest possible emissions intensity," explained Fairbanks.

"The memorandum of understanding we have signed allows us to memorialize an agreement to bring on enough renewable power to offset the emissions for our facility, including the Train 4 expansion, when all renewable generations phases are added to the supply portfolio," he added.

Cameron LNG has nameplate export capacity of 13.5 million tonnes per annum and is working with its joint venture partners to develop a cost-effective and lower-emission potential expansion of the facility.

Cameron LNG is a joint venture between five companies with extensive energy market and shipping experience.

The partners are affiliates of Sempra Infrastructure, Japan's Mitsui & Co. and Mitsubishi Corp., France's TotalEnergies and the Japanese shipping company NYK Line.

The Cameron export plant has shipped more than 450 cargoes of US natural gas to 29 countries since the start-up in 2019.

The proposed Cameron LNG expansion would include an additional liquefaction Train with a maximum production capacity of around 6.75 MTPA.

The expansion will utilize electric compression, equivalent to adding around 300 megawatts of demand to the Entergy Louisiana system.

"We're proud to partner with Cameron LNG on this agreement," said Phillip May, Entergy Louisiana President and Chief Executive.

"Strong businesses lead to a stronger Louisiana for us all," stated May.

"Our customers are continuously seeking carbon-reduction options, and this is another example of us working with an industry leader to meet their own goals as well as our own," added the CEO.

The MOU is non-binding and sets forth a framework for Entergy Louisiana and Cameron LNG to finalize and sign a minimum 20-year agreement for the procurement of new renewable generation resources in Louisiana over an agreed-upon timeframe.

"The new electric service agreement is expected to be developed together with a new, renewable tariff option that will be filed for Commission review and approval in the coming months," the statement added.

CFENERGIA SA, a subsidiary of the Mexican Federal Electricity Commission (CFE), has closed a four-day window for pre-registration of expressions of interest from companies and investors to join an onshore LNG export project planned for the port of Coatzacoalcas in the state of Veracruz on the southern coast of the Gulf of Mexico.

“We call on private companies and investors in the energy sector to express their interest in participating in the development of an onshore terminal for the liquefaction of natural gas and commercialization of LNG in the Port of Coatzacoalcas,” said the statement.

CFEnergía noted that the Coatzacoalcas LNG export project aimed to produce 4.5 million tonnes per annum for sale to the international market.

“The project will contribute to the strengthening of the national energy sector and to optimizing the use of the transport capacity of the CFE contracted in various gas pipelines in Mexico and the United States,” explained CFEnergía.

The company added that a tender was also being issued for the development and construction of the facilities and the storage of LNG as well as the transportation of natural gas to the plant amounting to around 600 million cubic feet per day.

A joint participation scheme is planned with investors and private companies, who may participate individually or as a consortium.

CFEnergía said its part in the project would be the supply of natural gas by pipeline, providing the site for the development of the liquefaction infrastructure and assistance in obtaining the permits and authorizations.

“The selected company or consortium, in addition to covering the costs of transportation by gas by pipeline will grant CFEnergía a consideration associated with the profits derived from the commercialization of LNG and a possible participation in the ownership of the project upon completion of supply contracts,” said the Mexican company.

Interested companies were required fill out pre-registration forms through December 5 and the deadline has now passed.

The Port of Coatzacoalcas had previously been the planned site of a floating storage and regasification unit (FSRU) LNG import project involving the state energy company Petróleos Mexicanos (Pemex).

The Coatzacoalcas onshore LNG

export project is the latest of about four export projects now being developed in the country.

The most advanced is the Costa Azul project on the Pacific Coast of Mexico.

Costa Azul is an existing LNG import terminal being turned into an export plant by California-based Sempra and partners.

New Fortress Energy, the New York-based US LNG project developer, is planning a floating LNG project with Pemex off the coast of Veracruz.

The joint venture is centred on the development of the Lakach deepwater natural gas field, one of the largest non-associated gas fields in the GoM.

NFE said it would invest in the continued development of the Lakach field over a two-year period by completing seven offshore wells.

NFE is also in the process of converting two cylindrical drilling vessels to become floating LNG facilities.

CONOCOPHILLIPS and QatarEnergy will combine to provide 2 million tonnes per annum of LNG to Germany’s new onshore import terminal under development at Brunsbüttel on the Elbe River.

The Qataris and ConocoPhillips have signed two long-term LNG sale and purchase agreements (SPAs) for the LNG cargo volumes from Qatar.

The deals will see ConocoPhillips purchasing the agreed quantities from Qatar to be delivered ex-ship to the German onshore terminal currently under development in Brunsbüttel north of Hamburg.

“The LNG volumes will be sourced from the two joint ventures between QatarEnergy and ConocoPhillips that hold interests in Qatar’s North Field East (NFE) and North Field South (NFS) expansion projects,” said a statement.

The SPAs were signed by Saad Sherida Al-Kaabi, the President and Chief Executive of QatarEnergy, and Ryan Lance, the Chairman and CEO of ConocoPhillips, at a special event held in the Qatari capital Doha.

“QatarEnergy and ConocoPhillips are excited for the opportunity to responsibly and securely supply world markets with LNG from the Qatari expansion projects,” said Lance.

“These agreements will provide an attractive LNG offtake solution for our new (expansion) joint ventures with QatarEnergy and position the joint ventures as reliable sources of LNG

supply into Europe,” added Lance.

ConocoPhillips has a partnership deal in Qatar’s North Field LNG expansion projects made up of a 3.125 percent share in the NFE project and a 6.25 percent stake in the NFS project, which are planned to commence production in 2026 and 2027 respectively.

German LNG Terminal GmbH is the development company of the Brunsbüttel terminal and ConocoPhillips is one of three companies with regasification capacity there with the other two being European chemicals company INEOS and German utility RWE Supply & Trading.

The Brunsbüttel terminal is aiming to help the power and industrial needs of the northern German state of Schleswig by importing 8 billion cubic metres of natural gas, later expanding to 10 Bcm.

The Brunsbüttel terminal company is owned by a joint venture comprising 50 percent of shares held by the German Federal Government’s financial institution, Kreditanstalt für Wiederaufbau (KfW), 40 percent by Dutch utility Gasunie and 10 percent by Essen-based RWE.

Gasunie, which is also a stakeholder in the Gate LNG terminal in Rotterdam, will be the operator of the Brunsbüttel terminal.

The Brunsbüttel terminal project was one of only a couple of LNG import facilities that were under development long before the Russian invasion of Ukraine, though they had been blocked by opponents linked to the German Green Party, which is now in Government after the September 2021 German election.

Speaking at the signing ceremony, QatarEnergy’s Al-Kaabi said the deals were important for several reasons.

“They mark the first ever long-term LNG supply to Germany with a supply period that extends for at least 15 years, thus contributing to Germany’s long-term energy security,” Al-Kaabi explained.

“They also represent the culmination of efforts between two trusted partners, QatarEnergy and ConocoPhillips, over many years, to provide reliable and credible LNG supply solutions to customers across the globe,” he stated.

DAEWOO Shipbuilding and Marine Engineering (DSME), said it cancelled the last of three LNG carrier orders from 2020 to serve the Yamal LNG export facility in Arctic Russia, operated by natural gas company Novatek.

DSME said it had now cancelled all three contracts on the vessels ordered two

years ago as the client had failed to meet the pre-payment schedules for the ships on time as Western-led sanctions led to financial and other restrictions on Russia after the Ukraine invasion.

Novatek and its partners in Yamal LNG as well as the Arctic LNG II project have placed large previous orders for icebreaking LNG carriers with South Korean shipbuilders.

DSME signed the newbuilding contract in October 2020 for Yamal LNG vessels that amounted to \$760 million for the three ships.

The cancellations come amid a global scramble for newbuild LNG shipbuilding berths at yards in South Korea, China and Japan.

Seapeak LLC, the re-branded Teekay LNG following its January 2022 acquisition by New York-based equity fund Stonepeak for \$5.3Bln, confirmed that it had ordered five 174,000 cubic metres capacity vessels from another South Korea shipyard, Samsung Heavy Industries (SHI).

The ships will cost around \$1.1Bln and are scheduled for delivery in 2027.

SHI said in a recent regulatory filings that it had obtained \$9.2Bln worth of orders so far this year, surpassing its yearly order target of \$8.8Bln.

It marked the second year of SHI beating contract targets in the booming LNG shipping sector.

SHI explained that from its 45 vessel orders this year a total of 35 were for LNG carriers.

Clarkson Research Service a shipping consultancy and data collector has revised its newbuild forecast for LNG.

The firm said that a total of \$56Bln of orders had been received by the third quarter of 2022 with LNG newbuilds comprising 94 ships with 16 million cubic metres capacity and amounting to \$19.7Bln of the global order total.

DNV, the European maritime classification society, said that there was still momentum in orders for LNG-powered vessels from ship owners in the month of November even at a time of very elevated LNG bunker prices in ports such as Rotterdam in the Netherlands.

According to the latest figures from DNV’s Alternative Fuels Insight (AFI) platform, 17 LNG vessels were added in November with container vessels and car carriers constituting nearly two thirds of the orders.

The total order figure for LNG-fuelled ships for the year to date has now reached

203 and the overall total is 857 ships operating or on order.

“With the preliminary agreement at the European Union last week that shipping would be included in the EU's Emissions Trading System starting from 2024, all low-carbon options now makes even more sense,” said Martin Wold, Principal Consultant in DNV's Maritime Advisory business.

“Methane emissions will also be included, so methane slip from engines will come under even greater scrutiny,” added Wold.

The DNV data showed that the total number of LNG-powered ships in operation or on order at the end of November 2022 comprised in the largest sectors 42 containerships in operation and 176 on order, 10 car carriers operating and 106 on order, 46 crude oil tankers operating and 43 on order and 42 oil-chemical tankers operating and 46 on order.

There were also 68 bulk carriers using and planning to use LNG, 50 car and passenger ferries, 39 cruise liners, 38 tugs, 37 offshore supply

vessels and 32 RoPax ships.

This data does not include smaller inland vessels and barges that are part of the Amsterdam, Rotterdam, Antwerp (ARA) refining hub transportation in northwest Europe.

Analysts note that LNG remained the preferred low-carbon solution despite current gas pricing which is expected to last into the near future.

That's as LNG priced in fuel oil terms at Rotterdam increased on December 6 to \$2,414 a tonne compared with \$1,890 per tonne on November 6.

Among other emissions-reducing fuels, Ultra Low Sulfur Fuel Oil (ULSFO) at the Dutch port declined over the past month to \$690.00 per tonne on December 6 versus \$923.50 per tonne on November 6.

EGYPT'S Petroleum and Mineral Resources Minister Tareq El-Molla has said that Egypt was ready to meet more of the increased demand for natural gas in Europe as its LNG exports have increased to 8 million tonnes per annum in 2022 and the capacity is there for growth in 2023.

“Efforts exerted over the past years have made of Egypt one of the solutions to the ongoing energy problem,” said the Minister in a keynote speech to the eighth Egypt Oil and Gas Convention on November 27 in Cairo.

The convention was taking place at the Dusit Thani Lakeview Hotel in the Egyptian capital through November 29.

El-Molla noted that Egypt had the capacity to export up to 12 MTPA of LNG annually from the two plants located east of the Mediterranean city of Alexandria.

He said that out of the total of LNG cargo exports from the Idku LNG plant and the Damietta facility about 90 percent were delivered to Europe.

He noted that the successes of the petroleum sector in Egypt was due to the integrated strategy of partnerships between the public and private sectors and was fully supported by the government of President Abdel Fattah El-Sisi.

“The petroleum sector is also seeking mechanisms of action that would maximize cooperation with international partners to be able to make optimal use

of our natural resources,” said the Minister.

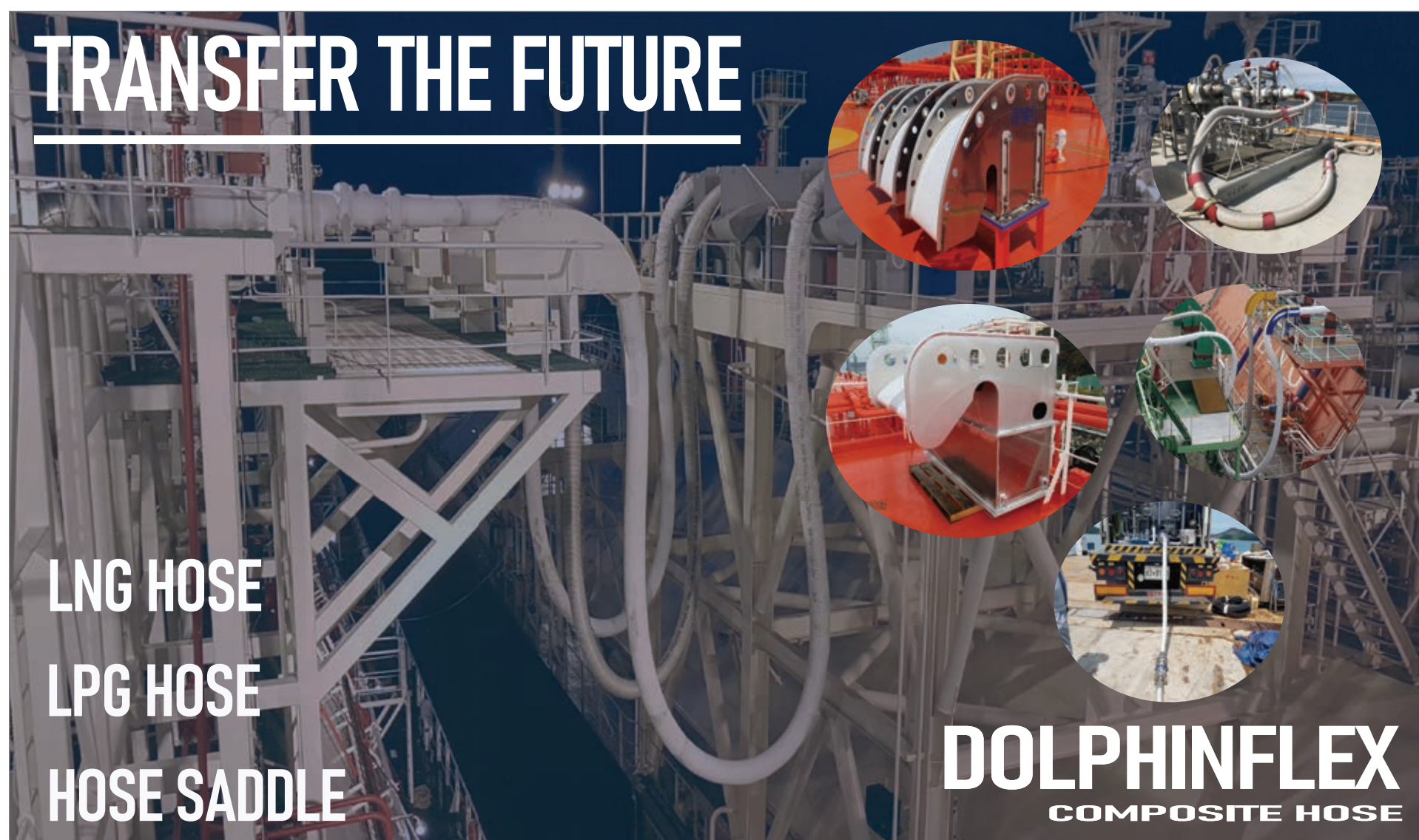
The Minister said that the strategy rested on increasing and sustaining oil and natural gas production while also reducing carbon emissions.

Egypt is set to increase LNG supplies by almost 30 percent this year compared with the 6.1MT shipped in 2021 as feed-gas supplies have stabilised.

The Minister added that Egypt's revenues from the exports of LNG, petrochemicals and petroleum products would amount in 2022 to \$19 billion.

He said that Egypt was working towards developing energy sources of all kinds simultaneously, be they traditional energy sources, especially natural gas, or renewable sources like solar energy and wind.

Egypt's previous natural gas shortages were solved by Eni's Zohr gas field discovery in the East Med and other gas finds in the nation's extensive oil and gas basins leading to a re-start of the Damietta LNG plant in February 2021 after it had been idle since the end of 2012.



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The Egyptian domestic natural gas market also receives pipeline gas from Israel.

The Damietta facility has as its shareholders the Italian energy company Eni as well as two of Egypt's state-owned companies, Egyptian Natural Gas Holding Company (EGAS) and Egyptian General Petroleum Corp. (EGPC).

The facility has nameplate capacity of 5 MTPA and with Eni owning 50 percent of the plant while EGAS and EGPC hold 40 percent and 10 percent respectively.

The second Egyptian plant, the Idku facility, has 7.2 MTPA of capacity from two Trains and is operated by Shell.

ENI, the Italian oil and gas company said Italy needed to significantly increase its LNG import capacity as in 2023 Russian natural gas imports will be in single digits compared with a year-ago and the amounts could be down to zero.

ENI Chief Executive Claudio Descalzi said at a business event in Milan that for security of supplies Italy would need four LNG import facilities rather than the three currently operating.

“The change in the flow of natural gas from Russia means Italy must expand its energy infrastructure in the South to eliminate bottlenecks in the gas grid and to enlarge its storage system,” explained Descalzi.

The ENI CEO noted that natural gas flows from Russian sources had fallen from around 38 percent of Italy's total consumption to around 10 percent in recent months.

“This year, we expect Russian natural gas be around 6 percent to 7 percent of the total, if even that,” he added.

The country currently has three LNG terminals, which have a capacity of around 17 billion cubic metres of gas.

SNAM, the gas gride operator whose name comes from Societa Nazionale Metanodotti (National Pipeline Company), operates the onshore Panigaglia LNG facility as well as having a controlling stake in the LNG facility, the “FSRU Toscana”, the floating storage and regasification unit moored off the Italian port of Livorno.

In addition to these two terminals, there is also the offshore Adriatic LNG facility owned by units of QatarEnergy and ExxonMobil and receiving cargoes from Qatar and other sources.

SNAM has also agreed to purchase two FSRUs for deployment on the East and West coasts of Italy, though Eni believes a further two terminals are needed to give

the country a total of seven LNG facilities.

Grid company SNAM also intends to invest more than €3 billion (\$3.11Bln) to boost gas network efficiency and to construct more gas storage sites.

SNAM is bringing two FSRU into the Mediterranean to increase the quantities of LNG available, including the FSRU “BW Singapore” from BW Group of Singapore.

It has also bought the “Golar Tundra” for \$350M from shipping group Golar LNG.

Italy is additionally seeking more pipeline gas from Algeria, while continuing to receive volumes on the Trans-Adriatic Pipeline from Azerbaijan.

“We have moved from Russian gas coming from pipelines to gas coming on ships,” explained Descalzi.

“We currently don't have enough LNG terminals so we believe that we need four additional facilities,” added the Eni CEO.

EQUINOR, the Norwegian oil and gas company, is boosting the feed-gas supplies from another field in the Barents Sea to produce more LNG from the Hammerfest plant on Melkøya Island in northern Norway.

Equinor said that first phase development of the Askeladd field will bring 18 billion cubic metres of gas and two million cubic metres of condensate to the market via the Hammerfest LNG plant on Melkøya.

Askeladd is a satellite field of the Snøhvit field and has been developed as a subsea tie-in to the Snøhvit facility and Hammerfest LNG.

“Askeladd is now producing and the gas and will help extend plateau production from Hammerfest LNG on Melkøya by up to three years,” said Thor Johan Haave, Equinor's Vice President for Operations and Maintenance at Hammerfest LNG.

During normal production, Hammerfest LNG delivers 18.4 million standard cubic metres of gas per day, or 6.5 billion cubic metres per year, for annual LNG output of around 4.8 million tonnes from the single liquefaction Train.

Equinor said this corresponded to the needs of around 6.5 million European households, or 5 percent of all Norwegian gas exports.

The Askeladd field is located 180 kilometres (112 miles) from land and in the first phase, Askeladd will consist of three wells in two templates, as well as a pipeline and umbilical tying back the new

templates to the existing Snøhvit facility.

“Hammerfest LNG delivers significant volumes to customers in Europe, and the gas from the Barents Sea reinforces our position as a predictable and reliable gas supplier,” added Haave.

“Askeladd and other projects in the region will ensure further value creation and production from HLNG for decades,” he stated.

The project was originally completed in 2020, but start-up had to wait until the Melkøya plant resumed operations after the fire the same year.

The development was delivered on schedule and at 650 million Norwegian crowns below the cost estimate of 5.2 billion crowns (\$520 million).

“Many employees and suppliers have helped restart Hammerfest LNG, which makes it possible to phase in both Askeladd and future projects,” added Trond Bokn, Equinor's Senior Vice President for Project Development.

Askeladd is the first of several projects in the further development of the Snøhvit field and the infrastructure around HLNG.

“Next up is Askeladd West with two new wells tied back to existing infrastructure, before further development continues with onshore compression and electrification through the Snøhvit future project,” said the company.

The Snøhvit field is located in the central part of the Hammerfest Basin in the southern Barents Sea in water depths of 310-340 metres.

Snøhvit was discovered in 1984 and the original plan for development and operation was approved in 2002.

Snøhvit is the first field to be developed in the Barents Sea and includes the Snøhvit, Albatross and Askeladd structures.

The Snøhvit licensees are Equinor (36.79 percent), Petoro AS of Norway (30.00 percent), a unit of France's TotalEnergies (18.40 percent), Neptune Energy of the UK (12.00 percent) and Germany's Wintershall DEA (2.81 percent).

EXXONMOBIL Corp. said upstream earnings potential was expected to double by 2027 from three years ago with more than 70 percent of capital investments being deployed in strategic developments in LNG projects around the world and in the US Permian Basin as well as in the South American nations of Guyana and Brazil.

The Irving, Texas-based major said that by 2027, upstream production is expected to grow by 500,000 oil-equivalent barrels per day to 4.2 million oil-equivalent barrels per day with more than 50 percent of the total to come from these key growth areas.

“Around 90 percent of upstream investments that bring on new oil and flowing gas production are expected to have returns greater than 10 percent at prices less than or equal to \$35 per barrel, while also reducing upstream operated greenhouse-gas emissions intensity by 40-50 percent through 2030, compared to 2016 levels,” said ExxonMobil.

The details came in ExxonMobil's just issued corporate plan for the next five years, with a sizeable increase in investments aimed at emission reductions.

ExxonMobil's priority LNG production areas are at the Golden Pass project in Texas, in the southeast African nation of Mozambique, in Papua New Guinea and in Qatar where its main partner is QatarEnergy.

The corporate plan through 2027 maintains annual capital expenditures at \$20 billion to \$25 billion, while growing lower-emissions investments to about \$17Bln.

ExxonMobil forecast that earnings and cash flow growth was expected to double by 2027 compared with 2019.

There would also be share-repurchase program expanded up to \$50Bln through 2024, including \$15Bln in 2022.

“Our five-year plan is expected to drive leading business outcomes and is a continuation of the path that has delivered industry-leading results in 2022,” said Darren Woods, Chairman and Chief Executive.

“We view our success as an ‘and’ equation, one in which we can produce the energy and products society needs - and - be a leader in reducing greenhouse-gas emissions from our own operations and also those from other companies,” added Woods.

The corporate plan we're laying out today reflects that view, and the results we've seen to date demonstrate that we're on the right course.”

The company also remained on track to deliver a total of about \$9 billion in structural cost reductions by year-end 2023 versus 2019.

In the Permian, the company said it was on track with its goal to reach net-zero Scope 1 and 2 emissions from its operated unconventional assets by 2030.

“We’re aggressively working to reduce greenhouse gas emissions from our operations, and our 2030 emission-reduction plans are on track to achieve a 40-50 percent reduction in upstream greenhouse-gas intensity, compared to 2016 levels,” added Woods.

“We will continue to advocate for clear and consistent government policies that accelerate progress to a lower-emissions future. At the same time, we’ll continue to work to provide solutions that can help customers in other industries reduce their emissions, especially in higher-emitting sectors of the economy like manufacturing, transportation and power generation,” stated the CEO.

INEOS, the European chemicals company, has signed a 20-year contract with Sempra Infrastructure for the supply of about 1.4 million tonnes per annum of LNG from the US Port Arthur project under development in Texas.

INEOS added that under the agreement it had signed up for 1.4 MTPA from Phase 1 of the project and also signed a non-binding heads of agreement for the potential purchase of an additional 0.2 MTPA from the Port Arthur LNG Phase 2 project under development.

The first deliveries from the US Gulf Coast plant are expected in 2027.

INEOS noted that it also signed a contract for long-term regasification capacity in a proposed German onshore LNG terminal at Brunsbüttel on the Elbe River north of Hamburg.

“These agreements mark INEOS’s entry into the global LNG market. The company is a first mover among European corporates as it secures competitive sources of energy to meet its own needs and those of its customers in Europe,” stated the company.

The agreements come at a critical time for energy markets and will provide much needed security of supply for Europe.

Brian Gilvary, Chairman of INEOS Energy, said the agreements were very important for the company.

“This long-term contract with Sempra and the agreement of regasification capacity in Brunsbüttel secures the key areas of the value chain for INEOS across the Atlantic corridor and represents a major step forward in the INEOS Energy journey at a time of significant transformation in the energy industry,” explained Gilvary.

The Port Arthur LNG project is a fully permitted facility on a 3,000-acre site in Jefferson County, Texas.

It is expected to include two natural gas liquefaction trains and LNG storage tanks and associated facilities capable of producing up to 13.5 MTPA from an initial two liquefaction Trains.

The Brunsbüttel import terminal near the Kiel Canal is being developed by the company, German LNG Terminal GmbH.

It will have initial an annual throughput capacity of 8 billion cubic metres of natural gas per year and may be expanded to at least 10 Bcm.

JX NIPPON Oil & Gas Exploration Corp., a participant in Asia-Pacific LNG projects in Malaysia, Indonesia and Papua New Guinea, has signed an accord to initiate discussions about acquiring interests in five natural gas fields offshore Peninsular Malaysia.

The move to set up talks comes in the form of a Heads of Agreement (HOA) between JX Nippon and Petronas Carigali, an exploration and production unit of Malaysian state energy company Petronas.

The five Petronas gas fields are called Bujang, Inas, Guling, Sepat and Tujoh and are located offshore Kerteh in eastern Malaysia.

JX Nippon said it conducted a joint study with Japanese state agency Japan Oil, Gas and Metals National Corp. (Jogmec) from April 2020 until September 2021 to commercialize the fields which have a particularly high carbon-dioxide level.

The Japanese plan involves bringing the gas fields into production and in an environmentally-friendly way by capturing CO₂ from the produced gas and reinjecting it into nearby mature gas fields by using Carbon Capture and Storage (CCS) technology.

“Since the study concluded that the development of such high CO₂ gas field is feasible with low environmental impact by utilizing CCS technology, JX came to the decision to further evaluate these gas fields and work together towards submitting the business value proposal to Petronas,” explained JX Nippon.

The Japanese Jogmec agency has since the study with JX Nippon changed its name to the Japan Organization for Metals and Energy Security.

“JX Nippon said that it understood that this initiative contributes to not only stable supply of natural gas to Peninsular Malaysia but at the same time expands its business in Malaysia which is one of the core countries for JX,” said the Japanese company.

Adopting the CCS solution is in line with the strategy of JX Nippon, which is part of the Japanese ENEOS Group.

A signing ceremony on the JX Nippon-Petronas accord was held in the Malaysian capital Kuala Lumpur involving Chief Executive Hasliza Othman and JX Nippon’s Managing Director in Malaysia, Yasuto Ariga.

The five gas fields are known in Malaysia as the BIGST fields and are part of a hydrocarbon cluster.

“The gas supply from the BIGST fields is important for Peninsular Malaysia’s energy security given the significant potential that exists within the cluster,” explained Petronas.

“CCS technology will be a key solutions in monetising the fields since these fields contain high CO₂ and their development will be the first CCS project in Peninsular Malaysia,” added Petronas.

LINDE Engineering, the German energy equipment supplier including for LNG, said its Linde Kryotechnik subsidiary had signed a contract to supply the CERN laboratory in Geneva, Switzerland, with two identical helium cryogenic refrigeration systems.

The Pullach, Germany-based company has already supplied systems providing more than 50 percent of the refrigeration capacity required for CERN’s Large Hadron Collider (LHC).

The LHC is the most powerful particle accelerator ever built, allowing physicists to test the predictions of different theories of particle physics.

The accelerator sits in a tunnel 100 metres underground at CERN, the European Organization for Nuclear Research.

“CERN’s Large Hadron Collider is the largest cryogenic system in the world,” explained Lars Blum, Managing Director of Linde Kryotechnik.

“We have been delivering sophisticated refrigeration systems to CERN since 1986. To be selected for the most significant upgrade of the LHC since its start-up in 2008 speaks to our track record in reliable and efficient solutions, even in the most complex research environments,” stated Blum.

The Linde company explained that each refrigeration system will have a capacity of 3.25 kilowatts at 1.9 Kelvin (-271 °C), which is close to absolute zero. The plants are required for a High-Luminosity upgrade to the LHC.

The LHC collides tiny particles of matter (protons) at an energy of 13.6 TeV

(Tera electron Volt) center of mass in order to study the fundamental components of matter and the forces that bind them together.

“The upgraded LHC will make it possible to study these in more detail, increasing the number of collisions by a factor of between five and seven,” the company explained.

For each of the plants, Linde will deliver a compressor system, a surface cold box measuring 14 metres in length and 3.5 meters in diameter, an underground cold box with a length of seven metres and a diameter of 2.5 metres and a vacuum-insulated piping network to connect the two cold boxes.

The surface cold box will cool the helium to 4.5 Kelvin (-269 °C), and the second cold box about 90 metres underground will provide the required 1.9 Kelvin (-271 °C).

Linde will also be responsible for installation and final commissioning. The handover to CERN is scheduled for mid-2026.

NATIONAL GRID plc, whose assets include an LNG import terminal southeast of London, said that all the conditions relating to the sale of a 60 percent equity interest worth around US\$7 billion in its UK gas transmission (NGG) and metering business to an Australian-Canadian consortium had been met.

The buyers of the stake are Macquarie Asset Management and British Columbia Investment Management Corporation and the full completion is now due at the end of January 2023.

The terms of the transaction, first revealed in March 2022, imply an enterprise value for NGG of around £9.6 billion (US\$11.8Bln).

On completion in January, National Grid will receive approximately £2.2Bln in cash.

Following the transaction, National Grid will also continue to own a 40 percent minority equity interest in NGG via a new holding company called “GasT TopCo”.

In addition, National Grid will also receive a further £2.0Bln from additional debt financing at completion.

NGG’s regulated asset value is estimated to be approximately £6.6Bln and its net debt is estimated to be around £3.8Bln.

The National Grid LNG terminal located on the Medway River in Kent in southeast England is not part of the deal.

The Grain LNG company is a subsidiary of National Grid Ventures, the competitive division of National Grid plc.

National Grid said that the Australia-Canada transaction forms part of National Grid's strategic pivot towards electricity and follows last year's acquisition of Western Power Distribution, the UK's largest electricity distribution business, and the announced sale of the Narragansett Electric Company in the US.

The proportion of National Grid Group's assets in electricity has now grown to about 70 percent and with 30 percent relating to gas.

The company NGG in which the 60 percent sale has been agreed, owns and operates the regulated gas National Transmission System (NTS) in Great Britain and also owns a regulated gas metering business.

As both the transmission owner and system operator, NGG owns, builds and operates the high-pressure NTS with day-to-day responsibility for balancing supply and demand in real time and facilitates the connection of assets to the transmission system.

The NGG transmission network comprises approximately 7,660 kilometres (4,763 miles) of high-pressure pipe and 23 compressor stations connecting to eight distribution networks and other third-party independent systems.

NGG also owns and operates an independent metering business, the largest owner of traditional gas meters in the UK with approximately 8.4 million domestic and commercial meters.

NEWMED Energy, the Israel company formally known as Delek Drilling, said it was considering a floating liquefied national gas plant to further develop the Leviathan gas field offshore Israel in the East Mediterranean amid other gas developments in the region.

NewMed said it had two options, an FLNG facility or a pipeline connections to Egyptian liquefaction plants located east of Alexandria.

Among its assets, NewMed Energy holds the rights to 45 percent of the Leviathan offshore gas field with the other major shareholder in the field being US major Chevron Corp. A smaller stake is held by Israel's Avner.

NewMed, which announced its name change from Delek in February 2022, also has its stake in the Aphrodite gas field in Cyprus's offshore economic zone waters,

making it one of the biggest players in the East Med.

NewMed noted that on November 8 after the earnings period the Leviathan partners also signed a non-binding MOU to examine the possibility of a collaboration for the supply of LNG to Europe together with German utility company Uniper.

“According to the said MOU, the parties will examine, inter alia, the supply of natural gas from the Leviathan project to Germany, with the natural gas liquefaction being performed through one of the existing liquefaction facilities in Egypt or through the construction of an independent floating liquefaction facility (FLNG) off Israel,” explained NewMed.

The Israel company reported net income of \$123 million in the July-to-September quarter compared with a \$50M loss in the same quarter of 2021.

Quarterly revenues rose to \$264.8M from \$206.6M in the prior-year quarter.

In the first three quarters of 2022, NewMed said that the Leviathan partners sold about 8.5 billion cubic metres of gas.

The Leviathan field in addition to supplying the Israeli domestic market also supplies Egypt and Jordan with pipeline gas.

Based on this figure, as well as the quantities sold since September the Leviathan partners estimate that the amount of natural gas to be sold in 2022 as a whole is expected to reach 11.2 Bcm versus 10.65 Bcm in 2021.

The East Med gas basin is additionally facing less geopolitical risks in the future after the October 27, 2022, signing of the maritime agreement between Israel and Lebanon.

The agreement was signed by the Prime Minister of Israel and the President of Lebanon and determines, inter alia, the maritime border between the countries.

This will allow Lebanon through the French energy company TotalEnergies and the Italy's Eni to develop Block 9 offshore Lebanon, while any potential reservoir between the countries is not developed without preserving Israel's economic rights.

The area of the potential reservoir is partially included in the area of the Alon-D licence that was previously held by the Leviathan partners.

NewMed Energy is also continuing with the process of being listed on the London Stock Exchange through a reverse takeover of UK company

Capricorn Energy.

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

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

NOVATEK, the Russian energy company and developer of the Arctic LNG II project to double up on the existing Yamal LNG plant, said it was still on track for the first Train to come on stream by year-end 2023 and Japan and China would be key customers.

“The launch of Novatek's first Train of the Arctic LNG II plant is still on scheduled and the second and third Trains for 2024 and 2026 respectively,” said Timofey Sazonov, Deputy General Director for capital construction of Arctic LNG II.

“The goal is to launch in December 2023 and we are not reconsidering deadlines,” he added.

It was reported in November that Russia may start deliveries of LNG to Japan from the Arctic LNG II plant at the end of 2023 as the Japanese were key shareholders in Arctic LNG project while still importing volumes from Gazprom's Sakhalin LNG plant.

“This project is developing successfully. We hope that next year Japan will receive additional volumes of Russian LNG, in addition to what is already supplied from Sakhalin,” said Mikhail Gauzin, Russian Ambassador to Tokyo.

The Arctic LNG II project construction on the Gydan Peninsula involves three processing Trains each with capacity of 6.6 million tonnes per annum.

The Novatek company holds a 60 percent shareholding in Arctic LNG II and there are four other 10 percent stakeholders.

The 10 percent holdings in Arctic LNG II belong to TotalEnergies, China National Petroleum Corp., China National Offshore Oil Corp. and a Japanese investor group comprising Mitsui & Co. and the government institution, the Japan Organization For Metals and Energy Security, previously known as Japan Oil, Gas and Metals National Corp.

TotalEnergies also has a 19.4 percent stake in the actual Novatek company, though recently withdrew its two directors from the Novatek board.

Additionally, Novatek's most recent Sales and Purchase Agreements were signed at the start of 2022 with two Chinese companies.

Novatek signed two new supply agreements in January 2022 with units of China's ENN Group and Zhejiang Energy Gas Group.

The Russian company's subsidiary, Novatek Gas and Power Asia, signed a deal with the ENN's trading firm ENN LNG (Singapore) Ltd.

The SPA stipulates cargoes from Arctic LNG II amounting to a total of 600,000 tonnes per annum for a term of 11 years.

LNG deliveries will be on a delivered ex-ship (DES) basis whereby Novatek supplies the shipping to ENN's Zhoushan LNG receiving terminal in eastern China.

The second Novatek 2022 deal was with Zhejiang Energy in the form of a long-term SPA from the Arctic LNG II.

That accord is for the supply of up to 1 MTPA from the facility and is also on a DES basis to Zhejiang Energy's designated terminals in China.

The TotalEnergies 19.4 percent stake in the Novatek company cannot be sold at present because of sanctions.

However, the Paris-based company withdrew its two directors from the Board of Novatek at the start of December.

“In view of the European sanctions in force since the beginning of the war, the two directors representing TotalEnergies on the board of directors of Novatek are led to abstain from voting in meetings of the board of directors of this company, in particular on financial matters,” explained TotalEnergies in a recent statement on the issue.

TotalEnergies stated that it would no longer account for its stake in Novatek in the Paris-based company's accounts.

Subsequently, TotalEnergies has said it would record an impairment of about \$3.7 billion in the TotalEnergies accounts for the fourth quarter of 2022.

PAPUA NEW GUINEA Prime Minister James Marape urged Australian LNG and mining sector investors to “take my people with you” in an address to a mining and petroleum conference in Sydney on future development projects in his Oceania nation.

PM Marape outlined his wishes at the 16th PNG Mining and Petroleum Investment Conference held in Australia's largest city.

He was accompanied by Petroleum Minister Kerenga Kua, Mining Minister Sir Ano Pala and International Trade and

Investment Minister Richard Maru at the PNG-focused conference which was being held for the first time since 2018 because of Covid-19 travel risks.

Australian energy company Santos is one of the major shareholders in the PNG LNG plant where US major ExxonMobil is the operator of the facility at Caution Bay, northwest of the PNG capital Port Moresby.

ExxonMobil holds a 33.2 percent interest in PNG LNG, though Santos became the majority shareholder with its 2021 takeover of PNG-based energy company Oil Search.

The expansion project called Papua LNG is led by French major TotalEnergies and involves others companies including Santos.

The existing PNG plant has capacity of over 9 million tonnes per annum and the Papua project proposal is for an additional two liquefaction Trains at the PNG plant site to more than double current production to about 20 MTPA.

The Prime Minister's speech also mentioned major mining projects and the fact that his country did not wish to miss out on the benefits that could emanate from the current global boom in demand for energy and mined commodities.

"You must show some progress, I don't want warehousing of licences," stated Marape.

The biggest undeveloped mining resource in the Pacific nation is the Wafi-Golpu copper-gold project, owned by Australia's Newcrest Mining and South Africa's Harmony Gold Mining.

The project has long been stuck on the drawing board, partly due to a battle with the government over how big a share of the project's gold output would go to the PNG government.

"We understand you are not a charity but please take my people with you," Marape told the energy and mining executives who were present.

Marape has been pressing for PNG to receive a bigger share of the benefits from LNG, oil and mining since he first became the PM in 2019.

He has made clear that his priorities are jobs and the economic upliftment of PNG citizens with world-scale and environmentally-friendly projects instead of being held back by the paternalism offered by well-off Western and regional green radicals.

A statement from the PNG government said that in addition to his speech, he was meeting in Sydney with senior executives of Santos and

ExxonMobil as well as mining company executives from Newcrest and others.

"I give an assurance to developers of projects like the Porgera re-opening, the Wafi-Golpu project, Papua LNG and P'nyang LNG feed gas that negotiations are close to completion," stated Marape.

The Prime Minister highlighted in his speech the country's ability to sell commodities such as LNG shipped from PNG to Asia.

"Last year when I visited China I was able to sell 3 million tonnes of gas. Papua New Guinea is using its bilateral network and multilateral networks to trade and can find markets," he told the conference.

The P'nyang Gas Agreement was signed between the licence joint venture partners and the Government of PNG at the end of February 2022.

The agreement provided a framework for the future development of the P'nyang project which is now expected to become a priority.

The Papua Gas Agreement covers the PNG petroleum retention licence PRL15, including the Elk-Antelope onshore gas field which is among the largest in the Asia-Pacific region.

The ExxonMobil-operated P'nyang project would deliver feed gas through new upstream facilities in the Western Province of PNG and linked to the LNG plant.

It is expected that up to 5 percent of P'nyang gas produced would also be made available to support the government's electrification efforts in Western Province and at other agreed locations.

PEMBINA PIPELINE Corp., the Canadian pipelines company and joint owner of the Cedar floating liquefied natural gas project, has issued a business update for 2023, including the sale of the company's interest in Pembina Gas Infrastructure's Key Access Pipeline System.

PGI, which is owned 60 percent by Pembina and 40 percent by US investment firm Kohlberg Kravis Roberts (KKR), has through its subsidiary entered into an agreement to sell its 50 percent non-operated interest in the Key Access Pipeline System.

Under the agreement, PGI will continue to fund its share of the project costs under the current scope until the end of 2023.

The pipeline system will bring condensate and other petroleum liquids produced with natural gas in the Montney and Duvernay regions in

northwest Alberta to the processing and storage hub in Fort Saskatchewan.

Pembina said the current scope aligns with the capital cost estimate of C\$1 billion (\$733M), net to PGI, most recently disclosed by the operator.

Upon closing of the sale, PGI will receive cash proceeds of C\$662.5 million (US\$485.4M).

PGI will use the proceeds to repay drawn credit facilities associated with the KAPS construction funding.

Closing is expected to occur in the first quarter of 2023 and is subject to approval by the Canadian Commissioner of Competition as well as satisfaction of other closing conditions.

Pembina and the Haisla First Nation have a 50-50 partnership joint venture to develop a floating LNG export plant near Kitimat in British Columbia.

The FLNG project will be located in the Douglas Channel and is expected have a liquefaction capacity of up to 4 million tonnes per annum of LNG.

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

Cedar LNG has completed initial work that has allowed regulatory and engineering work streams to be well advanced for a project at this stage.

The project has secured its LNG export licence from the Canada Energy Regulator.

Front-end engineering and design activities are currently underway and will continue into 2023.

Early FEED work has already identified opportunities to optimize the site layout, thereby considerably reducing the project footprint and local area disturbance.

Cedar FLNG expects to make a final investment decision in the second half of 2023.

Pembina additionally said its 2023 gross earnings guidance was for between C\$3.5Bln to C\$3.8Bln and a 2023 capital investment programme will be around C\$730M.

In the KAPs deal, Scotiabank is acting as financial advisor and Torys LLP as legal advisor to PGI.

Blake, Cassels & Graydon LLP is acting as legal advisor to Pembina.

REPSOL, the Spanish energy company, said the first terminal in Spain to supply liquefied natural gas as marine fuel was growing its customer base and a second LNG bunkering facility in the same region was under development.

The first ship fuelling station came into operation in July 2022 in the northern Spanish port of Bilbao.

The terminal has a cryogenic tank with a storage capacity of 1,000 cubic metres.

A second terminal of the same capacity is already under construction in the neighbouring port city of Santander and it is scheduled to come into operation during the first half of 2023.

Both terminals are co-financed by the European Commission through the CEF-Connecting Europe Facilities Programme.

The LNG bunkering stations are part of the collaboration agreement that Repsol formalized in 2019 with Brittany Ferries, the French shipping line linking Spain, France and the UK for freight and passenger traffic.

Among the Brittany Ferries fleet is the LNG-powered vessel "Salamanca" which is refuelled at Bilbao.

Another Brittany Ferries ship, the "Santoña", is also covered by the contract for LNG

"These LNG terminals are, thus, another example of the Repsol's commitment to the decarbonization of transport with a multi-technological approach using all available solutions," said Repsol.

"In the design of the terminal in Bilbao, operational flexibility has been a priority, which provides multiple advantages to customers," it added.

"The terminal allows access to any type of vessel, thus covering the needs of a medium-sized segment for LNG refuelling. The facility also permits simultaneous loading of passengers and fuel, thus optimizing operations on land and in maritime traffic, which leads to a reduction in emissions for port operations," explained Repsol.

Repsol noted that the shipping industry is showing great interest in adopting LNG as shown in data from European maritime classification society DNV.

The LNG-powered fleet worldwide currently consists of some 320 vessels, representing a growth of 30 percent over the previous year.

In 2021, there were also 500 orders for the construction of ships with this LNG capability and propulsion technology that will be delivered to their owners in the next five years.

At present, Spain has Europe's largest network of six operational LNG import, regasification and storage terminals around its coastline from where fuel can

be supplied to the growing fleet of LNG-powered ships.

Repsol, for its part, has extensive experience in this type of supply, having carried out more than 100 LNG bunker operations to 28 different vessels in seven Spanish ports.

SEMPRA Infrastructure, a subsidiary of California-based Sempra, has signed another long-term sale and purchase agreement, its third in recent weeks, and this time with French utility Engie.

The volumes will come from the first phase of development at the proposed Port Arthur facility in Jefferson County in Texas.

Engie has agreed to purchase about 875,000 tonnes per annum of LNG for 15 years.

The cargoes will be on a free-on-board basis whereby Engie lifts the volumes with its own chartered ships.

Sempra, which also operates the Cameron LNG plant in Louisiana, said that the agreement provided a framework as well to explore ways to lower the carbon intensity of LNG produced from the Port Arthur venture.

“Engie is a leader in Europe's energy transition and a great addition to our Port Arthur LNG customer portfolio,” said Justin Bird, Chief Executive of Sempra Infrastructure.

“We are excited to work with Engie to deliver reliable energy resources like LNG and contribute to the security of natural gas supply to their clients,” he added.

Sempra Infrastructure also recently announced that it had finalized an engineering, procurement and construction contract with US engineering firm Bechtel Energy to build Port Arthur LNG.

Sempra has additionally entered into long-term agreements with US major ConocoPhillips and European chemicals company INEOS for the sale and purchase of about 5.0 MTPA and 1.4 MTPA of LNG respectively.

“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,” said Sempra.

The Port Arthur LNG Phase 1 project is fully permitted and will comprise two large liquefaction Trains, several LNG storage tanks and associated facilities capable of producing 13.5 MTPA.

“A similarly-sized Port Arthur LNG

Phase 2 project is also competitively positioned and under active marketing and development,” added Sempra.

SHELL Petroleum NV, a subsidiary of Shell plc, has agreed to pay \$2 billion to acquire Europe's largest renewable natural gas (RNG) company, Nature Energy Biogas.

Based in Denmark, Nature Energy is a producer of RNG from agricultural, industrial and household waste.

Shell is taking over the company from the current owners who are three equity and pension funds, Davidson Kempner Capital Management LP, Pioneer Point Partners and Sampension.

“By purchasing the shares in Nature Energy, Shell will acquire the largest RNG producer in Europe, its portfolio of cash generative operating plants, associated feedstock supply and infrastructure, its pipeline of growth projects and its in-house expertise in the design, construction, and operation of innovative and differentiated RNG plant technology,” explained Shell.

“This acquisition will further increase Shell's ability to work with its established customer base across multiple sectors,” added Shell.

“It will also support Shell's ambition to profitably grow its low-carbon fuels production and customer offering in our world-leading marketing business,” stated the company.

Huibert Vigeveno, Shell's Downstream Director, said the acquisition would enable Shell to maintain its competitiveness in low-carbon fuels from capabilities across the value chain.

“Acquiring Nature Energy will add a European production platform and growth pipeline to Shell's existing RNG projects in the United States,” explained Vigeveno.

“We will use this acquisition to build an integrated RNG value chain at global scale at a time when energy transition policies and customer preferences are signalling strong growth in demand in the years ahead,” he declared.

Shell said that the transaction was subject to regulatory approvals and was expected to close in first quarter of 2023.

“Nature Energy is cash generative, and the acquisition is expected to be both accretive to Shell's earnings from completion and deliver double-digit returns,” said the company.

Shell noted that Nature Energy was founded in 1979 as a natural gas distributor.

The company established its first biogas plant in Denmark in 2015 and now has 14 operating plants with associated infrastructure, feedstock arrangements and current 2022 production of around 6.5 million MMBtu per annum.

The company also has a line of around 30 new plant projects in Europe and North America.

More than a third of these projects are in medium to late development stage in Denmark, the Netherlands and France and could deliver up to 9.2M MMBtu per year, subject to future final investment decisions and relevant regulatory approvals.

Shenzhen Energy, the Chinese natural gas and power company, said it signed a long-term LNG supply agreement with UK major BP for volumes to fuel gas-fired power plants in what is the second large contract signed by a Chinese company in November 2022.

SHELL PLC and BP plc, the UK-based majors, have agreed to restructure their ownership in Trinidad and Tobago's Atlantic liquefied natural gas project at Point Fortin in Trinidad.

The Atlantic LNG facility, which used to be the biggest supplier of LNG to the US before the shale-gas boom and the US become an exporter, has four liquefaction Trains with a total capacity of about 15 million tonnes per annum.

The overhaul in shareholdings was outlined in a statement from BP and comes as Atlantic LNG is now a key supplier to European nations such as the UK and also ships cargoes to South America as well as Asia.

Other countries supplied in the past year included India, Italy, Brazil, Caribbean neighbour Jamaica and the US territory of Puerto Rico.

A statement explained that the new agreement has resulted in higher pricing and more Trinidad & Tobago Government participation.

Each Train has different shareholder structures and trading agreements and Atlantic LNG still plays a key role in the development of the country's natural gas resources which have been pursued by both BP and Shell.

Trinidad's National Gas Company has shares in the facility's liquefaction Train four and the company has now increased its ownership to Trains two and three.

Chinese Investment Co. used to hold 10 percent of Train one, though is no longer actively involvement in the project.

Stuart R. Young, the Trinidad and

Tobago Minister of Energy and Energy Industries and Minister in the Office of the Prime Minister, said that the Ministry had reached agreement with the Atlantic LNG shareholders on “substantiative commercial terms” for the revised structure of the Atlantic LNG venture.

This followed the signing of a Heads of Agreement in January 2022.

The long talks were first initiated by the Government in 2018 with Atlantic shareholders following which the parties agreed that the Atlantic facilities and its complex shareholder structure and commercial agreements needed to be simplified.

“The Government and Atlantic shareholders, inclusive of companies affiliated with BP Trinidad and Tobago, Shell Trinidad and Tobago Limited, and T&T's NGC have agreed on a restructured ownership and commercial framework to see the Atlantic business operations consolidated into a single entity,” explained the Government.

In the revised structure, NGC will increase its equity share in the Atlantic project, consistent with the commitment by the Government to maximise value to the country from the sale of hydrocarbon resources.

“The new contracts will also facilitate a market-reflective pricing mechanism that provides fair value from the sale of LNG for both the country and the shareholders,” said the Government.

Shell's equity stake in the Atlantic plant ranged from 46 percent to 57.5 percent in each of the four Trains at the facility.

Under the new ownership agreement, Shell and BP have reduced participation in two Trains.

However, BP and Shell remain owners of the facility's three active liquefaction Trains.

This will result in a unitized facility owned by one joint venture with a common ownership and commercial framework for gas supply, processing, LNG production and natural gas liquids offtake.

“The agreement will lead to greater commercial certainty by freeing up billions of dollars in investment for exploration and production,” said the statement.

“It will help develop the Manatee project, which holds 2.7 trillion cubic feet of gas reserves on the Trinidad side,” it added.

“Atlantic LNG remains a world-class exporter in the increasingly competitive

LNG global market and is a key enabler for the production and export (monetization) of the country's natural gas resources," the statement declared.

"The agreement is, therefore, a significant step forward to securing the long-term viability of the LNG business in Trinidad and Tobago," it added.

"These commercial terms will be reflected in fully termed agreements, with final and binding agreements to be effective from October 2024," the Government concluded.

SHENZHEN Energy said the agreement was its first long-term international LNG contract and the signatory was BP's trading unit in Singapore.

The Shenzhen Energy statement did not specify another details about the agreement, nor the duration of the contract.

BP has been involved in importing LNG into China since 2006 when it brought shipments from Australia for the longest-standing Chinese LNG importer, China National Offshore Oil Corp..

The first BP cargoes were unloaded at the Dapeng Guangdong terminal, located on the Pearl River Delta near Shenzhen City.

"To meet the demand of Guangdong province and Shenzhen city for energy security and stability, Shenzhen Energy is making efforts to promote the construction of gas power plants," explained the Chinese company.

"It is estimated that around 2024, as the gas power plants go into operation, the group's total demand for natural gas will significantly increase," added Shenzhen Energy.

This is the second major LNG supply deal with a Chinese company after QatarEnergy signed a 27-year sale and purchase agreement (SPA) on November 21 with China Petroleum & Chemical Corp.(Sinopec) for the supply of 4 million tonnes per annum.

Under the terms of the SPA, the contracted LNG volumes will be supplied from QatarEnergy's North Field East (NFE) LNG expansion project and will be delivered to Sinopec's receiving terminals in China.

Saad Sherida Al-Kaabi, the Minister of State for Energy Affairs in Qatar and President and CEO of QatarEnergy, said at the time that the Sinopec deal would "further solidify the excellent bilateral relations" between China and Qatar.

China has been the world's largest

buyer of spot LNG cargoes in recent years along with Japan and South Korea. The shipments are priced on the Japan-Korea Marker currently at more than \$30 per million British thermal units.

However, the share of contracted volumes supplied to China's network of 23 LNG import terminals has been rising and now amounts to around 80 percent compared with 60 percent at the end of 2020.

TALON ENERGY and Strike Energy of Australia have signed an agreement to supply LNG exporter Santos with natural gas for the domestic market from their Walyering gas field in the Perth Basin of Western Australia.

Talon and Strike said they would supply Santos, operator of the Darwin LNG export plant and the Gladstone LNG facility in Queensland, with a minimum of 36.5 petajoules, or 1.05 billion cubic metres, of gas from the first quarter of 2023 for a period of five years.

"The agreement for the Walyering gas field in the Perth Basin is on a take-or-pay basis, with the ability to supply additional gas production at an agreed price, on an 'as available' basis," they said.

The domestic gas sales to Santos came as the Australian Federal Government prepared action to take more control of the nation's natural gas markets to force down prices for households and businesses.

Strike holds a 55 percent stake in the Walyering gas field and is the operator while Talon owns 45 percent.

Both companies are listed on the Australian Securities Exchange and both of their shares rose by up to 6 percent after the statement.

"Santos has an established domestic sales gas portfolio in Western Australia and this collaboration enables the JV to bring Walyering's gas production to market in a timely manner and on attractive terms," they added.

"The agreement is US-dollar denominated and linked to escalation in US Consumer Price Index," they said.

The gas supplied under the contract will be sourced from the gas field licence EP447 where the venture is constructing a low-cost gas processing facility and associated infrastructure and with gas production being delivered into the Parmelia Gas Pipeline.

"The signing of the Gas Sales Agreement with Santos is a momentous moment for Talon and the JV," said Talon's Chief Executive Colby Hauser.

"With the GSA now finalised the focus of activities at Walyering will be on the imminent construction and commissioning phase of Walyering's development, followed soon after by strong cash flows underpinned by this agreement," stated the CEO.

"The firm pricing secured in the GSA provides a high degree of certainty with respect to future gas sales income for Talon, and in conjunction with our recent capital raising, provides the company with a strong foundation for its future project development and growth," explained Hauser.

Strike's Chief Executive Stuart Nicholls said that the agreement with Santos provided a commercially attractive route for the Walyering venture to sell its gas stream in a strong pricing environment.

"As Strike commissions the field, the flexibility of this agreement is supportive of Strike managing the reservoir performance while maximising early revenues during the ramp up period," explained Nicholls.

"Walyering's incredibly short 15-month journey from discovery to planned start-up shows the opportunity and immediacy in returns and value from Strike's substantial undeveloped acreage position in the Jurassic wet-gas play in the Perth Basin," he stated.

Santos said the agreement was facilitated by existing Santos customer relationships and pipeline transport positions, with gas to be delivered into the Santos domestic sales gas portfolio in WA.

Santos CEO Kevin Gallagher said Santos continued to support Western Australian industry through the delivery of competitively priced domestic natural gas.

"We are delighted to sign this agreement with the Walyering joint venture and bring this gas to market in a timely manner, reinforcing our position as WA's biggest supplier of domestic gas," stated Gallagher.

TC ENERGY Corp., the North American pipeline and resources company with large-scale natural gas connections for the LNG sector in the US and Canada, has held its annual Investor Day with project and earnings forecast updates.

"We are reaffirming our long-term comparable EBITDA growth outlook of 6 percent by 2026 and a 3 to 5 percent annual dividend growth rate," said TC Energy.

François Poirier, TC Energy's President and Chief Executive said the company was confident moving forward.

"We have an industry-leading \$34 billion-worth of fully sanctioned, secured capital projects and an unparalleled opportunity that will continue to differentiate TC Energy as a leader in energy infrastructure," explained Poirier.

"We are leveraging our extensive North American footprint to expand and extend the reach of our services that will also align with the evolving energy mix and needs of our customers," he added.

One of TC Energy's main projects is the Coastal GasLink from northeast British Columbia to the LNG Canada export project under construction and about 80 percent at Kitimat.

The plant when completed will be operated by Shell on behalf of its Asian partners from Japan, South Korea, Malaysia and China.

Coastal GasLink had previously executed definitive agreements with LNG Canada that addressed and resolved disputes over certain incurred and anticipated costs of the Coastal GasLink.

The revised project agreements incorporate a new cost estimate for the project of \$11.2Bln, which reflects an increase from the original project cost estimate due to scope increases and the impacts of Covid-19, weather and other events outside.

"With respect to the Coastal GasLink Project, we continue to face significant cost pressures in Western Canada relating to labour costs and shortages of skilled labour, along with contractor underperformance and disputes," TC Energy told participants at the Investor Day.

"The project has also been impacted by other unexpected events including drought conditions, and erosion and sediment control challenges," explained the Calgary, Alberta-based company.

"As a result, we now expect a material increase in project costs and TC Energy's corresponding funding requirements," it stated.

"We are actively pursuing cost mitigants and potential recoveries from contractors to offset a portion of these costs, some of which may not be conclusively determined until after project completion," added TC Energy.

"We expect to provide an updated capital cost estimate in early-2023 that will incorporate the scope of recent developments," it stated.

The Coastal GasLink is heading for

mechanical completion by year-end 2023.

“We continue to see long-term value in the Coastal GasLink Project for the WCSB, our customers and the communities across the project route,” declared CEO Poirier.

TC Energy also previously noted that its Louisiana XPress pipeline, a Columbia Gulf project, was phased into service during the third quarter of 2022 and has increased market share from 25 percent to about 30 percent of volumes destined for export from third-party US LNG facilities.

TC Energy added that after the third quarter, in November 2022, the Gillis Access Project was sanctioned for development.

This is a 1.5 Bcf per day greenfield pipeline system that will connect supplies from the Haynesville basin at Gillis to markets elsewhere in Louisiana.

The 42-mile Louisiana header system will also enable the rapidly growing Louisiana LNG export market to access Haynesville-sourced gas production as well as create a platform for further growth into the southeast Louisiana markets.

TC Energy said the Gillis project had an anticipated in-service date in 2024 and a total estimated cost of US\$400M.

The company stated it had its secured capital program and was expected to be primarily funded through a combination of increasing cash flows, incremental long-term debt and hybrid capacity, as well as other sources of capital.

“We expect that any funding requirements exceeding our targeted annual capital expenditure range of \$5 billion to \$7 billion will be funded through our flexible \$5+ billion divestiture program that is expected to be executed during 2023,” explained TC Energy.

TOTALENERGIES Chairman and Chief Executive Patrick Pouyanné met Lebanese Minister of Energy and Water Walid Fayad at the French major’s Paris headquarters to mobilize drilling teams for the Block 9 offshore resource that will make Lebanon an energy producer in what is becoming the Eastern Mediterranean LNG and pipeline gas hub.

CEO Pouyanné also called for tenders to secure the drilling rig and the selection of the rig would be made in the first quarter of 2023.

“Pre-orders have also been placed with suppliers for equipment required for the well,” added Pouyanné

“In parallel, offshore resources are

being mobilized to contribute to the environmental studies which will be finalized by the end of June 2023,” the CEO stated.

Total Energies and its partner Eni of Italy aim to complete their drilling campaign as soon as possible in 2023.

Lebanon and Israel, who have no diplomatic ties, finalised a US-brokered maritime demarcation deal on October 27, 2022, allowing the exploration and production plans to advance.

Under the agreement, the disputed waters will be divided along a line that straddles the Qama gas field prospect.

Production and exploration will be based on the Lebanese side, but Israel will be compensated for any gas extracted from its side of the line.

“Following the signature of this Framework Agreement, the Block 9 partners will initiate the exploration of an already identified prospect, which might extend both in Block 9 and into Israel waters south of the recently established maritime border line,” explained Total Energies.

Other companies operating in the region include those from Egypt and Israel’s New Med Energy and Chevron Corp. through their joint venture ownership of the Leviathan gas field offshore Israel.

New Med, which announced its name change from Delek Drilling in February 2022, also has a stake in the Aphrodite gas field in Cyprus’s offshore economic zone waters, making it one of the biggest players in the East Mediterranean.

New Med has said it had two LNG options in the area, a floating LNG facility or a pipeline connections to Egyptian liquefaction plants located east of Alexandria.

TRAFIGURA, the global commodities company and a liquefied natural gas market player, has entered a \$3 billion loan deal for four years and underwritten by the German Federal Government to help secure LNG cargoes for Germany.

Trafigura said the loan was jointly arranged and underwritten by Deutsche Bank and another international bank and syndicated to a number of participating banks.

“We are proud to be contributing to Europe’s energy security by supplying this significant volume of gas to Germany backed by our extensive portfolio and long-term US LNG contracts,” said Richard Holtum, Head of Gas and Power Trading for Trafigura.

He added that more than 25 banks participated in the successful syndication which was 1.6-times oversubscribed.

“The loan is secured, in part, by a guarantee under the Untied Financial Loan program (UFK) of the government of the Federal Republic of Germany acting through the German Export Credit Agency (ECA), Euler Hermes Aktiengesellschaft,” explained Trafigura.

“The program is a tool to secure the long-term delivery of strategic commodities to Germany,” added the Geneva-based firm.

Trafigura handled LNG volumes last year amounting to more than 14 million tonnes, which was a 10 percent increase on the previous year.

Commodities firm’s like Trafigura, Vital, Gunvor and Glencore have increased the size of their LNG trading portfolios in recent years.

Trafigura, whose volumes include cargoes from Freeport LNG in Texas, said the Germany-backed loan would support a new commitment by Trafigura to deliver substantial volumes of gas into the European gas grid, and ultimately into Germany, over the next four years.

“Trafigura will supply the gas to Securing Energy for Europe (SEFE), which was recently recapitalised by the German government,” said Trafigura.

“The first gas delivery took place on 1 November 2022 and Trafigura will primarily use existing quantities from its global gas and LNG portfolio to help secure gas supplies to SEFE,” it added.

WINTERSHALL DEA, the company viewed as Germany’s national oil and gas player and which is a shareholder in the Norwegian-run Hammerfest LNG export project, has submitted a plan for development of the Dvalin North gas field in the Norwegian Sea to help boost pipelines gas supplies for Europe.

The Plan for Development and Operation (PDO) was handed over at a brief ceremony at the Norwegian Ministry of Petroleum and Energy.

Wintershall Dea said the hand-over marked “rapid progress” from exploration to execution for the Dvalin North field, which was the largest discovery offshore Norway in 2021.

The company said that Dvalin North was the latest in a line of Wintershall Dea-operated and partner-operated project sanctions on the Norwegian Continental Shelf this year.

“This field builds on our existing

position as one of the largest producers of Norwegian gas at a time when Europe needs more energy,” said Dawn Summers, Wintershall Dea’s Chief Operating Officer.

“Committing to a development only the year after discovery is very rare, but shows our determination to supply natural gas to Europe through a major investment in Norway,” she stated.

The Dvalin North gas field is located around 200 kilometres (125 miles) off the coast of Northern Norway, west of Sandnessjøen, and at a water depth of 420 metres.

It is estimated to contain around 84 million barrels of oil equivalent and the gas will be exported via the Polarled pipeline to Nyhamna near Kristiansund in mid-Norway.

Wintershall’s partners in the Dvalin North gas project are Norwegian oil and gas operators Petoro and Sval Energi.

The Dvalin North partnership said it would commit some €780 million (\$825M) to develop the discovery. Activities would include drilling three producing wells from a single subsea template located 10km to the north of the existing Dvalin gas field.

The Dvalin field is forecast to come into production in the coming months while Dvalin North is scheduled for start-up in late 2026.

Wintershall Dea is one of Europe’s leading independent natural gas and oil companies and has German roots and headquarters in the cities of Kassel and Hamburg and with worldwide operations.

Wintershall Dea was formed in 2019 from the merger of Wintershall Holding GmbH and DEA Deutsche Erdoel AG.

“We are a firm believer in using smart, subsea engineering to supply the European market with vital fuel,” said Michael Zechner, Wintershall Dea’s head of operations in Norway.

“Dvalin North will be our fifth operated subsea field in Norway and we are committed to investing in delivering even more,” he added.

The company said that the Dvalin North discovery was a consequence of Wintershall Dea’s strategy to explore for hydrocarbons close to existing assets.

It added that as a tie-back to the Heidrun platform via the operated Dvalin field, Dvalin North would be utilizing existing infrastructure in the region.

WINTERTHUR Gas & Diesel (WinGD), the leading Swiss developer of low-speed gas and diesel engines for

marine propulsion, has received orders from two LNG carrier operators for its WinGD Integrated Digital Expert (WiDE) engine monitoring, diagnostics and remote support service.

Norwegian shipping company Knutsen OAS has ordered WiDE for seven vessels, which include a recently delivered LNG carrier and six under construction.

The LNG shipping joint venture CoolCo, formed in 2021 between Eastern Pacific Shipping and Golar LNG, said it would use the service on two existing vessels.

The latest orders will deliver diagnostics to a total of 17 WinGD X-DF dual-fuel engines.

“WiDE empowers the vessel’s operation team with the tools needed to increase insight into engine performance, manage their maintenance plan and troubleshoot any challenges in order to reduce operating costs,” explained Rudolf Holtbecker, the Director of Operations at WinGD.

WinGD maintains that among the advantages of its X-DF low-pressure dual-fuel engines are low maintenance costs and ultra-low air pollution, reaching IMO Tier III NOx limits without after-treatment.

WinGD’s X72DF engine has become the standard for LNG carriers with 224 in service and more than 130 engines on order.

The WiDE product uses advanced data sensors, analysis and modelling to compare in-service operations of engines with their ideal reference performance for real-time conditions, identifying anomalies before they raise alarms and alerting crew to potential issues.

“This enables crews to avoid or dramatically reduce the time taken for troubleshooting, while fleet managers can optimise maintenance programmes based on detailed and up-to-date insight into component condition,” said the company.

WinGD noted that the WiDE service also enables support from dedicated WinGD Operations Experts and provides regular updates on engine performance and condition.

It added that “robust connectivity” through a leading telecommunications provider powers the WinGD 24x7 emergency response service, offering vessel operators around-the-clock remote support when needed.

“WiDE is a powerful tool for operators who want to take operating expenses into

their own hands,” said Holtbecker.

“Backed by our on-call experts, they can have total confidence that they will be able to maximise engine availability and optimise performance,” he added.

The company pointed out that more than 200 vessels were now monitored through WiDE and all new WinGD engines are fitted with the WiDE hardware as standard to enable the service.

WOODSIDE Energy, the operator of the North West Shelf and Pluto LNG plants in Western Australia, has issued its 2023 guidance including a maintenance shutdown at the Pluto facility and marked progress on the Sangomar field development offshore Senegal in West Africa.

Woodside also updated expected investments as well as production and sales forecasts.

The Perth-based company said full-year 2023 capital expenditure would be around US\$6.0 billion to US\$6.5Bln, assuming no change to current participating interests.

The approximate split by activity areas would see about 50 percent spent on the Scarborough natural gas field offshore Western Australia to serve the Pluto Train 2 expansion.

A further 20 percent of the total would go to the Sangomar development, 15 percent to Gulf of Mexico and Caribbean activities and the balance to corporate spending.

Woodside’s full-year 2023 production guidance is 180-190 million barrels of oil equivalent (MMboe) and key events include a major turnaround at Pluto LNG in the second quarter of 2023 with an expected duration of about four weeks.

The Sangomar Field Development Phase 1 is also targeting first oil in late 2023.

In the Gulf of Mexico the Mad Dog Phase 2 project is undergoing commissioning and Woodside assumes for production guidance purposes a start-up in mid-2023.

Woodside also explained that it had reached an important point in the Sangomar development with the completion of the construction phase for the floating production storage and offloading (FPSO) facility which will be deployed at the oil field.

Woodside had awarded the contract in 2020 for supply of the FPSO to Japanese engineering and offshore platforms expert Modec Inc.

The hull and marine works, external turret and topsides module installation and conversion work on the vessel were completed by COSCO Shipping Heavy Industry (Dalian) Co. in China.

The topsides modules were fabricated by both COSCO and by BOMESC Offshore Engineering Co. of Tianjin, China, and the external turret mooring system was fabricated by Penglai Jutal Offshore Engineering Heavy Industries based in Yantai in China’s Shandong province.

“The Chinese yards achieved excellent safety performance throughout this phase of construction, logging more than 16 million hours of complex construction work without a lost-time injury event,” said Woodside Chief Executive Meg O’Neil.

“The construction teams also successfully navigated the challenges posed by pandemic-related travel and logistical restrictions throughout 2021 and 2022, ensuring the FPSO remained on schedule for start-up at the Sangomar field in late 2023,” she said.

Woodside said the FPSO was now being relocated to Keppel Offshore & Marine Ltd.’s Tuas Shipyard in Singapore.

“Keppel will complete topsides integration and support pre-commissioning and commissioning activities for the FPSO,” said the company.

The FPSO is a converted Very Large Crude Carrier and has been named the “Leopold Sédar Senghor” after Senegal’s first President.

Sangomar is Senegal’s first offshore oil project and is 70 percent completed. The nation is also developing floating LNG with UK major BP and Dallas, Texas-based Kosmos Energy.

The Senegal oil project will have a capacity to produce 100,000 barrels per day of crude and includes the FPSO, 23 wells and supporting subsea infrastructure designed to allow the tie-in of subsequent phases.

Woodside is operator and has an 82 percent participating interest in the project and Senegal’s national energy company Petrosen holds the remaining 18 percent.

WOODSIDE Energy and the Ngarluma Aboriginal Corporation (NAC) have entered into a bilateral Indigenous Land Use Agreement and a modern benefits-sharing and relationship agreement relating to lands being

investigated for the proposed Woodside Power Project in the Pilbara region of Western Australia.

The lands are within part of the Ngarluma people’s native title determined area located in Maitland, about 15 kilometres southwest of Karratha, the site of the Woodside- LNG export and domestic gas plant.

Woodside said that the “power opportunity” would pave the way for the long-term supply of solar energy to local industrial customers.

The agreements set out a framework for the delivery of social and economic benefits to NAC and Ngarluma people in connection with the solar power project.

These agreements also outline how Woodside and NAC will work together to develop partnership, including the management of cultural heritage.

Woodside said that early engagement with NAC has ensured the project will be designed to avoid heritage impacts.

The framework is consistent with Woodside’s objectives for the integration of renewable energy into Woodside-operated facilities and achieving positive outcomes for the Indigenous communities.

“Woodside acknowledges the Ngarluma people, the Traditional Owners and native title holders of the land on which the power opportunity would be located and we thank NAC and the Ngarluma people for working together with us to finalise the agreements needed to progress,” said Woodside Chief Executive Meg O’Neill.

“We have been engaging with NAC since 2019 and the agreements are a significant milestone to celebrate together,” she added.

Woodside is currently investigating the supply of approximately 50 megawatts of solar energy to the Pluto LNG export plant facility, which would result in a direct reduction in Scope 1 greenhouse-gas emissions from Pluto.

The venture is proposed to initially generate electricity from a large-scale solar farm, complemented by a battery energy storage system.

Woodside plans to supply this solar energy through the Horizon Power-operated section of the North West Interconnected System (NWIS) to its customers connected to the NWIS.

Woodside has progressed environmental studies and submitted a referral for the solar power to the Environmental Protection Authority in November 2021. ■

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	Storage	
				Tanks	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
Phillipines	Pagbilao LNG	Energy World Corp.	2017	1	130,000
Poland	Swinoujscie	Baltic Gaz System	2015	2	320,000
Portugal	Sines	REN Atlantico	2004	3	390,000
Puerto Rico	Penuelas	EcoElectrica	2000	1	160,000
Singapore	Singapore	Singapore Energy Authority	2013	3	540,000
Spain	Barcelona	Enagas	1969	8	840,000
	Huelva	Enagas	1988	5	610,000
	Cartagena	Enagas	1989	5	587,000
	Bilbao	Enagas, EVE	2003	3	450,000
	Sagunto	GNF, Osaka Gas, Oman Oil	2006	4	600,000
	Mugardos, El Ferrol	Reganosa, Sonatrach, Sojitz Corp.	2006	2	300,000
	El Musel, Gijón,	Enagas	2013	2	300,000
	Lysekil	Gasum	2014	1	30,000
Sweden	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

World LNG Carrier Fleet

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



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

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Celsius Carolina	180,000	Oriental Fleet LNG 03 Ltd.	Samsung	Aug-21	Marshall Isl.	X-DF	TZ Mk. III Flex	4	US Portfolio	2314
Celsius Charlotte	180,000	Xiang CH28 HK International	Samsung	Jun-21	Marshall Isl.	X-DF	TZ Mk. III Flex	4	US Portfolio	2313
Celsius Copenhagen	180,000	Greenheart Gas Shipco I LLC	Samsung	Nov-20	Bermuda	X-DF	TZ Mk. III Flex	4	Portfolio	2297
CESI Beihai	174,000	COSCO Shipping Energy Transportation Co.	Hudong Zhonghua	Jun-17	H.K., China	DFDS	GT NO 96	4	APLNG	1717A
CESI Gladstone	174,000	China Shipping Co.	Hudong Zhonghua	Oct-16	H.K., China	–	GT NO 96	4	APLNG	1715A
CESI LianYungAng	174,000	COSCO Shipping Energy Transportation Co.	Hudong Zhonghua	Jun-18	H.K., China	Diesel-Electric	GT NO 96	4	APLNG	1720A
CESI Qingdao	174,000	China Shipping Co.	Hudong Zhonghua	Feb-17	H.K., China	DFDS	GT NO 96	4	APLNG	1716A
CESI Tianjin	174,000	COSCO Shipping Energy Transportation Co.	Hudong Zhonghua	Jul-17	China	TFDE	GT NO 96	4	APLNG	1718A
CESI Wenzhou	174,000	COSCO Shipping Energy Transportation Co.	Hudong Zhonghua	Feb-18	China	Diesel-Electric	GT NO 96	4	APLNG	1719A
Cheikh Bouamama	75,558	Skikda LNG Transport Corp.	Universal SB	Jul-08	Liberia	Steam	TZ Mk. III	4	Arzew/Skikda	88
Cheikh el Mokrani	75,759	Mediterranean LNG Transport Corp.	Japan Marine United	Jun-07	Liberia	Steam	TZ Mk. III	4	Skikda	55
Christophe De Margerie	170,000	DY Shipping Limited	Daewoo	Nov-16	Russia	Diesel/Gas-Electric	GT NO 96 GW	–	Yamal	2418
Clean Cajun	180,000	Platia Shipping Ltd.	HHI	May-22	Panama	X-DF	Membrane	4	–	3137
Clean Copano	180,000	Psili Shipping Ltd	HHI	Jul-22	Panama	X-DF	Membrane	4	–	3138
Clean Energy	149,700	Pegasus Shipholding	HHI	Mar-07	M. Islnds.	Steam	TZ Mk. III	4	Portfolio	1748
Clean Horizon	162,000	Dynagas	HHI	Apr-15	Malta	Diesel/Gas-Electric	TZ Mk. III Flex	4	Portfolio	2566
Clean Ocean	162,000	Dynagas	HHI	May-14	M. Islnds.	Diesel/Gas-Electric	TZ Mk. III Flex	4	Sabine Pass	2558
Clean Planet	162,000	Dynacom Tankers Management	HHI	Aug-14	M. Islnds.	Diesel Electric	TZ Mk. III Flex	4	Yamal	H2565
Clean Vision	162,000	Olinda	HHI	Aug-15	Malta	Diesel/Gas-Electric	TZ Mk. III Flex	4	Portfolio	2567
CNTIC VPower Energy	127,500	Shell Tankers Australia	Mitsubishi	Jan-92	Bermuda	Steam	Moss	4	North West Shelf	2041
Cobia LNG	174,000	Cardiff LNG ETA Owning LLC	HHI	Feb-21	Malta	X-DF	TZ Mk. III Flex	4	–	3038
Cool Discoverer	174,000	Serendipity Maritime Ltd.	HHI	Sep-20	Greece	X-DF	TZ MK. III Flex	4	Portfolio	S970
Cool Explorer	160,000	Thenamaris Ships Management Inc.	Samsung	Jan-15	Malta	DFDS	TZ Mk. III Flex	4	Spot	2049
Cool Racer	174,000	Eloquent Shipping Ltd.	HHI	Feb-21	Malta	X-DF	TZ Mk. III Flex	4	Portfolio	3126
Cool Rider	155,000	RBSSAF (19) Ltd.	HHI	May-07	Malta	–	TZ Mk. III	4	Portfolio	1777
Cool Runner	160,000	Thenamaris Ships Management Inc.	Samsung	Mar-14	Malta	Diesel Electric	TZ Mk. III Flex	4	Wheatstone	H2046
Cool Voyager	160,000	Energy Shipping & Trading	Samsung	Oct-13	Malta	TFDE	TZ Mk. III Flex	4	Wheatstone	–
Corcovado LNG	160,162	Drytank	Daewoo	Apr-14	Malta	Diesel Electric	GT NO 96 L03	4	Spot	H2297
Cubal	160,276	Mint LNG IV	Samsung	Jan-12	Bahamas	–	TZ Mk. III	4	Soyo	1813
Cygnus Passage	145,400	Cygnus LNG Shipping	Mitsubishi	Jan-09	Panama	Steam	Moss	4	Sakhalin II	2235
Dapeng Moon	147,200	Yue Gang LNG Ship Management Co.	Hudong Zhonghua	Jul-08	H.K., China	Steam	GT NO 96	4	Pluto	1309
Dapeng Star	147,210	Yue Peng LNG Shipping Co.	Hudong Zhonghua	Nov-09	H.K., China	Steam	GT NO 96	4	Pluto	1379
Dapeng Sun	147,200	Yue Peng LNG Shipping Co.	Hudong Zhonghua	Apr-08	H.K., China	Steam	GT NO 96	4	North West Shelf	1308
Diamond Gas Crystal	174,000	Diamond LNG Shipping 5 Pte Ltd.	Hyundai Samho	Jun-21	Singapore	X-DF	TZ Mk. III Flex	4	–	8030
Diamond Gas Metropolis	174,000	Diamond LNG Shipping 4 Ltd.	HHI	Nov-20	Bahamas	X-DF	TZ Mk. III Flex	4	Portfolio	8029
Diamond Gas Orchid	165,000	NYK Line	Mitsubishi	Jun-18	Japan	STaGE	Sayaringo	4	Cameron	2325
Diamond Gas Rose	165,000	NYK Line	Mitsubishi	Aug-18	Bahamas	STaGE	Sayaringo	4	Cameron	2325
Diamond Gas Sakura	165,000	Tokyo Gas	Japan Marine United	May-19	Panama	STaGE	Sayaringo	4	Cameron	2332
Diamond Gas Victoria	174,000	Diamond LNG Shipping 6 Pte Ltd.	Hyundai Samho	Jun-21	Bahamas	X-DF	TZ MK. III Flex	4	–	8031
Disha	136,025	India LNG Transport Company No.1 Ltd.	Daewoo	Dec-03	Malta	Gas Turbine	GT NO 96	4	RasGas	2210
Doha	137,262	Mitsui O.S.K. Lines	Mitsubishi	Jun-99	Japan	Steam	Moss	5	Qatargas I	2091
Dorado LNG	174,000	Hai Kuo Shipping 2052G Ltd.	Samsung	Dec-20	Malta	X-DF	TZ Mk. III Flex	4	Portfolio	2276
Duhail	210,150	Nauranto Schiffsbetriebsgesellschaft mbH & Company ts Gabriela KG	Daewoo	Dec-07	Bahamas	Diesel	GT NO 96	4	Qatargas II	2247
Dukhan	137,661	Qatar LNG Transport	Mitsui E&S	Sep-04	Liberia	Steam	Moss	5	Qatargas II	1561
East Energy	122,255	Bonny Gas Transport	STX	Aug-82	Bermuda	Steam	Membrane	4	NLNG	26B
Eduard Toll	172,410	Teekay Corp.	Daewoo	Sep-17	Bahamas	TFDE - Azipod	GT NO 96 GW	4	Yamal	2423
Ejnan	145,000	Peninsula LNG Transport No. 3	Samsung	Jan-07	Bahamas	Steam	TZ Mk. III	4	RasGas II	1594
Ekaputra 1	136,400	Cometco Shipping Inc.	Mitsubishi	Jan-89	Liberia	Steam	Moss	5	Bontang	2011
Elisa Aquila	174,000	Caroline 82 SASU	Hyundai Samho	04/03/2022	France	X-DF	TZ Mk. III Flex	4	Portfolio	S917
Elisa Larus	174,000	Caroline 77 SASU	Hyundai Samho	May-20	France	X-DF	TZ Mk. III Flex	4	Portfolio	S970
Energy Advance	147,624	Tokyo LNG Tanker Co. & Toho LNG Shipping Co.	Kawasaki	Mar-05	Japan	Steam	Moss	4	Portfolio	1521
Energy Atlantic	156,000	Alpha Tankers	STX	Sep-15	Greece	TFDE	GT NO 96 L03	4	Sabine Pass	1670
Energy Confidence	153,000	Tokyo LNG Tanker Co. & NYK	Kawasaki	Apr-09	Japan	Steam	Moss	4	Darwin LNG	1611
Energy Endeavour	173,400	Rossini Navigation SA	Daewoo	Jan-21	M. Islnds.	ME-GI	GT NO 96 GW	–	–	2484
Energy Frontier	147,599	Tokyo LNG Tanker Co.	Kawasaki	Sep-03	Japan	Steam	Moss	4	Sakhalin II	1520
Energy Glory	165,000	NYK Line	Japan Marine United	Mar-19	Japan	TFDE	TZ Mk. III Flex+	4	Cove Point	5071
Energy Horizon	177,000	Tokyo LNG Tanker Co. & NYK	Kawasaki	Aug-11	Japan	Steam	Moss	4	Pluto	1664
Energy Innovator	165,000	Tokyo Gas	Japan Marine United	Jun-19	Panama	TFDE	TZ Mk. III Flex+	4	Cove Point	5072
Energy Integrity	173,400	Mozart Navigation SA	Daewoo	May-21	M. Islnds.	ME-GI	GT NO 96 GW	4	–	2485

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Energy Intelligence	173,400	Strauss Navigation SA	Daewoo	Jun-21	M. Islns.	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. Islns.	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. Islns.	X-DF	TZ Mk. III Flex	4	Portfolio	8011
Flex Artemis	174,000	Flex LNG Rreliance Ltd.	Daewoo	Aug-20	M. Islns.	ME-GI	NO-96-GW+FRS	4	Portfolio	2479
Flex Aurora	174,000	Flex LNG Aurora Ltd.	HHI	Jun-20	M. Islns.	X-DF	TZ Mk. III Flex	4	Portfolio	8010
Flex Constellation	173,400	Frontline	Daewoo	Jun-19	M. Islns.	ME-GI	NO-96-GW+PRS	4	Portfolio	H2470
Flex Courageous	173,400	Frontline	Daewoo	Aug-19	M. Islns.	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. Islns.	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. Islns.	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. Islns.	X-DF	TZ Mk. III Flex	4	–	8012
Fraiha	210,100	J5 Nakilat No.6 Ltd.	Daewoo	Aug-08	M. Islns.	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. Islns.	X-DF	GT NO 96 GW	4	Portfolio	2499
GasLog Chelsea	153,000	Gas-Fifteen Ltd.	Hanjin (Busan)	Jun-10	Bermuda	TFDE	TZ Mk. III	4	–	193
GasLog Galveston	174,000	Gas-Thirty Three Ltd.	Samsung	Jan-21	Bermuda	X-DF	TZ Mk. III Flex+	4	US Portfolio	2301
GasLog Geneva	174,000	GasLog	Samsung	Oct-16	Bermuda	TFDE	TZ Mk. III Flex	4	Portfolio	2102
GasLog Genoa	174,000	GasLog	Samsung	Mar-18	Bermuda	X-DF	TZ Mk. III Flex	4	Portfolio	2130
GasLog Georgetown	174,000	Gas-Thirty Two Ltd.	Samsung	Nov-20	Bermuda	–	TZ Mk. III Flex+	4	Portfolio	2300
GasLog Gibraltar	174,000	Gas-Fourteen Ltd.	Samsung	Nov-16	Bermuda	TFDE	TZ Mk. III Flex	4	Portfolio	2103
GasLog Gladstone	174,000	GasLog	Samsung	Mar-19	Bermuda	X-DF	TZ Mk. III Flex+	4	Portfolio	2131
GasLog Glasgow	174,000	GasLog	Samsung	Jul-16	Bermuda	TFDE	TZ Mk. III Flex	4	Portfolio	2073
GasLog Greece	174,000	GasLog	Samsung	Mar-16	Bermuda	TFDE	TZ Mk. III Flex	4	Portfolio	2072
GasLog Hong Kong	174,000	GasLog	HHI	Mar-18	Bermuda	X-DF	TZ Mk. III Flex	4	Portfolio	2801
GasLog Houston	174,000	GasLog	HHI	Dec-18	Bermuda	X-DF	TZ Mk. III Flex	4	GoM	2800
GasLog Salem	155,000	GasLog	Samsung	May-15	Bermuda	TFDE	TZ Mk. III	4	Portfolio	2044
GasLog Santiago	155,000	Gas-Four Ltd.	Samsung	Mar-13	Bermuda	TFDE	TZ Mk. III	4	Portfolio	1947
GasLog Saratoga	155,000	GasLog	Samsung	Dec-14	Bermuda	TFDE	TZ Mk. III	4	Spot	2043
GasLog Savannah	155,000	Gas-One Ltd.	Samsung	May-10	Liberia	TFDE	TZ Mk. III	4	Portfolio	1641
GasLog Seattle	155,000	Gas-Seven Ltd.	Samsung	Oct-13	Bermuda	TFDE	TZ Mk. III	4	Portfolio	2041
GasLog Shanghai	155,000	Gas-Three Ltd.	Samsung	Feb-13	Bermuda	TFDE	TZ Mk. III	4	Portfolio	1946
GasLog Singapore	155,000	Gas-Two Ltd.	Samsung	Aug-10	Liberia	TFDE	TZ Mk. III	4	Portfolio	1642
GasLog Skagen	155,000	Gas-Six Ltd.	Samsung	Aug-13	Bermuda	TFDE	TZ Mk. III	4	Portfolio	2017
GasLog Sydney	155,000	Gas-Five Ltd.	Samsung	Jun-13	Bermuda	–	TZ Mk. III	4	Portfolio	2016
GasLog Wales	180,000	GasLog	Samsung	May-20	Bermuda	X-DF	TZ Mk. III Flex+	4	Portfolio	2274
GasLog Warsaw	180,000	GasLog	Samsung	Jul-19	Bermuda	X-DF	TZ Mk. III Flex+	4	Portfolio	2212
GasLog Wellington	176,400	GAS-Thirty Four Ltd.	Samsung	Jun-21	Bermuda	X-DF	TZ Mk. III Flex+	4	US Portfolio	2311
GasLog Westminster	180,000	Gas-Thirty Ltd.	Samsung	Jul-20	MAIta	X-DF	TZ Mk. III Flex	4	Portfolio	2262
GasLog Winchester	176,400	Gas-Thirty Five Ltd.	Samsung	Aug-21	Bermuda	X-DF	TZ Mk. III Flex+	4	US Portfolio	2312
GasLog Windsor	180,000	GasLog	Samsung	Apr-20	Bermuda	X-DF	TZ Mk. III Flex	4	Portfolio	2213
Georgiy Brusilov	172,410	Arctic LNG 3 Ltd.	Daewoo	Nov-18	Cyprus	TFDE - Azipod	GT NO 96 GW	4	Yamal	2427
Georgiy Ushakov	172,652	Teekay Corp.	Daewoo	Sep-19	Bahamas	ME-GI	GT NO 96 GW	4	Yamal	2433
Ghasha	137,000	Ghasha Inc.	Mitsui E&S	Jun-95	Liberia	Steam	Moss	5	Das Island	1392
Gigira Laitebo	177,419	Cleopatra LNG Shipping Co.	HHI	Feb-10	Bahamas	–	TZ Mk. III	4	RasGas	1876
Global Energy	74,100	GDF Armateur 2	STX	Jan-04	France	Diesel/Gas-Electric	CS1	4	Portfolio	32M
Global Energy	173,400	Hai Kuo Shipping 2118G Ltd.	Daewoo	May-20	Greece	ME-GI	GT NO 96 GW	4	Portfolio	2478
Global Sea Spirit	169,932	Global Sea Spirit Inc	Daewoo	Oct-21	Greece	ME-GI	–	4	US Portfolio	2502
Global Sealine	174,000	Jackar Shiptrade SA	Daewoo	Dec_21	M. Islns.	ME-GI	–	–	US Portfolio	2503
Global Star	173,400	Hai Kuo Shipping 2119G Ltd.	Daewoo	Jan-21	M. Islns.	ME-GI	GT NO 96 GW	4	Portfolio	2487
Golar Arctic	140,648	Golar LNG 2216 Corp.	Daewoo	Oct-03	Singapore	Steam	GT NO 96	4	Jamaica LNG	2216

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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	Bahaf	1903
Hyundai Greenpia	125,000	Hyundai Merchant Marine	HHI	May-96	Panama	Steam	Moss	4	MLNG	853
Hyundai Oceanpia	135,000	H&T Shipping	HHI	Jun-00	Panama	Steam	Moss	4	Oman LNG	1157
Hyundai Peacepia	174,000	Hyundai LNG Shipping	Daewoo	Jun-17	Panama	ME-GI	GT NO 96 GW	4	Sabine Pass	2452
Hyundai Princepia	174,000	Hyundai LNG Shipping	Daewoo	May-17	Panama	ME-GI	GT NO 96 GW	4	Sabine Pass	2451
Hyundai Technopia	137,415	H&K Shipping	HHI	Jul-99	Panama	Steam	Moss	4	RasGas I	1073
Hyundai Utopia	125,182	Hyundai Merchant Marine	HHI	Jun-94	Panama	Steam	Moss	4	Donggi Senoro	760
Iberica Knutsen	138,000	Norspan LNG III AS	Daewoo	Aug-06	Norway	Ultra Steam Turbine	GT NO 96	4	Portfolio	2236
Ibra LNG	147,000	SNC Corentin	Samsung	Jul-06	Panama	Steam	TZ Mk. III	4	Oman LNG	1573
Ibri LNG	147,569	Dune LNG Carrier	Mitsubishi	Jul-06	Panama	Steam	Moss	4	Oman LNG	2215
Isabella	169,932	Kasimia Marine Co.	Daewoo	Jul-21	Greece	ME-GI	GT NO 96 GW	4	–	2495
Ish	137,000	Ish Inc.	Mitsubishi	Nov-95	Liberia	Steam	Moss	5	Das Island	2067
John A. Angelicoussis	174,000	Varta Shipping Ltd	Daewoo	Mar-22	Greece	ME-GI	–	4	–	2508
K. Acacia	138,017	Horizon Maritime Shipholding	Daewoo	Dec-99	Panama	Steam	GT NO 96	4	Oman LNG	2203
K. Freesia	138,015	Meridian Maritime Shipholding	Daewoo	Aug-00	Panama	Steam	GT NO 96	4	RasGas I	2204
K. Jasmine	145,878	Kolt JV No. 1	Daewoo	May-08	Panama	Steam	GT NO 96	4	Sakhalin II	2260
K. Mugungwha	151,812	Kolt JV No. 2	Daewoo	Nov-08	Panama	Steam	GT NO 96	4	Oman LNG	2261
KARMOL LNGT Powership Asia	127,500	BHP Consortium	Kawasaki	Jan-91	Bermuda	Steam	Moss	4	North West Shelf	1410
Kinisis	173,400	Chandris Group	Daewoo	Oct-18	Greece	ME-GI	GT NO 96 GW	4	Portfolio	2464
Kita LNG	147,895	Cardiff LNG	Daewoo	May-14	Malta	Diesel Electric	GT NO 96 L03	4	Spot	H2298
Kmarin Diamond	155,000	RBSSAF (19) Ltd.	Hyundai Samho	Jul-08	Isle of Man	Diesel/Gas-Electric	TZ Mk. III	4	Portfolio	S297
Kool Baltic	170,200	Sovcomflot	STX	Jan-15	Liberia	Diesel Electric	GT NO 96 GW	4	Portfolio	1912
Kool Boreas	170,200	Sovcomflot	STX	Apr-15	Liberia	Diesel Electric	GT NO 96 GW	4	Portfolio	1913
Kool Firn	174,000	Heliconia Maritime SA	HHI	Sep-20	Liberia	DFDS	TZ Mk. III Flex	4	Portfolio	8007
Kool Orca	174,000	Headliner Maritime SA	HHI	Jan-21	Liberia	X-DF	NO-96-GW+PRS	4	Portfolio	8008
Kumul	170,000	Mitsui O.S.K. Lines	Hudong Zhonghua	Dec-15	H.K., China	Diesel	GT NO 96	4	PNG LNG	1673A
La Mancha Knutsen	176,300	Norspan LNG IX	HHI	Sep-16	Spain	ME-GI	TZ Mk. III Flex	4	Portfolio	2733
La Seine	174,000	Xiang CH16 HK International	HHI	Feb-20	Malta	X-DF	TZ MK. III Flex	4	Portfolio	3020
Lagenda Serenity	79,960	Kawasaki Kisen Kaisha	Hudong Zhonghua	Jun-22	Panama	LP-DF	–	3	Malaysia LNG	H1789A
Lagenda Suria	79,960	Silk LNG Transport No 1 Pte Ltd	Hudong Zhonghua	May-22	Singapore	LP-DF	–	3	Malaysia LNG	H1788A
Lalla Fatma N'Soumer	145,000	Algerian Nippon Gas Transport Corp.	Kawasaki	Oct-04	Bahamas	Steam	Moss	4	Arzew	1534
Lech Kaczynski	174,000	SNC Martin	HHI	Dec-22	France	X-DF	–	4	Portfolio	3243

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Lena River	155,000	Solana Holdings	HHI	Sep-13	M. Islnds.	–	TZ Mk. III	4	Portfolio	H2557
Lijmiliya	263,300	Nakilat Lijmiliya Inc.	Daewoo	Dec-08	M. Islnds.	Diesel	GT NO 96	5	Qatargas II	2256
LNG Abalamabie	162,000	Bonny Gas Transport	Samsung	Jul-16	Bermuda	DFDS	TZ Mk. III Flex	4	NLNG	2079
LNG Abuja II	162,000	Bonny Gas Transport	Samsung	Mar-16	Bermuda	–	TZ Mk. III Flex	4	NLNG	2078
LNG Adamawa	141,000	Bonny Gas Transport	HHI	Apr-05	Bermuda	Steam	Moss	4	NLNG	1470
LNG Adventure	174,000	Diderot Financement 28 SNC	Samsung	Mar-21	M. Islnds.	X-DF	TZ Mk. III Flex	4	Portfolio	2302
LNG Akwa Ibom	141,000	Bonny Gas Transport	HHI	Oct-04	Bermuda	Steam	Moss	4	NLNG	1469
LNG Alliance	154,472	NYK Armateur	STX	Mar-07	France	Diesel/Gas-Electric	CS1	4	Portfolio	32P
LNG Aquarius	126,300	P.T. Hanochem Shipping	General Dynamics	Jan-77	Indonesia	Steam	Moss	5	Bontang	41
LNG Barka	155,982	Lloyd's TSB General Leasing (No. 3)	Kawasaki	Dec-08	Bahamas	Steam	Moss	4	Oman LNG	1591
LNG Bayelsa	137,500	Bonny Gas Transport	HHI	Mar-03	Bermuda	–	Moss	4	NLNG	1429
LNG Benue	145,952	BW Gas LNG Carriers	Daewoo	Apr-06	Bermuda	Steam	GT NO 96	4	NLNG	2224
LNG Bonny II	174,000	Nigeria LNG	HHI	Dec-15	Bermuda	Diesel/Gas-Electric	TZ Mk. III Flex	4	NLNG	2636
LNG Borno	149,600	Okra Shipping No. 1	Samsung	Aug-07	Bermuda	Steam	TZ Mk. III	4	NLNG	1563
LNG Cross River	141,000	Bonny Gas Transport	HHI	Aug-05	Bermuda	Steam	Moss	4	NLNG	1471
LNG Dream	145,000	Osaka Gas Consortium	Kawasaki	Sep-06	Bahamas	Steam	Moss	4	North West Shelf	1545
LNG Dubhe	174,000	Mitsui O.S.K. Lines	Hudong Zhonghua	Nov-19	Panama	ME-GI	GT NO 96 L03+	4	Yamal	1810A
LNG Ebisu	147,546	LNG Ebisu Shipping Corp.	Kawasaki	Jul-08	Bahamas	–	Moss	4	Pluto	1588
LNG Endeavour	170,520	Fortune Great Shipping Ltd.	Samsung	Oct-21	France	X-DF	TZ Mk. III Flex	4	Portfolio	2355
LNG Endurance	170,520	DuPlessis Bail SNC	Samsung	Dec-21	France	X-DF	TZ Mk. III Flex	4	Portfolio	2307
LNG Enterprise	170,520	Hanovre Financement 20 SASU	Samsung	Oct-21	France	X-DF	TZ Mk. III Flex	4	Portfolio	2360
LNG Enugu	145,926	BW Gas LNG Carriers	Daewoo	Oct-05	Bermuda	Steam	GT NO 96	4	NLNG	2222
LNG Finima II	162,000	Bonny Gas Transport	Samsung	Dec-15	Bermuda	–	TZ Mk. III Flex	4	NLNG	2076
LNG Fukurokuju	164,700	Mitsui O.S.K. Lines	Kawasaki	Jul-16	Panama	Steam	Moss	4	APLNG	1712
LNG Imo	148,452	Bergesen LNG XI Ltd.	Daewoo	Jun-08	Bermuda	–	GT NO 96	4	NLNG	2232
LNG Jamal	135,333	Osaka Gas Consortium	Mitsubishi	Oct-00	Japan	Steam	Moss	5	Oman LNG	2157
LNG Juno	180,000	Mitsui O.S.K. Lines	Mitsubishi	Oct-18	Japan	STaGE	Moss	–	Freeport	2323
LNG Jupiter	153,000	Osaka Gas Consortium	Kawasaki	Jul-09	Panama	Steam	Moss	4	PNG LNG	1592
LNG Jurojin	160,000	LNG Jurojin Shipping Corp.	Mitsubishi	Nov-15	Bahamas	Steam	Moss	4	Portfolio	2299
LNG Kano	148,565	Bergesen LNG IX Ltd.	Daewoo	Jan-07	Bermuda	Steam	GT NO 96	4	NLNG	2230
LNG Kolt	153,595	KLT 5 International	Hanjin (Busan)	Dec-08	Panama	Steam	TZ Mk. III	4	Portfolio	192
LNG Lagos II	174,000	Nigeria LNG	HHI	Jan-16	Bermuda	DFDS	TZ Mk. III Flex	4	NLNG	2637
LNG Lerici	65,000	LNG Shipping S.p.A.	Sestri Ponente	Apr-98	Italy	Steam	GT NO 96	4	Portfolio	5911
LNG Lokoja	148,471	Bergesen LNG VIII Ltd.	Daewoo	Nov-06	Bermuda	Steam	GT NO 96	4	NLNG	2229
LNG Maleo	127,544	Mitsui O.S.K. Lines	Mitsui E&S	Jan-89	Japan	Steam	Moss	4	North West Shelf	1351
LNG Mars	155,693	Osaka Gas Consortium	Mitsubishi	Oct-16	Japan	Steam	Moss	4	PNG LNG	2296
LNG Megrez	174,000	Mitsui O.S.K. Lines	Hudong Zhonghua	Nov-20	Panama	ME-GI	GT NO 96 L03+	4	Yamal	1813A
LNG Merak	174,000	Mitsui O.S.K. Lines	Hudong Zhonghua	Jan-20	Panama	ME-GI	GT NO 96 L03+	4	Yamal	1811A
LNG Ogun	149,000	Okra Shipping No. 1	Samsung	Jul-07	Bermuda	Steam	TZ Mk. III	4	NLNG	1564
LNG Ondo	148,478	Bergesen LNG X Ltd.	Daewoo	Sep-07	Bermuda	Steam	GT NO 96	4	NLNG	2231
LNG Oyo	145,842	BW Gas LNG Carriers	Daewoo	Jan-06	Bermuda	Steam	GT NO 96	4	NLNG	2223
LNG Phecda	174,000	Mitsui O.S.K. Lines	Hudong Zhonghua	Sep-20	Panama	ME-GI	GT NO 96 L03+	4	Yamal	1812A
LNG Port Harcourt II	162,000	Bonny Gas Transport	Samsung	Dec-15	Bermuda	–	TZ Mk. III Flex	4	NLNG	2077
LNG Prima Carrier	137,000	Pacific Eurus Shipping	Mitsubishi	Mar-06	Bahamas	Steam	Moss	4	Das Island	2187
LNG River Niger	141,000	Bonny Gas Transport	HHI	Jul-06	Bermuda	Steam	Moss	4	NLNG	1472
LNG River Orashi	145,914	BW Gas LNG Carriers	Daewoo	Nov-04	Bermuda	Steam	GT NO 96	4	NLNG	2221
LNG Rivers	137,200	Bonny Gas Transport	HHI	Jun-02	Bermuda	–	Moss	4	NLNG	1295
LNG Rosenrot	176,523	Fair Wind Navigation SA	Daewoo	Jan-21	M. Islnds.	X-DF	GT NO 96 GW	4	Portfolio	2498
LNG Sakura	177,000	Mitsui O.S.K. Lines	Kawasaki	Feb-18	Bahamas	TFDE	Moss	–	Freeport	1731
LNG Saturn	155,300	Mitsui O.S.K. Lines	Mitsubishi	Feb-16	Bahamas	Ultra Steam Turbine	Moss	4	Gorgon	2311
LNG Schneeweisschen	180,000	Mitsui O.S.K. Lines	Daewoo	Sep-18	Bermuda	TFDE	GT NO 96 GW	–	Freeport	2462
LNG Sokoto	137,425	Bonny Gas Transport	HHI	Sep-02	Bermuda	–	Moss	4	NLNG	1296
LNG Unity	154,472	GDF Armateur 2	STX	Nov-06	France	Diesel/Gas-Electric	CS1	4	Portfolio	32N
LNG Venus	153,000	Mitsui O.S.K. Lines	Mitsubishi	Nov-14	Japan	–	Sayaendo	4	North West Shelf	2295
LNG Vesta	127,386	Tokyo LNG Tanker Co.	Mitsubishi	Jun-94	Japan	Steam	Moss	4	–	2061
LNGShips Athena	170,618	Cardiff LNG Iota Owning LLC	HHI	Mar-21	Malta	X-DF	TZ Mk. III Flex	4	–	112
LNGShips Empress	174,000	Cardiff LNG Kappa Owning LLC	Samsung	Mar-21	Malta	X-DF	TZ Mk. III Flex	4	QCLNG	2380
LNGShips Manhattan	174,000	Cardiff LNG Theta Owning LLC	HHI	May-21	Malta	X-DF-HPSCR	NO-96-GW+PRS	4	QCLNG	3039
Lobito	160,276	Mint LNG III	Samsung	Nov-11	Bahamas	–	TZ Mk. III	4	Soyo	1812
Lusail	145,000	Peninsula LNG Transport No. 1	Samsung	May-05	Bermuda	–	TZ Mk. III	4	RasGas II	1440
Macoma	145,400	Teekay LNG Partners	Daewoo	Sep-17	Bahamas	ME-GI	GT NO 96 GW	4	Portfolio	2417
Magdala	173,400	Teekay Corp.	Daewoo	Feb-18	Bahamas	ME-GI	GT NO 96 GW	4	Portfolio	2453
Malaga Knutsen	174,000	Millenaire Financement 17 SASU	Hyundai Samho	Jul-22	France	X-DF	TZ Mk. III Flex+	4	Portfolio	8092
Malanje	160,276	Mint LNG II	Samsung	Oct-11	Bahamas	–	TZ Mk. III	4	Soyo	1811

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Maran Gas Achilles	174,000	Maran Gas Maritime	Hyundai Samho	Jan-16	Greece	DFDS	TZ Mk. III Flex	4	Portfolio	S689
Maran Gas Agamemnon	174,000	Maran Gas Maritime	Hyundai Samho	May-16	Greece	DFDS	TZ Mk. III Flex	4	Portfolio	S690
Maran Gas Amorgos	169,932	Vero Maritime Inc	Daewoo	19/11/2021	Greece	ME-GI	GT NO 96	4	–	2506
Maran Gas Alexandria	161,870	Maran Gas Maritime	Hyundai Samho	Oct-15	Greece	–	TZ Mk. III Flex	4	QCLNG	S627
Maran Gas Amphipolis	174,000	Maran Gas Maritime	Daewoo	Aug-16	Greece	–	GT NO 96 L03	4	Portfolio	2412
Maran Gas Andros	173,400	Maran Gas Maritime	Daewoo	Nov-19	Greece	ME-GI	GT NO 96 GW	4	Freeport	2467
Maran Gas Apollonia	161,870	Maran Gas Maritime	Hyundai Samho	Jan-14	Greece	Diesel Electric	TZ Mk. III Flex	4	Punta Europa	S624
Maran Gas Asclepius	145,000	Sea Satin Corp.	Daewoo	Jul-05	Greece	Steam	GT NO 96	4	RasGas II	H2227
Maran Gas Chios	170,000	Maran Gas Maritime	Daewoo	Mar-19	Greece	ME-GI	GT NO 96 GW	4	–	2456
Maran Gas Coronis	145,700	Jopica Shipping Company	Daewoo	Jul-07	Greece	Steam	GT NO 96	4	RasGas II	2244
Maran Gas Delphi	159,800	Maran Gas Maritime	Daewoo	Feb-14	Greece	Diesel Electric	GT NO 96 L03	4	Portfolio	2296
Maran Gas Efessos	159,800	Maran Gas Maritime	Daewoo	Jun-14	Greece	–	GT NO 96 L03	4	Portfolio	H-2291
Maran Gas Hector	174,000	Maran Gas Maritime	Hyundai Samho	Nov-16	Greece	Diesel/Gas-Electric	TZ Mk. III Flex	–	Portfolio	S691
Maran Gas Hydra	173,400	Maran Gas Maritime	Daewoo	Feb-19	Greece	ME-GI	GT NO 96 GW	4	Sabine Pass	2459
Maran Gas Ithaca	174,000	Arona Maritime Inc.	Daewoo	Oct-21	Greece	X-DF	TZ Mk. III Flex	4	Portfolio	2507
Maran Gas Kalymnos	169,932	Hai Kuo Shipping 2028G Ltd	Daewoo	Sep-21	Greece	ME-GI	Membrane	4	–	2504
Maran Gas Leto	174,000	Maran Gas Maritime	Hyundai Samho	Mar-16	Greece	DFDS	TZ Mk. III	4	Portfolio	S688
Maran Gas Lindos	161,870	Maran Gas Maritime	Daewoo	Jul-15	Greece	DFDS	GT NO 96 L03	4	Punta Europa	2292
Maran Gas Mystras	155,900	Maran Gas Maritime	Daewoo	Aug-15	Greece	DFDS	GT NO 96 L03	4	QCLNG	2405
Maran Gas Olympias	174,000	Maran Gas Maritime	Daewoo	Feb-17	Greece	ME-GI	GT NO 96 L03	–	Portfolio	2415
Maran Gas Pericles	173,400	Maran Gas Maritime	Hyundai Samho	Aug-16	Greece	DFDS	TZ Mk. III Flex	4	Portfolio	S734
Maran Gas Posidonia	161,870	Maran Gas Maritime	Hyundai Samho	May-14	Greece	–	TZ Mk. III Flex	4	Punta Europa	S625
Maran Gas Psara	173,595	Highseas Shiptrade Co.	Daewoo	May-20	Greece	ME-GI	GT NO 96 GW	4	Portfolio	2469
Maran Gas Roxana	174,000	Maran Gas Maritime	Daewoo	Jan-17	Greece	ME-GI	GT NO 96 L03	4	Portfolio	2413
Maran Gas Sparta	159,800	Maran Gas Maritime	Hyundai Samho	Apr-15	Greece	–	TZ Mk. III Flex	4	QCLNG	S626
Maran Gas Spetses	173,400	Maran Gas Maritime	Daewoo	Jul-18	Greece	ME-GI	GT NO 96 GW	4	GoM	2458
Maran Gas Troy	155,000	Maran Gas Maritime	Daewoo	Sep-15	Greece	DFDS	GT NO 96 L03	4	–	2406
Maran Gas Ulysses	173,400	Maran Gas Maritime	Hyundai Samho	Jan-17	Greece	Diesel/Gas-Electric	TZ Mk. III Flex	–	Portfolio	S735
Maran Gas Vergina	174,000	Santa Lucia Enterprises Inc.	Daewoo	Dec-16	Greece	ME-GI	GT NO 96	–	Portfolio	2414
Maria Energy	174,000	Tsakos Energy Navigation	HHI	Sep-16	Greece	Diesel/Gas-Electric	TZ Mk. III Flex	4	–	2612
Marshal Vasilevskiy	170,000	Gazprom	HHI	Jan-19	Russia	Diesel/Gas-Electric	TZ Mk. III Flex	4	Kaliningrad LNG	2854
Marvel Crane	177,000	NYK Line	Mitsubishi	Mar-19	Japan	STaGE	Moss	–	Cameron	2321
Marvel Eagle	155,000	Mitsui O.S.K. Lines	Kawasaki	Oct-18	Panama	Reheat Steam Turbine	Moss	–	Cameron	1728
Marvel Falcon	174,000	Mitsui O.S.K. Lines	Samsung	Apr-18	Singapore	TFDE	TZ Mk. III Flex	4	Cameron	2148
Marvel Hawk	177,000	Mitsui O.S.K. Lines	Samsung	Dec-18	Japan	TFDE	TZ Mk. III Flex	4	Cameron	2149
Marvel Heron	177,000	Mitsui O.S.K. Lines	Mitsubishi	Sep-19	Japan	STaGE	Moss	–	Cameron	2322
Marvel Kite	177,000	Mitsui O.S.K. Lines	Samsung	Jan-19	Japan	TFDE	TZ Mk. III	4	Cameron	2150
Marvel Pelican	156,265	Mitsui O.S.K. Lines	Kawasaki	Dec-19	Panama	Reheat Steam Turbine	Moss	4	Cameron	1729
Marvel Swan	174,000	MIF I NO 20 K/S	Samsung	Apr-21	Denmark	X-DF	TZ Mk. III Flex	4	–	2310
Megara	173,400	Teekay LNG Partners	Daewoo	Jul-18	Bahamas	ME-GI	GT NO 96 GW	4	Portfolio	2455
Mekaines	266,000	Nakilat SHI 1695 Inc.	Samsung	Apr-09	M. Islnds.	–	TZ Mk. III	5	Qatargas III	1695
Merchant	138,000	Sea Breeze Leasing	Samsung	Jul-03	Isle of Man	Steam	TZ Mk. III	4	Portfolio	1381
Mesaimeer	216,312	Nakilat HHI 1908 Inc.	HHI	Mar-09	M. Islnds.	Diesel	TZ Mk. III	4	Qatargas III	1908
Methane Alison Victoria	145,000	Lloyds TSB Leasing No.8 Ltd.	Samsung	Apr-07	Bahamas	Steam	TZ Mk. III	4	Punta Europa	1587
Methane Becki Anne	170,000	Methane Services (Shell)	Samsung	Sep-10	Bermuda	–	TZ Mk. III	4	Singapore	1858
Methane Heather Sally	145,000	Lloyds TSB Leasing No.8 Ltd.	Samsung	Jan-07	Bahamas	Steam	TZ Mk. III	4	Punta Europa	1586
Methane Jane Elizabeth	145,000	British Gas Asia Pacific	Samsung	Jun-06	Bermuda	Steam	TZ Mk. III	4	Idku	1554
Methane Julia Louise	170,000	Methane Services (Shell)	Samsung	Apr-10	Bermuda	–	TZ Mk. III	9	Singapore	1745
Methane Lydon Volney	145,000	BG Group	Samsung	Aug-06	Bermuda	Steam	TZ Mk. III	4	Idku	1555
Methane Mickie Harper	170,000	Methane Services (Shell)	Samsung	Dec-10	Bermuda	Diesel/Gas-Electric	TZ Mk. III	4	Singapore	1859
Methane Nile Eagle	145,000	Egypt LNG Shipping	Samsung	Dec-07	Bermuda	Steam	TZ Mk. III	4	Idku	1588
Methane Patricia Camila	170,000	Methane Services (Shell)	Samsung	Oct-10	Bermuda	–	TZ Mk. III	4	Singapore	1746
Methane Princess	138,000	Golar LNG	Daewoo	Aug-03	U.K.	Steam	GT NO 96	4	Portfolio	2215
Methane Rita Andrea	145,000	British Gas Asia Pacific	Samsung	Apr-06	Bermuda	Steam	TZ Mk. III	4	Idku	1553
Methane Shirley Elisabeth	145,000	Lloyds TSB Leasing No.8 Ltd.	Samsung	Feb-07	Bermuda	Steam	TZ Mk. III	4	Punta Europa	1585
Milaha Qatar	145,500	Qatar Shipping Co.	Samsung	Apr-06	Malta	Steam	TZ Mk. III	4	RasGas II	1562
Milaha Ras Laffan	138,270	Milaha Ras Laffan GmbH & Co. KG	Samsung	Apr-04	Malta	Steam	TZ Mk. III	4	RasGas II	1425
Min Lu	147,100	Minlu LNG Shipping Co.	Hudong Zhonghua	Aug-09	H.K., China	–	GT NO 96	4	Tangguh	1378
Min Rong	145,000	Min Rong LNG Shipping Co.	Hudong Zhonghua	Feb-09	H.K., China	–	GT NO 96	4	Tangguh	1320
Minerva Amorgos	170,520	Vitamin Shipping SA	Samsung	Sep-22	Greece	X-DF	–	4	–	2332
Minerva Chios	170,520	Peninsula Shipping SA	Samsung	Aug-21	Greece	X-DF	TZ Mk. III Flex+	4	–	2305
Minerva Kalymnos	174,000	Koje Shipping SA	Samsung	Feb-21	Malta	X-DF	GT NO 96 GW	4	–	2304
Minerva Limnos	173,400	Roland Shipping SA	Daewoo	Jun-21	Greece	ME-GI	GT NO 96 GW	4	Portfolio	2482
Minerva Psara	173,400	Wimbledon Shipping SA	Daewoo	Jan-21	Malta	–	GT NO 96 GW	4	–	2481

CARRIER FLEET

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Value from maritime data



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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 Sea	170,852	Meridian 23 Ltd.	Samsung	Jan-22	Liberia	X-DF	TZ Mk. III	4	Portfolio	2336
Orion Star	174,000	Jupiter 3 Ltd	Samsung	Apr-22	Liberia	–	–	4	–	2319
Orion Sun	174,000	Meridian 24 Ltd.	Samsung	Jul-22	Liberia	X-DF	–	4	Portfolio	2337
Ougarta	170,000	Hyproc Shipping Co.	HHI	Mar-17	Algeria	DFDS	TZ Mk. III Flex	4	Arzew	2814
Pacific Arcadia	145,400	Bahamas LNG Shipping	Mitsubishi	Oct-14	Bahamas	–	Moss	4	PNG LNG	MHISB 2289
Pacific Breeze	180,000	"K" Line - Kawasaki Kisen Kaisha	Kawasaki	Mar-18	Japan	TFDE	Moss	4	Ichthys	1718
Pacific Enlighten	145,400	Pacific Hope Shipping	Mitsubishi	Mar-09	Panama	Steam	Moss	4	North West Shelf	2236
Pacific Mimosa	155,300	NYK Line	Mitsubishi	Mar-18	Japan	Reheat Steam Turbine	Moss	–	Wheatstone	2316
Pacific Notus	137,006	Pacific LNG Shipping	Mitsubishi	Sep-03	Bahamas	Steam	Moss	5	Darwin LNG	2176
Palu LNG	159,800	Cardiff LNG	Daewoo	Nov-14	Malta	TFDE	GT NO 96 L03	4	Spot	2400
Pan Africa	174,000	Teekay LNG Partners	Hudong Zhonghua	Jan-19	H.K., China	TFDE	GT NO 96	4	QCLNG	1666A
Pan Americas	174,000	Teekay LNG Partners	Hudong Zhonghua	Jan-18	H.K., China	TFDE	GT NO 96	4	QCLNG	H1664A
Pan Asia	174,000	Teekay LNG Partners	Hudong Zhonghua	Sep-17	H.K., China	TFDE	GT NO 96	4	QCLNG	1663A
Pan Europe	174,000	Teekay LNG Partners	Hudong Zhonghua	Jul-18	H.K., China	TFDE	GT NO 96	4	QCLNG	H1665A
Papua	170,000	Mitsui O.S.K. Lines	Hudong Zhonghua	Nov-14	H.K., China	–	GT NO 96	4	PNG LNG	H1670A
Patris	174,000	Chandris Group	Daewoo	Jan-18	Liberia	ME-GI	GT NO 96 GW	4	Freeport	2460
Pearl LNG	174,000	Cardiff LNG Delta Owning LLC	Samsung	Aug-20	Malta	X-DF	NO-96-GW+PRS	4	Portfolio	2275
Pioneer Spirit	138,121	M & S Shipping 3 S.A.	Daewoo	Jul-05	Bahamas	Steam	GT NO 96	4	Das Island	2219
Point Fortin	154,200	Los Halillos Shipping Co.	Koyo Dockyard	Jan-10	Panama	Steam	TZ Mk. III	4	Portfolio	2263
Portovenere	65,000	LNG Shipping S.p.A.	Sestri Ponente	Apr-97	Italy	Steam	GT NO 96	4	Portfolio	5910
Portovyy	138,107	Monteriggioni Inc.	Daewoo	Aug-03	Belgium	Steam	GT NO 96	4	Portfolio	2213
Prachi	162,000	India LNG Transport Company No. 4 Ltd.	HHI	Nov-16	Singapore	Diesel/Gas-Electric	TZ Mk. III Flex	–	Gorgon	2633
Prima Concord	138,267	BG Group	Samsung	May-04	Bermuda	Steam	TZ Mk. III	4	Singapore	1428
Prism Agility	180,000	SK Shipping	HHI	May-19	Panama	X-DF	TZ Mk. III Flex	4	Portfolio	2937
Prism Brilliance	180,000	SK Shipping	HHI	May-19	Panama	X-DF	TZ Mk. III Flex	4	Portfolio	2938
Prism Courage	176,462	Millenaire Financement 12 SASU	HHI	Oct-21	Panama	X-DF	TZ Mk. III Flex	4	Portfolio	2939
Prism Diversity	176,400	HHIENS4 Shipholding SA	HHI	Jun-22	M. Islnds.	X-DF	–	4	–	3145
Pskov	170,200	Sovcomflot	STX	Sep-14	Liberia	–	GT NO 96	4	Portfolio	1911
Puteri Delima	130,400	Puteri Delima S.Bhd.	STX	Jan-95	Malaysia	Steam	GT NO 96	4	MLNG II	30F
Puteri Delima Satu	137,100	MISC	Mitsui E&S	Oct-02	Malaysia	Steam	GT NO 96	4	MLNG III	1506
Puteri Firus Satu	137,100	Puteri Firus S.Bhd.	Mitsubishi	Aug-04	Malaysia	Steam	GT NO 96	4	MLNG III	2177
Puteri Intan	137,100	Puteri Intan S.Bhd.	STX	Aug-94	Malaysia	Steam	GT NO 96	4	MLNG II	30E
Puteri Intan Satu	137,100	MISC	Mitsubishi	Aug-02	Malaysia	Steam	GT NO 96	4	MLNG III	2165
Puteri Mutiara Satu	137,100	MISC	Mitsui E&S	Apr-05	Malaysia	Steam	GT NO 96	4	MLNG III	1562
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

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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 Prouse	174,000	Albus Shipping Ltd.	HHI	Feb-20	Liberia	X-DF	NO-96-GW+PRS	4	Portfolio	8006
Seapeak Arctic	89,800	Artic Spirit LLC	Ishikawajima	Dec-93	Liberia	Steam	IHI SPB	4	Atlantic LNG	3016
Seapeak Arwa	165,500	Membrane Shipping	Samsung	Aug-08	M. Islnds.	Diesel/Gas-Electric	TZ Mk. III	4	Balhaf	1625
Seapeak Catalunya	138,000	Teekay Shipping Spain S.L.	Izar	Jun-03	Spain	Steam	GT NO 96	4	Atlantic LNG	319
Seapeak Creole	173,400	Teekay LNG Partners	Daewoo	Feb-16	Bahamas	ME-GI	GT NO 96 GW	–	Sabine Pass	2407
Seapeak Galicia	140,624	Teekay Gas II	Daewoo	Jul-07	Liberia	Steam	GT NO 96	4	Portfolio	2209
Seapeak Glasgow	174,162	Teekay LNG Partners	Hyundai Samho	Dec-18	Bermuda	ME-GI	TZ Mk. III Flex	–	Freeport	S856
Seapeak Hispania	145,500	Teekay Gas Naviera SL	Daewoo	Aug-02	Spain	Steam	GT NO 96	4	Peru LNG	2205
Seapeak Madrid	138,000	Teekay Shipping Spain S.L.	Navantia	Dec-04	Spain	Steam	GT NO 96	4	Atlantic LNG	105
Seapeak Magellan	165,500	Magellan Spirit ApS	Samsung	Apr-09	Denmark	Diesel/Gas-Electric	TZ Mk. III	4	Portfolio	1626
Seapeak Marib	165,500	Membrane Shipping	Samsung	Apr-08	M. Islnds.	Diesel/Gas-Electric	TZ Mk. III	4	Balhaf	1608
Seapeak Meridian	165,500	Meridian Spirit Aps	Samsung	Jan-10	Denmark	Diesel/Gas-Electric	TZ Mk. III	4	Portfolio	1633
Seapeak Methane	165,500	Malt Singapore Pvt. Ltd.	Samsung	Feb-08	M. Islnds.	Diesel/Gas-Electric	TZ Mk. III	4	Atlantic LNG	1607
Seapeak Polar	89,800	Polar Spirit LLC	Ishikawajima	Jun-93	Liberia	Steam	IHI SPB	4	Atlantic LNG	3015
Seapeak Vancouver	173,400	Teekay LNG Partners	Daewoo	Nov-16	Bahamas	ME-GI	GT NO 96 GW	–	Portfolio	2411
Seishu Maru	138,000	Mitsui O.S.K. Lines	Mitsubishi	Sep-14	Bahamas	–	Moss	4	PNG LNG	2297
Seri Alam	145,572	MISC	Samsung	Jul-05	Malaysia	–	TZ Mk. III	4	Bintulu	1502
Seri Amanah	145,709	MISC	Samsung	Mar-06	Malaysia	Steam	TZ Mk. III	4	Bintulu	1503
Seri Anggun	145,731	MISC	Samsung	Oct-06	Malaysia	Steam	TZ Mk. III	4	North West Shelf	1589
Seri Angkasa	145,130	MISC	Samsung	Dec-06	Malaysia	Steam	TZ Mk. III	4	Bintulu	1590
Seri Ayu	145,894	MISC	Samsung	Oct-07	Malaysia	Steam	TZ Mk. III	4	Bintulu	1591
Seri Bakti	152,944	MISC	Mitsubishi	Apr-07	Malaysia	Steam	GT NO 96	4	Gladstone	2220
Seri Balhaf	152,000	MISC	Mitsubishi	Jan-09	Malaysia	Steam	GT NO 96	4	Bontang	2223
Seri Balqis	152,000	MISC	Mitsubishi	Mar-09	Malaysia	Steam	GT NO 96	4	NLNG	2224
Seri Begawan	152,900	MISC	Mitsubishi	Nov-07	Malaysia	Steam	GT NO 96	4	Bintulu	2221
Seri Bijaksana	152,300	MISC	Mitsubishi	Apr-08	Malaysia	Steam	GT NO 96	4	Bintulu	2222
Seri Camar	150,000	MISC	HHI	Feb-18	Malaysia	Ultra Steam Turbine	Moss	4	Pacific Northwest	2732
Seri Camellia	159,800	MISC	HHI	Sep-16	Malaysia	Ultra Steam Turbine	TZ Mk. III Flex	4	Pacific Northwest	2729
Seri Cemara	150,200	MISC	HHI	Apr-18	Malaysia	Ultra Steam Turbine	Moss	4	Portfolio	2735
Seri Cempaka	162,000	MISC	HHI	Aug-17	Malaysia	Ultra Steam Turbine	TZ Mk. III Flex	4	Pacific Northwest	2731
Seri Cenderawasih	162,000	MISC	HHI	Feb-17	Malaysia	Ultra Steam Turbine	Moss	4	Pacific Northwest	2730
Sestao Knutsen	136,947	Norspan LNG IV AS	Navantia Cadiz	Oct-07	Spain	Steam	GT NO 96	4	Portfolio	331
Sevilla Knutsen	173,400	Norspan LNG VI AS	Daewoo	May-10	Spain	Diesel/Gas-Electric	GT NO 96	4	Portfolio	2269
Shagra	268,000	Nakilat SHI 1751 Inc.	Samsung	Nov-09	M. Islnds.	Diesel	TZ Mk. III	10	Qatargas IV	1751
Shahamah	135,496	Shahamah Inc.	Kawasaki	Oct-94	Liberia	Steam	Moss	5	Das Island	1438
Shandong Juniper	135,269	Shell Bermuda (Overseas) Ltd.	Mitsubishi	Feb-04	Singapore	Steam	Moss	5	Peru LNG	2183
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
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

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Sohar LNG	137,248	Energy Spring LNG Carriers	Mitsubishi	Oct-01	Malta	Steam	Moss	5	Oman LNG	2162
Sohshu Maru	177,000	Mitsui O.S.K. Lines	Kawasaki	Jul-19	Japan	DERST (aka STaGE)	Moss	4	Freeport	1735
Solaris	155,000	GasLog	Samsung	Jul-14	Bermuda	Diesel/Gas-Electric	TZ Mk. III	4	Portfolio	2042
Sonangol Benguela	160,500	Sonangol Benguela Ltd.	Daewoo	Dec-11	Bahamas	–	GT NO 96	4	Soyo	2282
Sonangol Etosha	160,500	Sonangol Etosha Ltd.	Daewoo	Sep-11	Bahamas	–	GT NO 96	4	Soyo	2281
Sonangol Sambizanga	160,500	Sonangol Sambizanga Ltd.	Daewoo	Aug-11	Bahamas	–	GT NO 96	4	Soyo	2280
Southern Cross	172,000	Mitsui O.S.K. Lines	Hudong Zhonghua	Jul-15	H.K., China	ME-GI	GT NO 96	4	PNG LNG	H1671A
Soyo	160,276	Mint LNG I	Samsung	Aug-11	Bahamas	–	TZ Mk. III	4	Soyo	1810
Spirit of Hela	177,000	Nefertiti LNG Shipping Co.	Hyundai Samho	Nov-10	Bahamas	Diesel Electric	TZ Mk. III	4	PNG LNG	S324
Stena Blue Sky	145,700	Blue Sky LNG	Daewoo	Aug-06	Panama	Steam	GT NO 96	4	Spot	2233
Stena Clear Sky	171,800	Clear Sky LNG Shipping	Daewoo	May-11	U.K.	Diesel/Gas-Electric	GT NO 96	4	Portfolio	2278
Stena Crystal Sky	171,800	Stena Drilling Cyprus	Daewoo	May-11	U.K.	Diesel/Gas-Electric	GT NO 96	4	Portfolio	2268
Symphonic Breeze	145,394	Reborn Maritime	Kawasaki	Dec-07	Bahamas	Steam	Moss	4	Portfolio	H1587
Taitar No 1	145,000	NiMic No 1 S.A.	Mitsubishi	Oct-09	Panama	–	Moss	4	RasGas	2241
Taitar No 2	145,000	NiMic No 2 S.A.	Kawasaki	Dec-09	Panama	–	Moss	4	RasGas	1625
Taitar No 3	145,000	NiMic No 3 S.A.	Mitsubishi	Dec-09	Panama	–	Moss	4	RasGas	2242
Taitar No 4	147,000	NiMic No 4 S.A.	Kawasaki	Aug-10	Panama	–	Moss	4	RasGas	1626
Tangguh Batur	145,700	LNG North-South Shipping Co.	Daewoo	Dec-08	Singapore	Steam	GT NO 96	4	Tangguh	2242
Tangguh Foja	155,000	Ocean 1919 Shipping No. 1	Samsung	Nov-08	Panama	–	TZ Mk. III	4	Tangguh	1619
Tangguh Hiri	155,000	Tangguh Hiri Finance Ltd.	HHI	Dec-08	Isle of Man	–	TZ Mk. III	4	Tangguh	1780
Tangguh Jaya	155,000	Ocean 1919 Shipping No. 2	Samsung	Dec-08	Panama	–	TZ Mk. III	4	Tangguh	1620
Tangguh Palung	155,000	Ocean 1919 Shipping No. 3	Samsung	Mar-09	Panama	–	TZ Mk. III	4	Tangguh	1634
Tangguh Sago	155,000	Teekay Shipping (Canada) Limited	Hyundai Samho	Dec-08	Bahamas	Diesel/Gas-Electric	TZ Mk. III	4	Tangguh	S298
Tangguh Towuti	145,700	LNG East-West Shipping Co.	Daewoo	Oct-08	Singapore	Steam	GT NO 96	4	Tangguh	2241
Tembek	216,200	Overseas LNG S1 Corp.	Samsung	Nov-07	M. Islnds.	Diesel	TZ Mk. III	4	Qatargas II	1605
Tenergy	170,520	Briety Shipping Inc	HHI	Jan-22	Greece	X-DF	TZ Mk. III	4	Portfolio	3157
Tessala	170,000	Hyproc Shipping Co.	HHI	Feb-17	Algeria	Diesel/Gas-Electric	TZ Mk. III Flex	–	Arzew	2813
Trader	138,000	K Line LNG Shipping (UK) Ltd.	Samsung	Nov-02	Isle of Man	Steam	TZ Mk. III	4	Portfolio	1380
Traiano Knutsen	180,000	Hai Kuo Shipping 1901 G Ltd.	HHI	Jul-20	Belgium	ME-GI	TZ Mk. III Flex	4	Portfolio	3086
Trinity Arrow	154,982	Luster Maritime S.A. & Cypress Maritime Panama & Los Halillos Shipping Co.	Koyo Dockyard	Feb-08	Panama	Steam	TZ Mk. III	4	Portfolio	2258
Trinity Glory	154,000	Cypress Maritime Consortium	Koyo Dockyard	Nov-08	Panama	Steam	TZ Mk. III	4	Bontang	2260
Tristar Ruby	155,000	RBSSAF (19) Ltd.	HHI	Apr-08	Isle of Man	Diesel/Gas-Electric	TZ Mk. III	4	Portfolio	1778
Umm Al Amad	210,200	J5 Nakilat No. 7 Ltd.	Daewoo	Sep-08	M. Islnds.	Diesel	GT NO 96	18	RasGas III	2253
Umm Al Ashtan	137,000	Umm Al Ashtan Ltd.	STX	May-97	Liberia	Steam	Moss	4	Das Island	1333
Umm Bab	145,000	Sea Trade International Inc.	Daewoo	Nov-05	Greece	Steam	GT NO 96	4	RasGas II	2228
Umm Slal	266,000	Nakilat Umm Slal Inc.	Samsung	Nov-08	M. Islnds.	–	TZ Mk. III	5	Qatargas II	1676
Valencia Knutsen	173,400	Norspan LNG VII AS	Daewoo	Sep-10	Spain	–	GT NO 96	4	Portfolio	2274
Velikiy Novgorod	170,200	Sovcomflot	STX	Dec-13	Liberia	–	GT NO 96	4	Portfolio	1910
Vivit Americas LNG	174,000	Cardiff LNG Zeta Owning LLC	HHI	Oct-20	Malta	X-DF	TZ Mk. III Flex	4	Portfolio	3037
Vivit Arabia LNG	174,000	Kaiser 2 SA	Hyundai Samho	Jun-22	Liberia	X-DF	TZ Mk. III Flex	4	Portfolio	8026
Vivit City LNG	174,103	Kaiser SA	Hyundai Samho	Dec-21	Liberia	X-DF	TZ Mk. III Flex	4	Portfolio	8025
Vladimir Rusanov	174,000	Mitsui O.S.K. Lines	Daewoo	Jan-18	Bahamas	ME-GI	GT NO 96 GW	4	Yamal	2424
Vladimir Vize	172,000	China Shipping Development Co.	Daewoo	Sep-18	H.K., China	ME-GI	GT NO 96 GW	4	Yamal	2426
Vladimir Voronin	172,652	Teekay Corp.	Daewoo	Jul-19	Bahamas	ME-GI	GT NO 96 GW	4	Yamal	2431
WilForce	155,900	Wilforce LLC	Daewoo	Sep-13	Norway	–	GT NO 96	4	–	H2289
WilPride	155,900	Wilpride LLC	Daewoo	Nov-13	Norway	–	GT NO 96	4	–	H2290
Woodside Chaney	174,000	Maran Gas Maritime	Daewoo	Jul-19	Greece	ME-GI	GT NO 96 GW	4	Portfolio	2457
Woodside Charles Allen	173,400	Hai Kuo Shipping 2027G Ltd.	Daewoo	Oct-20	Greece	ME-GI	GT NO 96 GW	4	Portfolio	2486
Woodside Donaldson	165,500	Malt Singapore Pvt. Ltd.	Samsung	Oct-09	Singapore	Diesel/Gas-Electric	TZ Mk. III	4	Pluto	1632
Woodside Goode	159,800	Armour Company Ltd.	Daewoo	Nov-13	Greece	Diesel Electric	GT NO 96 GW	4	RasGas	H2295
Woodside Rees Withers	173,400	Maran Gas Maritime	Daewoo	Oct-19	Greece	ME-GI	GT NO 96 GW	4	–	2466
Woodside Rogers	159,800	Margie Seaway Corp.	Daewoo	Jul-13	Greece	Diesel/Gas-Electric	GT NO 96 GW	4	Pluto	H2288
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
Yamal Spirit	174,000	Teekay LNG Partners	Hyundai Samho	Jan-19	Bermuda	ME-GI	TZ Mk. III Flex	–	Freeport	S857
Yari LNG	159,800	Cardiff LNG	Daewoo	Nov-14	Malta	TFDE	GT NO 96 L03	4	Spot	2401
Yenisei River	155,000	Navajo Marine	HHI	Jul-13	M. Islnds.	–	TZ Mk. III	4	Yamal	2556
Yiannis	169,932	Onerato Marine SA	Daewoo	Sep-21	Greece	ME-GI	GT NO 96 GW	4	Portfolio	2501
YK Sovereign	127,125	SK Shipping	HHI	Dec-94	Panama	Steam	Moss	4	MLNG	761
Zarga	268,000	Nakilat SHI 1752 Inc.	Samsung	Jan-10	M. Islnds.	–	TZ Mk. III	5	Qatargas IV	1752
Zekreet	137,482	Mitsui O.S.K. Lines	Mitsui E&S	Dec-98	Japan	Steam	Moss	5	Qatargas I	1432



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

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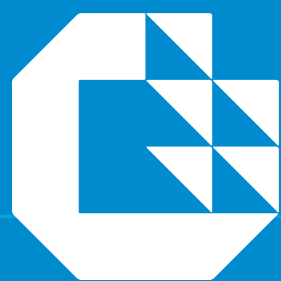
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