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Taiwan pivots to LNG-fuelled power as nuclear exit nears

Taiwan stands out among Asian LNG buyers as a country where gas demand has been rising steadily and substantially, not least due to the fast-approaching decommissioning of the country's last nuclear power station. The state-owned commodity importer CPC Corp, meanwhile, just got the green light to build a new LNG regas and import terminal at Kaohsiung – an additional option for future LNG imports as more shipments are lined up at Taiwan's existing terminals Yung An and Taichung Harbor in the first quarter of 2025; our Correspondent Anja Karl investigates.

Taiwan is one of the least resource-rich countries in the world: With just 0.22 trillion cubic feet (Tcf) of proven gas reserves, Taiwan's total reserves are less than even a single year of gas consumption of around 139 million cubic feet (mmcf). The island is hence highly dependent on importing natural gas and other commodities to sustain demand from industry, power generators and households alike.

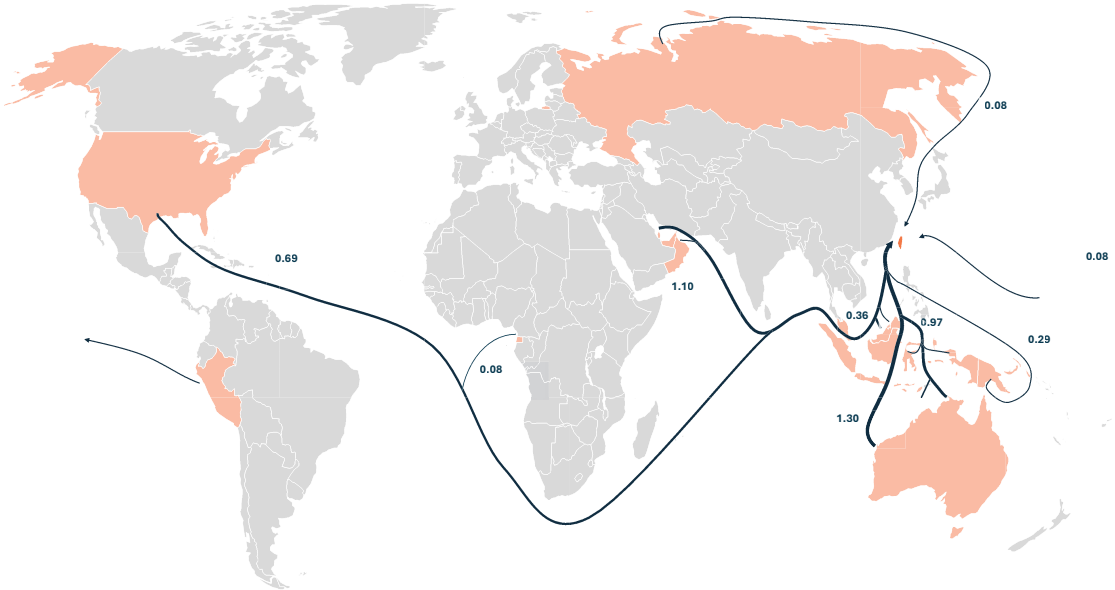
More than 19.4 billion New Taiwanese Dollars (NT\$), equalling US\$0.59 billion have been spent by Taiwan's state-owned oil and gas company CPC Corp. to implement five ongoing and two new projects designed

to increase the island nation's LNG import capacity. The government's nuclear exit policy requires Taipower to

change its energy mix and generate more baseload power from natural gas and renewables to meet rising demand from energy-intensive industries.

- At Taichung Harbor, CPC has extended Taiwan's second LNG regas terminal at a cost of NT\$18.5 billion to 3 million tons per annum (mtpa) from initially 1.68 mtpa. Utilisation rates of the terminal have since December 2018 been consistently high.
- In northern Taiwan, rising gas demand by Taipower's industrial and commercial consumers prompted CPC to realise its third LNG receiving terminal for NT\$60.1 billion in capital costs. This latest landmark project at Kuantang Industrial Centre comprises of a regas facility with up to 3 mtpa alongside with two LNG storage tanks with 160,000 kilolitre each. The entire project is designed to supply fuel to three projected gas-fired generating units at Datan Power Station. The

LNG Flows to Taiwan
Q4 2024



Source: LNG Journal
Only major cumulative flows shown for clarity. Not to scale, for illustration only.

Recent Taiwanese LNG Imports (MMt)

Vessel Name	IMO	Export Facility	Import Facility	Arrival Date	Delivered
Diamond Gas Victoria	9874466	Cameron LNG	Taichung	31/12/2024	0.08
Al Rayyan	9086734	Ras Laffan	Taichung	30/12/2024	0.04
Kool Husky	9626039	PNG LNG	Yung-an	30/12/2024	0.07
Tangguh Jaya	9349019	Tangguh	Taichung	30/12/2024	0.07
Al Jasra	9132791	Ras Laffan	Taichung	28/12/2024	0.06
Pacific Breeze	9698123	Ichthys LNG	Yung-an	28/12/2024	0.08
Beidou Star	9613159	Gorgon LNG	Yung-an	25/12/2024	0.03
Kumul	9613161	PNG LNG	Yung-an	25/12/2024	0.07
Arkat	9496305	Brunei LNG	Taichung	24/12/2024	0.06
GasLog Sydney	9626273	PFLNG 2	Yung-an	22/12/2024	0.07
Taitar No.4	9403657	Ras Laffan	Taichung	22/12/2024	0.05
LNG Ebisu	9329291	Wheatstone LNG	Yung-an	20/12/2024	0.05
Total					0.73

Source: LNG Journal

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Bird's eye view of Taichung LNG terminal (under expansion)



CPC's second LNG terminal in Kaohsiung

Kuantang LNG import terminal and related midstream infrastructure is scheduled for completion by December 2025.

- Simultaneously, shipments to the Yung-An LNG terminal in Kaohsiung in the southwest of Taiwan, keep rising since its inception in 1984. The CPC-owned terminal began operating in

1990 with a capacity of 1.5 mtpa, and was subsequently expanded to 7.5 mtpa in 2002 and further enhanced as of July 2018 to a receiving capacity of 10 mtpa.

Apart from LNG, petroleum products and petrochemicals are also in high demand in Taiwan, which is why CPC is investing in a 150,000 barrel per day (bpd) topping

unit and related distillate hydrotreaters at the Dalin refinery. An investment of NT\$20.5 billion here is meant to improve the refinery's crude oil handling capacity and boost its ability to supply naphtha feedstock for industrial offtakers.

Pivot to LNG spurred by nuclear exit policy

As for electric power generation, CPC and Taipower are rushing to find a replacement for the soon-to-be shuttered nuclear power unit at Maanshan – the island nation's last operational nuke.

Once the final 951 MW Maanshan Unit-1 will be shut down and decommissioned, the lost generating capacity will have to be made up by electricity derived either from renewable energy sources, or from gas-fuelled power stations. The latter is deemed the more likely option given that dispatchable gas power stations are capable to ramp up at short notice to provide emergency power or balance inherently intermittent contributions of wind and solar power sources.

Decommissioning of Maanshan Unit 1 is due before summer 2025 – as Taipower adheres to the government's Nuclear Free Homeland Policy. State-run commodity importer CPC has consequently been stepping up LNG imports over the course of this year.

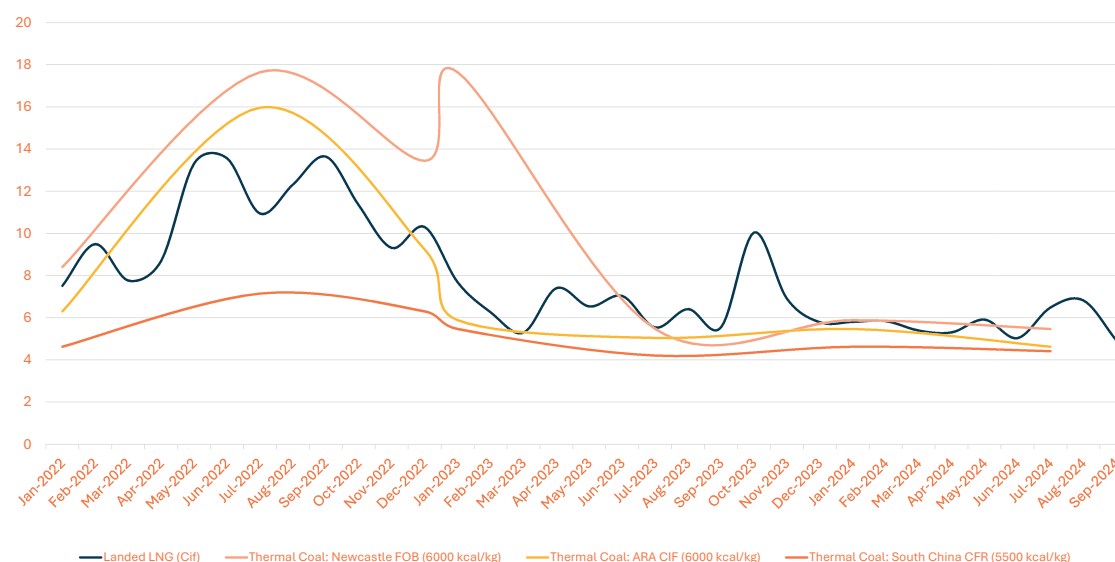
Complying with state energy policy, Taipower completed the shut-down process of Unit 1 of the last fully functional nuclear power plant on July 27 this year. It is currently preparing to decommission Unit 2 in early 2025 – completing Taiwan's full nuclear exit.

Risk of power crunch

The risk of a power crunch has been looming large as the government is determined to stick to its nuclear exits policy, bowing to rising geopolitical and environmental pressure. But supply of alternative energy sources – notably LNG – has been hard to come by at an affordable rate in the wake of Russia's invasion of Ukraine and the subsequently ensuing global energy crisis.

Eager to pre-empt electricity shortages, the government in Taipei is

Taiwanese Thermal Power Fuel Prices (US\$/mmBtu)



Source: EIA, IEA (using Argus Media data)
Coal prices are global benchmarks.

supporting projects for 4.4 Gigawatt (GW) gas-fuelled power gen capacity which is scheduled to come into operation over the next few years. These new power plants are bound to underpin Taiwan's future LNG demand.

Legal review of Maanshan closure

Currently Taiwan's highest law-making court is reviewing if the runtime of the final Maanshan nuclear power unit could be extended. The matter has been brought to court in an effort to guarantee sufficient baseload power gen capacity will remain available, but market observers reckon a ruling of a nuclear run-time extension is

highly unlikely. Repowering thermal power stations to no longer run on coal, but on cleaner-burning natural gas is another option. Converting the combustion system at Talin Power Station from coal to gas – a project in the making – would not only boost demand for LNG. Burning gas instead of thermal coal would also produce around 95,000 tonnes less sulphur oxide, some 50,000 tonnes less nitrogen oxide and 6.26 million tonnes less carbon dioxide annually, Taipower, the operator of the Westinghouse-built PWR nuclear reactor pointed out. CPC confirmed it will supply regasified LNG to the repowered Talin power plant but the company was quick to add it

would also supply gas to power industries, homes, other end-users, and source gas for storage to meet seasonal demand swings. Plans to increase Taiwan's natural gas reserves from the current 7-day storage level to 14, have already been announced by the country's Ministry of Economics in October. Rising requirements for gas storage further add to Taiwan's growing appetite for imported LNG. All these factors make the state gas buyer CPC Corporation keep a vigilant



Maanshan nuclear power plant

eye on offerings from long-term LNG suppliers as well as for spot cargoes which adds to the bullish momentum for LNG prices in the Asia Pacific basin.

Global LNG balance bound to tighten in Q1-2025

Spot and forward LNG prices indicate the supply/demand balance will tighten in December and going into the first quarter of 2025. Following two exceptionally mild winters, markets are currently well supplied at relatively low prices, analysts said, suggesting a prolonged spell of cold temperatures could squeeze the balance substantially. The last two winters in the Northern Hemisphere were exceptionally mild, hence gas prices going into this winter are only slightly higher than last year at the same time.

"If weather remains mild this winter as in the past two winters, we expect a relatively stable global supply-demand balance with prices similar to the previous two winters," analysts noted; "But if Europe and Asia experience colder temperatures this winter than in the past two years, or other operational and market risks materialize, global supply-demand balances could tighten, leading to elevated natural gas prices and potential price spikes."

Limited LNG additions enhance supply risk

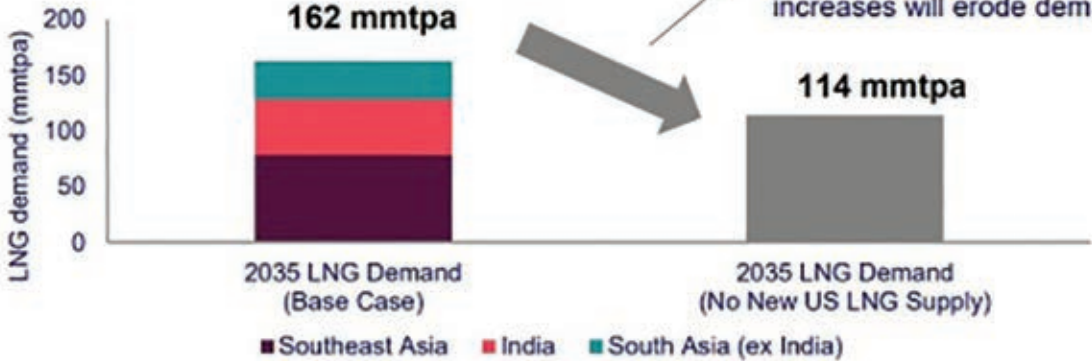
LNG capacity additions are limited this winter, with growth – if any – most likely to come forward in the United States. Shifts in pipeline flows also affect the supply side, analysts added, pointing at severe reductions in Russian gas volumes delivered to Europe – if the transit contract between Gazprom and Naftogaz Ukrainy that expires at the end of 2024 is not renewed.

Operational issues could delay the start-up of new projects, limiting available gas for exports, unplanned outages at LNG export facilities. Moreover, geopolitical events that could alter LNG trade flows, potentially reducing available supply. As for downstream markets, notably power generation, analyst noted that "issues related to electricity supply could affect demand for LNG as a fuel source for power generation, such as nuclear availability and restarts in Europe and Asia, renewable energy

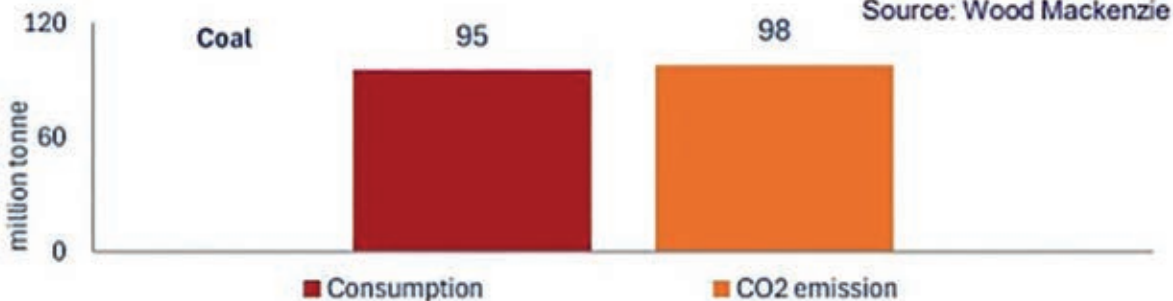
output, and fuel availability and costs to power stations." All for this affects dispatch economics. **Brace for a cold winter** Weather risk is another key issue, notably below normal temperatures in December this year, January and February 2025. "A cold winter with sustained, lower-than-normal temperatures in one or more regions in the Northern Hemisphere could occur as El Niño changes to La Niña this year," analysts said, explaining: "This change

in climate patterns may increase natural gas demand, creating competition for spot LNG supplies between Europe and Asia. "Colder weather in the United States could reduce storage inventories and increase U.S. domestic Henry Hub prices, affecting LNG export prices from the United States," they warned. Other LNG import markets, including Brazil and Egypt, could also increase LNG demand, which could intensify competition for spot LNG among region and further tighten balances.

Emerging Asia LNG Demand (2035)



Incremental Coal Consumption and incremental CO2 emissions (2035)



Note: The incremental coal consumption is estimated based on 30% of 2035 LNG demand being displaced 100% by coal. CO2 emission are estimated using IEA CO2 Factors for Coal (95.92 kg CO2/ mmbtu). Coal currently accounts for ~65% of the total emissions in Asia

New attempt to establish Argentina as LNG exporter

Argentina aims to become a major LNG exporter in South America, leveraging its Vaca Muerta shale resources, hoping to capitalise on European and Asian demand growth. A recent project merger in favour of FLNG signals momentum whilst a financing programme could potentially address the economic challenges of previous attempts. However, growth of surplus production is key, writes our Markets Editor, Dr Alexander Wilk.

Argentina again sees efforts to monetise its substantial natural gas reserves, as the country pursues new LNG export projects at a time when other established South American gas producers are struggling to enhance their output. Europe's urgent need for alternative gas supplies and a roster of emerging Asian LNG markets such as India are adding new lift to long-standing Argentine LNG exporting ambitions. In early December, the country's hydrocarbons champion YPF has renewed yet again its efforts to transform Argentina's sizeable Vaca Muerta shale play into steady LNG flows to international markets by joining a venture being developed by rival shale driller Pan American Energy and LNG specialist Golar LNG.

Unconventional expansion

Natural gas production in Argentina is approaching record highs, driven by increasing output from the Vaca Muerta shale formation, which is seeking to offset declining output from conventional natural gas fields. From January 2021 through September 2024, natural gas production rose by 27 percent, lifting output near the records set in the early 2000s, according to data from the country's energy ministry, the Secretaría de Energía de la República Argentina (SESCO).

The US Energy Information Administration (EIA) estimates that the Vaca Muerta shale formation, located mainly in Argentina's Neuquén province, has the equivalent of roughly 8.7 trillion cubic metres of technically recoverable shale gas resources. Argentina thus ranks among the world's top five holders of shale natural gas resources. This, of course, does not mean even a substantial amount of that theoretical maximum will inevitably be produced. Actual production – and production from unconventional sources especially – is typically determined by market driven factors such as wellhead prices, interest rates, fiscal policy and available infrastructure. Moreover, the availability of drilling rigs can also be a determining factor. As previously seen in the explosion of unconventional hydrocarbon production in the United States, these factors

conspire to determine the influx of capital into the sector.

Just as unconventional gas production was fundamental to the United States' success as an LNG exporter, so too will it be fundamental to Argentina's success.

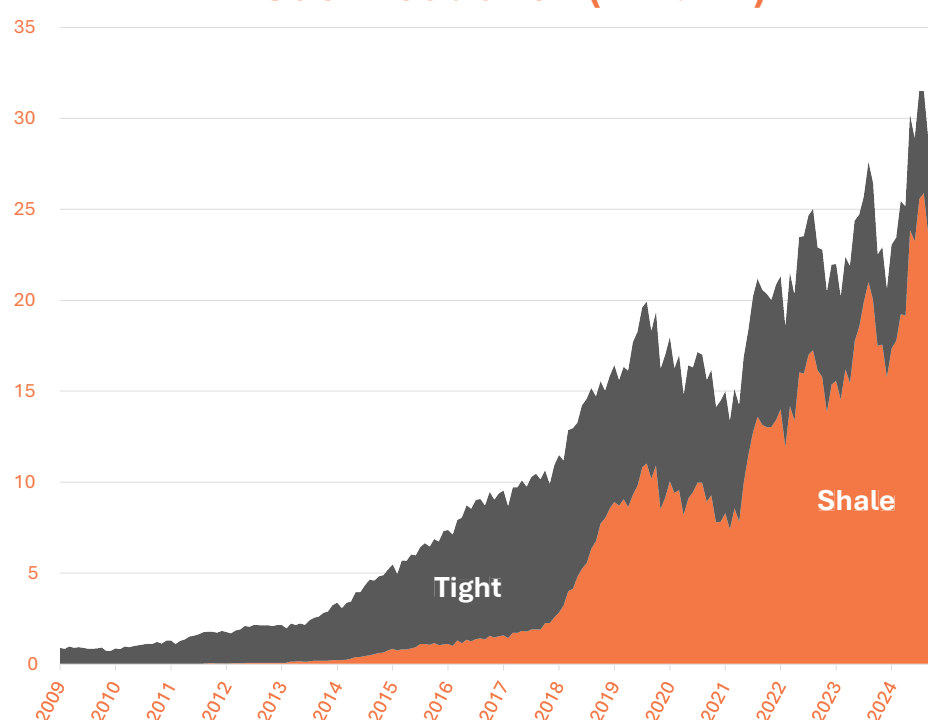
Uphill battle

Gas production growth from the Vaca Muerta shale formation has helped lift overall output from the lows seen in the mid-2010s. Data from the country's energy secretariat shows that from January 2021 through September 2024, natural gas production from unconventional sources rose significantly, with the Vaca Muerta shale formation playing a pivotal role in Argentina's energy landscape. The development of unconventional resources has successfully lifted production from the lows of 41-42 billion cubic metres (bcm) seen in 2014-2015 to more than 48 bcm in 2022-2023 and thus very similar levels to those seen in 2009. They even approached Argentina's peak gas production to date of 49.4 bcm in 2019.

However, a more granular analysis of production trends suggests a complex picture. Robust gas production growth between 2015 and 2019 (inclusively) was kneecapped by Argentina's strict COVID lockdowns in 2020. The pandemic compelled YPF to declare force majeure on its charter contract for the 0.50 million tonnes per annum (mtpa) Tango FLNG plant, which swiftly ended Argentina's LNG exports. Concurrently, the decline of conventional gas production outpaced unconventional output growth, resulting in a total gas output drop by 4.3 bcm (-9 percent) to 45.1 bcm that year. Recovery began only slowly – 2021 production only grew to 45.3 bcm – resulting in Argentina's annual gas production having yet to catch up to 2019 levels.

Concurrently, monthly SESCO data has shown strong performance in 2024, with total gas production reaching 4.6 bcm in November (the last available data month). This was the highest level for that month in SESCO's data and on par with Argentina's usual peak production season of June-August. Moreover, based on an extrapolation of historical data, we estimate December 2024 production could

Argentine Unconventional Gas Production (Bln. m³)



Source: Secretaría de Energía de la República Argentina (Argentina Ministry of Energy)
Note: Monthly data up to and including November 2024.

well be around 4.0 bcm in total, whereby shale gas might push Argentina's total output to around 51 bcm for 2024 and thus establish a new peak production record.

Yet, this growth, past and prospective, needs to be considered alongside domestic gas consumption stemming from residential and industrial demand, gas production itself (e.g. to run power generators) and even the venting of excess gas (which suggests infrastructure bottlenecks). SESCO data shows that Argentina has had an average gas surplus of roughly 1.8 bcm annually between 2009 and 2023. This equates to roughly 1.26mmt of LNG per year. However, this surplus has always been reliant on gas imports. Without them, SESCO data shows consistently that Argentina's gas production was unable to cover demand. This has only changed in 2024 so far, where annual gas production is likely to surpass domestic demand for the first time since 2009. Nevertheless, this is more due to falling demand than rising production, as impressive as recent output growth may have been. Accordingly, the surplus has received substantial uplift as domestic gas demand retreated in 2023 and 2024, which mirrors the decline of the country's economic activity index. As a result, the

gas surplus could be slightly higher for 2024 if production growth holds – even as pipeline gas imports from Bolivia ceased in September 2024 and LNG offtakes more than halved to 0.65mmt for the year to December, according to our data.

Whilst the Vaca Muerta formation's potential cannot be disputed, the Argentine government's data thus indicates Argentine gas production has not yet reached sufficient levels to meet both domestic demand during times of growing economic activity and the feedgas requirements of a larger-scale LNG export project. The country's only foray into LNG exports was via the small-scale Tango FLNG facility.

Reviving projects with new partners

YPF has never fully abandoned its LNG aspirations after the initial 2019 force majeure. Argentina's former president Alberto Fernández repeatedly stressed the importance of extracting and selling gas resources for profit. Accordingly, preliminary studies continued, aimed at not only rebuilding export capacity but also capitalising on the revived fortunes of domestic gas production. The country's shale-rich Vaca Muerta play lies at the heart of this strategy. Unlocking its

potential will require better pipeline infrastructure, continuous drilling to keep production from rapidly declining and, crucially, foreign direct investment. High domestic prices and a more favourable international pricing environment have spurred renewed interest, and the government's discourse has kept course towards fully exploiting and exporting shale gas resources.

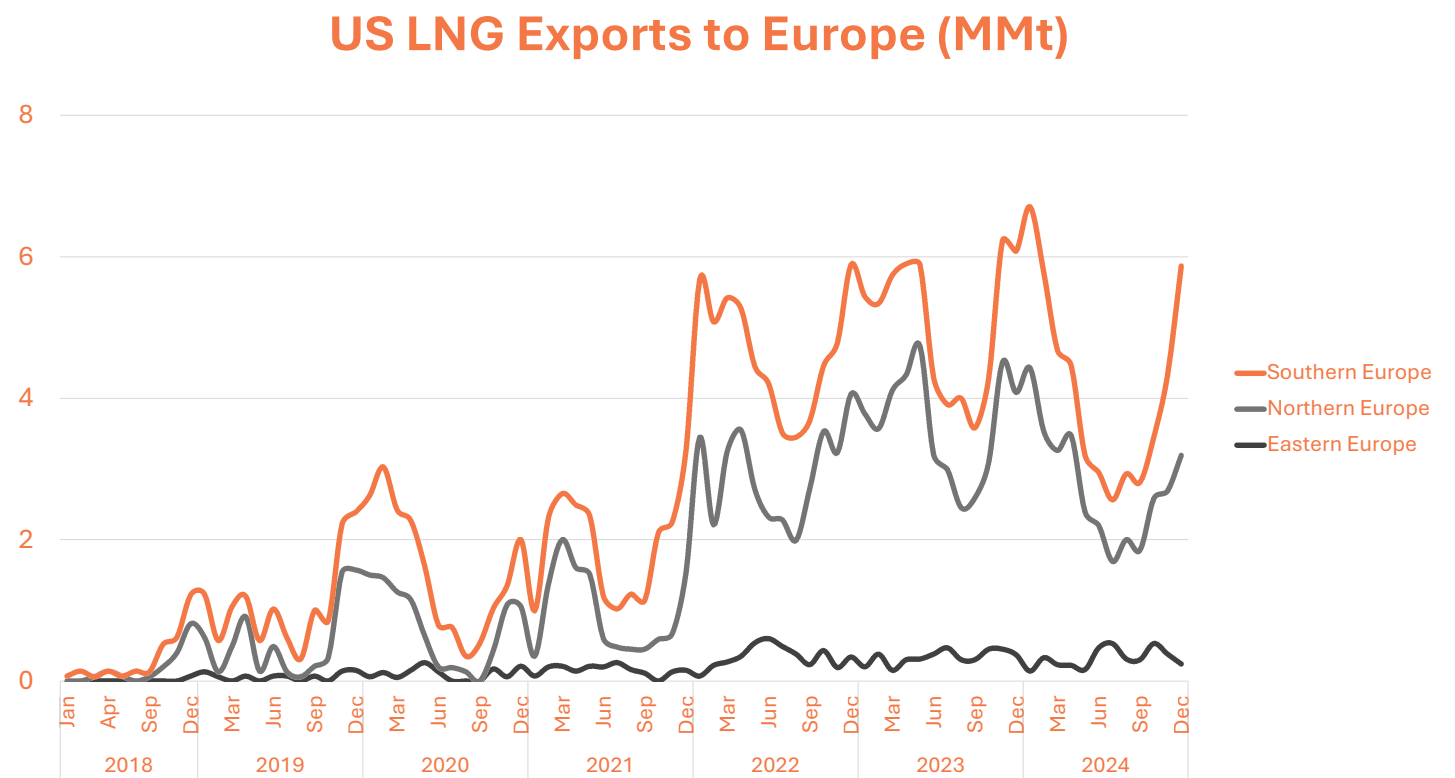
Market opportunities

The European gas crunch in 2022, triggered by geopolitical shifts and the disruption of Russian pipeline flows, incentivised the Argentine government to revisit LNG export schemes. As European nations scrambled to install floating storage and regasification units (FSRUs), Buenos Aires saw an opening to target energy-hungry European markets.

Early hopes that Qatar could cover Europe's gas deficit proved overly optimistic. Qatar was unable to increase supply at short notice. In February 2022, Qatar's energy minister Saad al-Kaabi rebuffed a German government enquiry by saying "Most of the LNG are tied to long-term contracts and destinations that are very clear. So, to replace that sum of volume that quickly is almost impossible." Although Germany can now look forward to direct LNG deliveries from Qatar via a 15-year contract with ConocoPhillips, the agreed 2.0 mtpa not only represent a relatively small amount given Germany's energy needs, but also are only due to begin in 2026.

This provided an opening for US LNG exports to Europe, which have since skyrocketed, more than doubling from 22.99mmt in 2021 to 55.88mmt in 2022 and climbing to 60.68mmt in 2023. Although European offtakes of US LNG fell back by 10.96mmt to 49.72mmt in 2024 on the back of another year of relatively mild winters and full gas inventories, 2024 imports are still twice those of 2021. Beyond imports from the United States, European demand growth for LNG from elsewhere has emulated that trend.

In similar vein, for example, India's LNG demand is growing robustly. According to our data, Indian LNG offtakes stood at 25.28mmt in 2024 up by 3.09mmt (14 percent) year-on-year. Notably, Rystad Energy predicts India's domestic gas demand will double by 2040 as local production falls short. A considerable portion of that demand will have to be covered by LNG imports. Against this backdrop, Argentina may



Source: LNG Journal

have another opportunity to enter the LNG market as an exporter, so long as it could ramp up production from Vaca Muerta and surmount infrastructure bottlenecks.

New offshore endeavour

A major new offshore venture signals fresh momentum. YPF has joined forces with Pan American Energy Group (PAE) and Golar LNG on a US\$3 billion floating LNG (FLNG) export project in the San Matías Gulf, off the coast of Río Negro province. The project will utilise the Golar-controlled FLNG Hilli, which brings with it a reliable operational track record. The vessel, originally converted from a 122,000 cubic meter LNG carrier built in the mid-1970s, made history as the world's first FLNG conversion when deployed offshore Cameroon in 2018, from where it has supplied both Europe and India.

The project partners aim to achieve first exports by 2027. Importantly, the project targets year-round operations — which would be an important shift for Argentina whose LNG activity has so far been highly seasonal due to higher domestic winter demand. The vessel's four trains provide a production capacity of 2.4 mtpa though Golar LNG maintains flexibility to potentially swap the Hilli for a larger MKII FLNG vessel with 3.5mtpa capacity, which would significantly boost the project's nominal capacity.

This partnership represents a 20-year commitment to FLNG deployment, with Stifel's Ben Nolan speaking to SeatradeMaritime noting it could

generate EBITDA considerably above US\$500 million if upgraded to a MKII vessel. The project entails using spare capacity in Argentina's existing pipeline infrastructure during periods of low domestic demand, but also requires investments in compressor stations, onshore and underwater pipelines, and mooring systems. The ultimate vision is to create a consistent LNG export stream that turns Vaca Muerta's vast shale gas reserves into steady foreign currency earnings, alleviating some of the economic pressures that have long plagued Argentina's energy sector.

YPF's President and CEO, Horacio Daniel Marín, anticipates that this offshore venture could yield LNG exports worth US\$15 billion by 2030 — a welcome prospect for an economy struggling with currency restrictions, high inflation, and an historic lack of sustained investment. The selection of the Hilli, with its proven operational history and potential for capacity expansion, adds credibility to these ambitious targets.

Economic challenges

However, Argentina's past struggles to entice sustained foreign direct investments into its hydrocarbon industry indicates the main hurdle. Foreign currency restrictions, heavy inflation, and past failures to pass major hydrocarbons reforms have weighed on investor confidence. Nevertheless, the importance of Vaca Muerta's resources — compared by some to the prolific Permian Basin in the United States — remains

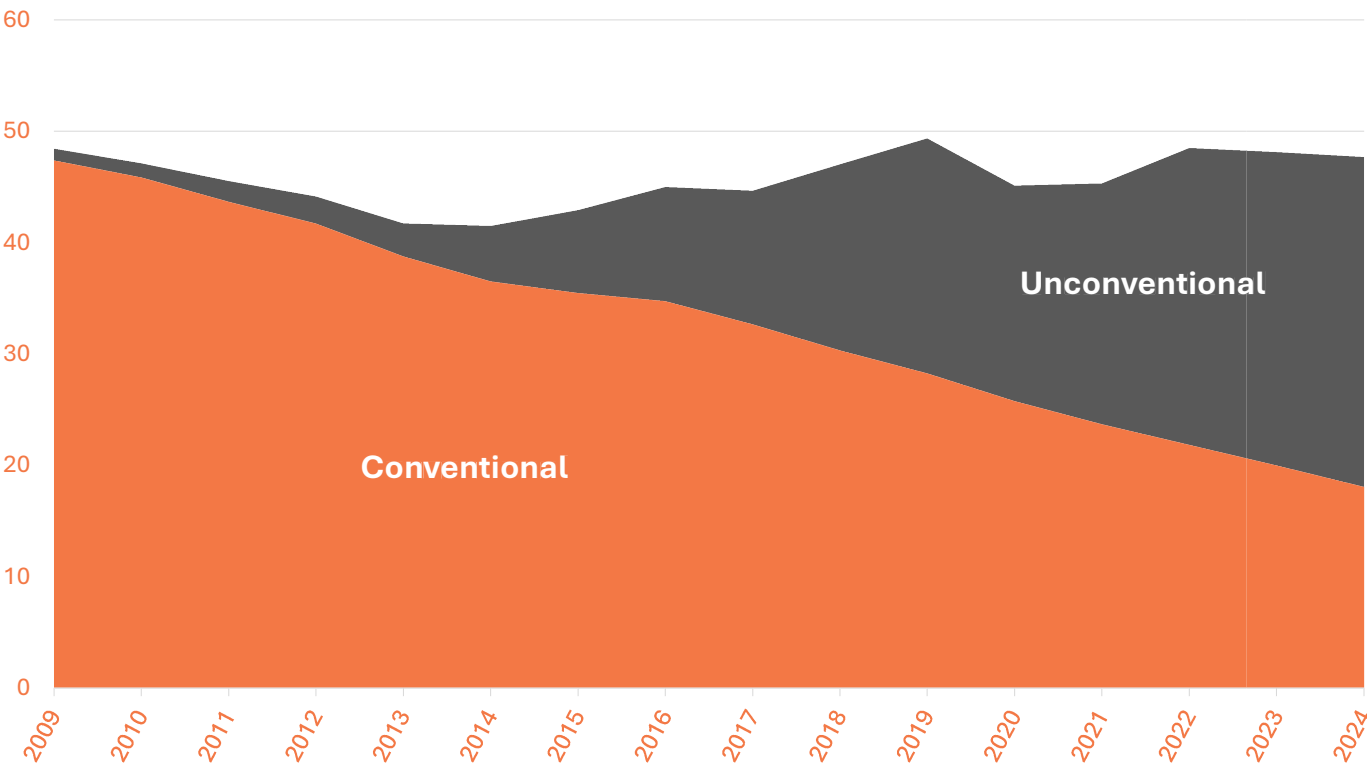
clear and constitutes the country's hydrocarbon crown jewel. Its unlocking will require not only stable and transparent policies, but also the ability to secure affordable financing for sustained well drilling over the long term. In our view, installing the FLNG plant as a semi-permanent gas outlet to lucrative markets may well serve to entice increased drilling and investment activity in the Vaca Muerta play.

While the project partners have not yet publicised financing specifics, a new programme of long-term tax and foreign-exchange benefits, approved by the Argentine Congress is promising and has already received an application for inclusion by the YPF-Pan American-Golar venture, according to Economy Minister Luis Caputo speaking to Bloomberg.

YPF and Malaysia's Petronas signed an LNG feasibility study in September 2022 for a US\$10 billion export facility on Argentina's Atlantic coast. Initially targeting about 5.0mtpa of LNG, the plant was envisioned to eventually expand to 25mtpa. Meanwhile, US firm Excelerate had proposed establishing an LNG trading hub by 2025 in partnership with Transportadora de Gas del Sur (TGS), which could help stabilise Argentine gas markets and mimic the benefits of storage by absorbing seasonal spikes. With YPF joining the Pan American-Golar project, the path forward for these onshore projects is unclear.

Elsewhere in South America, established LNG exporters have lost momentum. Trinidad & Tobago's

Argentine Gas Production (Bln. m³)



Source: Secretaría de Energía de la República Argentina (Argentina Ministry of Energy)
Note: Annual data up to and including November 2024.

established gas fields are maturing fast, with some in operation since 1993. Peru's LNG industry has suffered from periodic bouts of political and regulatory uncertainty, and nascent offshore gas discoveries in Suriname, Guyana, and Mexico remain in early stages. Against this backdrop, Argentina's persistence

stands out. Its emerging FLNG project and onshore endeavours place it once again in the spotlight as a potential regional leader in LNG exports.

Concluding thoughts

Argentina's journey toward becoming a significant LNG exporter reflects broader

transitions in global energy markets. While the country possesses world-class resources in Vaca Muerta and has attracted credible international partners, several factors will determine the success of its LNG ambitions. First, the ability to maintain consistent production growth from unconventional sources while

managing natural decline in conventional fields remains crucial. Second, the country must demonstrate that it can provide the stability – both fiscally and in gas production terms – needed for multi-billion dollar investments.

The partnership with Golar LNG, utilising proven FLNG technology, represents an ostensibly pragmatic approach to market entry. Starting with the Hilli's proven record as an offshore system while maintaining flexibility to upgrade to larger vessels suggests a measured strategy that could build credibility with potential customers and investors. However, the success of the offshore installation alone may not be sufficient to establish Argentina as a major LNG player – the parallel development of onshore infrastructure and stable regulatory frameworks will be equally important.

As global LNG markets continue to evolve, particularly with Europe's structural shift away from Russian pipeline gas, Argentina has a unique opportunity to finally establish itself as an LNG exporter. The next few years will be critical in determining whether the country can transform its considerable potential into sustained export success, potentially setting a precedent for other emerging LNG exporters in South America.

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Global LNG trade sees robust month-on-month growth in December

Our December data showed a robust LNG trade increase globally. Meanwhile, demand was also uplifted by higher demand globally, our Market Editor Dr Alexander Wilk reports.

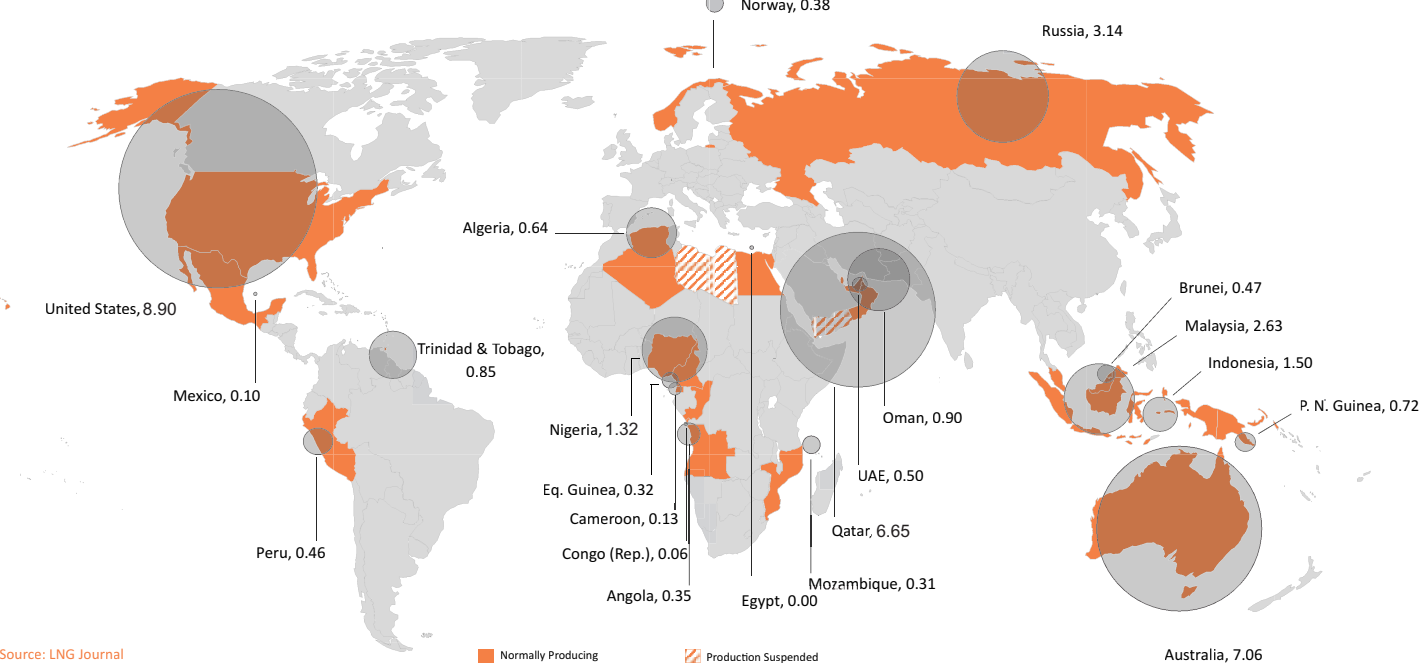
According to our data, global LNG exports in December amounted to 37.50mmt and were thus up significantly by 3.15mmt (9 percent) from 34.35mmt in November.

Pacific Basin exports led December's growth as volumes increased by 1.91mmt (15 percent) to 14.27mmt from 12.36mmt in November. Australia, the Basin's largest exporter by installed capacity, boosted shipments by 0.57mmt (9 percent) to 7.06mmt from 6.49mmt, primarily driven by Ichthys LNG where volumes grew to 0.78mmt from 0.57mmt, up by 0.21mmt (37 percent).

The Atlantic Basin showed parallel growth as overall shipped LNG increased by 0.91mmt (6 percent) to 15.18mmt from 14.27mmt in November. US exports provided the strongest contribution as shipments grew by 0.64mmt (8 percent) to 8.90mmt from 8.26mmt, led by Freeport LNG where volumes increased to 1.50mmt from 1.27mmt, up by 0.23mmt (18 percent).

Middle Eastern LNG exports amounted to 8.05mmt and thus constituted an increase of 0.33mmt (4

Global LNG Exports (MMt)
December 2024



Source: LNG Journal

percent) from 7.72mmt in November, with Qatari exports from Ras Laffan growing by 0.24mmt (4 percent) to 6.65mmt from 6.41mmt.

Global LNG imports, meanwhile, showed strong growth of 4.17mmt (13

percent) to 37.32mmt from 33.15mmt in November, led by Turkish imports which rose to 2.22mmt from 0.89mmt, up by 1.33mmt (149 percent).

Export - Pacific Basin

In December, Pacific exports had accrued to 14.27mmt and had thus increased by 1.91mmt (15 percent) compared to November's total of 12.36mmt. Consequently, annualised capacity utilisation stood at 91 percent. Exports were thus up by 0.35mmt (3 percent) year-on-year.

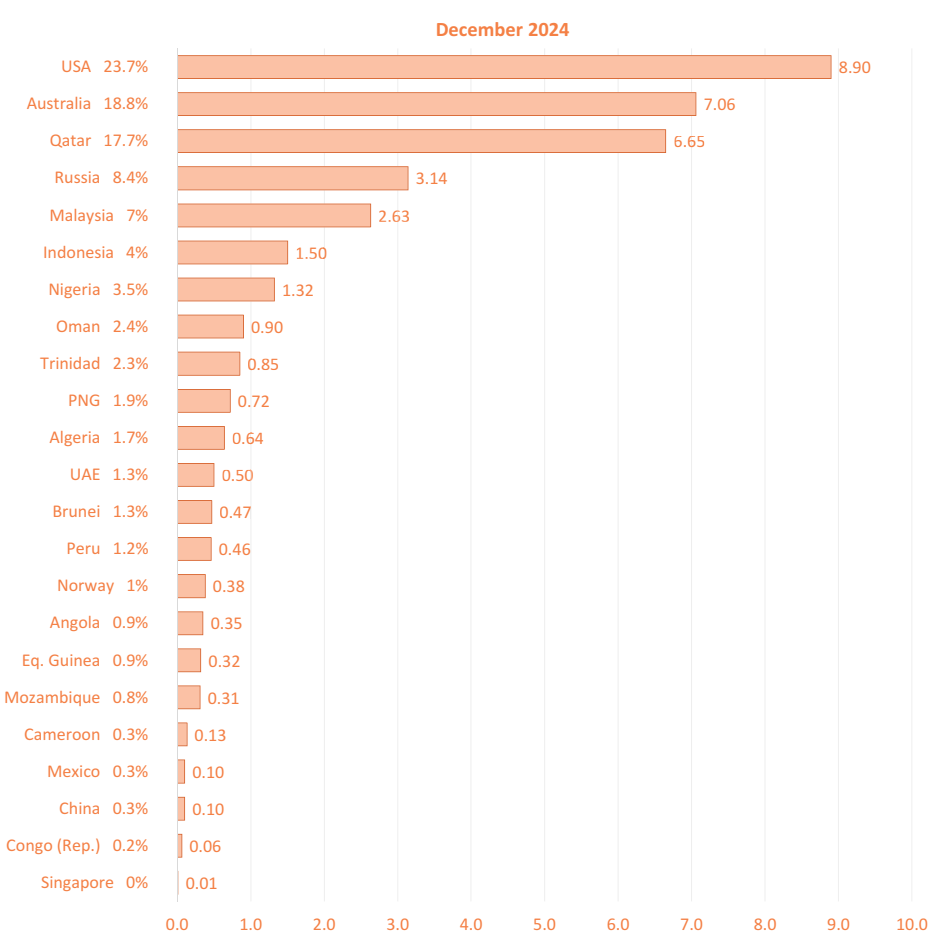
Australia: The Pacific Basin's most significant exporter by installed capacity – Australia – boosted exports by 0.57mmt (9 percent) to 7.06mmt in December from 6.49mmt in November.

Australian LNG exports showed mixed performances in December as six facilities recorded higher volumes whilst three others experienced decreases with the combined 0.67mmt increase outweighing the 0.10mmt decrease. Leading the growth was Ichthys LNG where shipments rose to 0.78mmt from 0.57mmt during November with an increase of 0.21mmt (37 percent). This was followed by NWS LNG as deliveries grew to 1.13mmt from 0.98mmt with a rise of 0.15mmt (15 percent) alongside Australia Pacific LNG where volumes increased to 0.93mmt from 0.80mmt with a gain of

0.13mmt (16 percent). Further adding to the overall increase were Pluto LNG where volumes moved up to 0.43mmt from 0.35mmt with an increase of 0.08mmt (23 percent) and Prelude FLNG as shipments reached 0.27mmt from 0.20mmt with a rise of 0.07mmt (35 percent). Additionally, Gladstone LNG volumes edged higher to 0.59mmt from 0.56mmt with an uptick of 0.03mmt (5 percent). Meanwhile, Queensland Curtis LNG volumes remained unchanged at 0.75mmt between November and December. Among facilities showing decreases, Wheatstone LNG volumes fell to 0.76mmt from 0.83mmt with a reduction of 0.07mmt (-8 percent) whilst Gorgon LNG shipments moved down to 1.42mmt from 1.45mmt with a decrease of 0.03mmt (-2 percent).

Australian exports to Japan reached 2.40mmt in December as volumes rose from 2.24mmt with an increase of 0.16mmt (7 percent). Chinese imports from Australia grew to 2.23mmt from 1.77mmt with a gain of 0.46mmt (26 percent) whilst South Korean imports moved up to 1.14mmt from 0.98mmt with an increase of 0.16mmt (16 percent). The amount of Pacific Basin volumes that still had to declare their destinations was unchanged at 0.49mmt between November and December whilst Singapore saw a modest rise to 0.16mmt

Market Share & LNG Exports by Country (MMt)



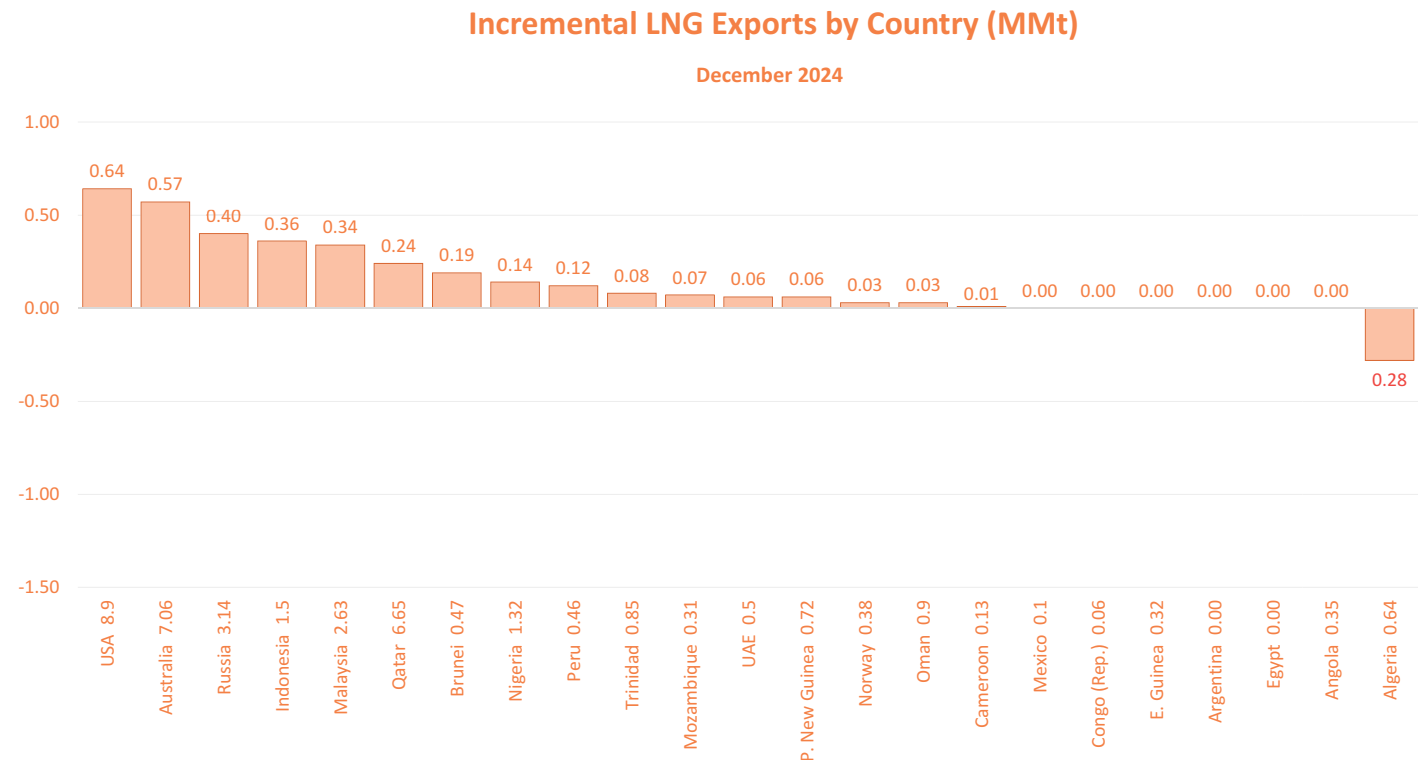
Source: LNG Journal

from 0.15mmt with an uptick of 0.01mmt (7 percent). Taiwanese imports decreased to 0.54mmt from 0.88mmt with a reduction of 0.34mmt (-39 percent) and Malaysian volumes fell to 0.10mmt from 0.27mmt with a decrease of 0.17mmt (-63 percent). Meanwhile, Indonesia and Thailand were not seen in the market with offtakes from Australia in December down from 0.06mmt and 0.14mmt respectively during November.

Southeast Asia: North of Australia, PNG LNG recorded a production increase of 0.06mmt to 0.72mmt in December, representing growth of 9 percent compared to November, when it produced 0.66mmt. The plant's annualised capacity utilisation rate thus stood at 102 percent.

PNG exports to Japan decreased to 0.34mmt from 0.43mmt with a reduction of 0.09mmt (-21 percent) in December whilst Chinese imports fell to 0.16mmt from 0.23mmt with a decrease of 0.07mmt (-30 percent). Both Taiwan and Pacific Basin volumes remained unchanged at 0.14mmt and 0.08mmt respectively between November and December.

Indonesia, meanwhile, boosted exports by 0.36mmt (32 percent) to 1.50mmt in December compared to 1.14mmt in November. Indonesian facility volumes rose in December led by Bontang where shipments increased to 0.43mmt from 0.24mmt with a gain of 0.19mmt (79 percent) whilst Tangguh deliveries grew to 0.87mmt from 0.76mmt with an increase of 0.11mmt (14 percent). Additionally, Donggi-Senoro LNG volumes moved up to 0.20mmt from



Source: LNG Journal

0.14mmt with a rise of 0.06mmt (43 percent). Accordingly, Bontang operated at 44 percent of annualised capacity utilisation, whilst Tangguh and Donggi-Senoro LNG produced at 90 percent and 118 percent, respectively.

In neighbouring Malaysia, exports were up by 0.34mmt (15 percent) to 2.63mmt in December compared to 2.29mmt in November. Notably, PFLNG 2 shipments rose to 0.40mmt from 0.13mmt with a gain of 0.27mmt (208 percent) whilst Malaysia LNG deliveries moved up to 2.17mmt from 2.09mmt with an increase of 0.08mmt (4 percent).

Brunei LNG recorded a production increase of 0.19mmt to 0.47mmt in December, representing growth of 68 percent compared to November, when it

produced 0.28mmt. The plant's annualised capacity utilisation rate thus stood at 77 percent. Japanese imports from Brunei grew to 0.21mmt from 0.14mmt with an increase of 0.07mmt (50 percent) in December whilst South Korean volumes fell to 0.05mmt from 0.14mmt with a decrease of 0.09mmt (-64 percent). Concurrently, exports to Taiwan remained stable at 0.14mmt whilst we were still tracking a 0.07mmt cargo with an undetermined Far Eastern destination at the time of writing.

Russia, Peru & Mozambique: Elsewhere in the Pacific, Sakhalin-2 LNG recorded a production increase of 0.12mmt to 1.01mmt in December, up by 13 percent compared to November, when it produced 0.89mmt. The plant's

annualised capacity utilisation rate thus stood at 124 percent. Japanese imports grew to 0.53mmt from 0.47mmt with an increase of 0.06mmt (13 percent) in December whilst South Korean volumes rose to 0.18mmt from 0.12mmt with a gain of 0.06mmt (50 percent). Chinese imports remained unchanged at 0.30mmt in December.

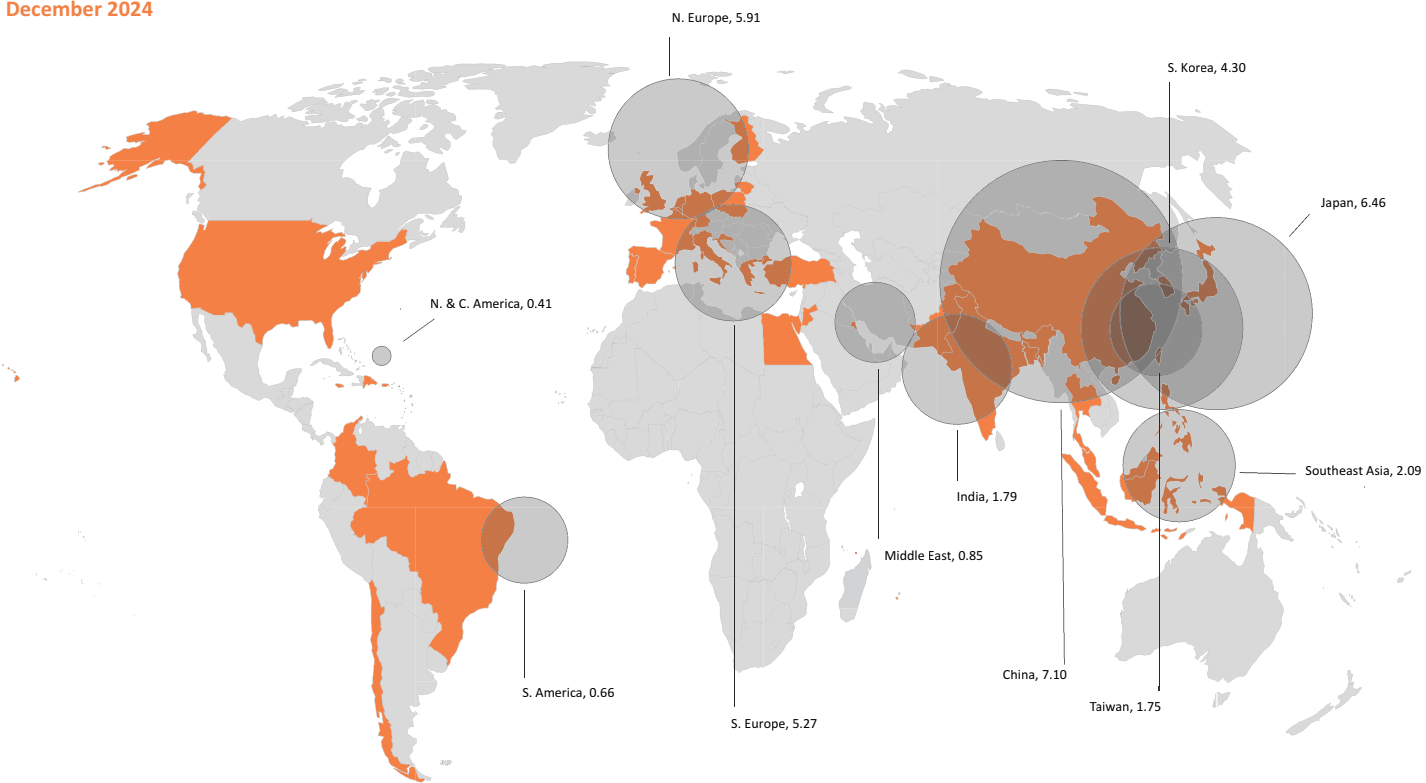
Concurrently, Pampa Melchorita LNG recorded a production increase of 0.12mmt to 0.46mmt in December, up by 35 percent compared to November, when it produced 0.34mmt. The plant's annualised capacity utilisation rate thus stood at 122 percent.

Peruvian exports on vessels still awaiting final destinations in the Pacific Basin remained stable at 0.16mmt in December whilst South Korean volumes rose to 0.08mmt from 0.06mmt with an increase of 0.02mmt (33 percent). El Salvador maintained deliveries at 0.08mmt alongside Spain at 0.08mmt and Caribbean volumes at 0.06mmt between November and December.

Finally, Mozambique's Coral Sul FLNG recorded a production increase of 0.07mmt (29 percent) to 0.31mmt in December from 0.24mmt in November. The plant's annualised capacity utilisation rate thus stood at 107 percent. Mozambican exports showed Chinese and Indian volumes remaining stable at 0.08mmt each in December alongside a cargo still awaiting final destination in the Pacific Basin at 0.08mmt. Thai imports decreased to 0.07mmt from 0.08mmt with a reduction of 0.01mmt (-13 percent) whilst Singapore was not seen in the market with offtakes from Mozambique in December down from

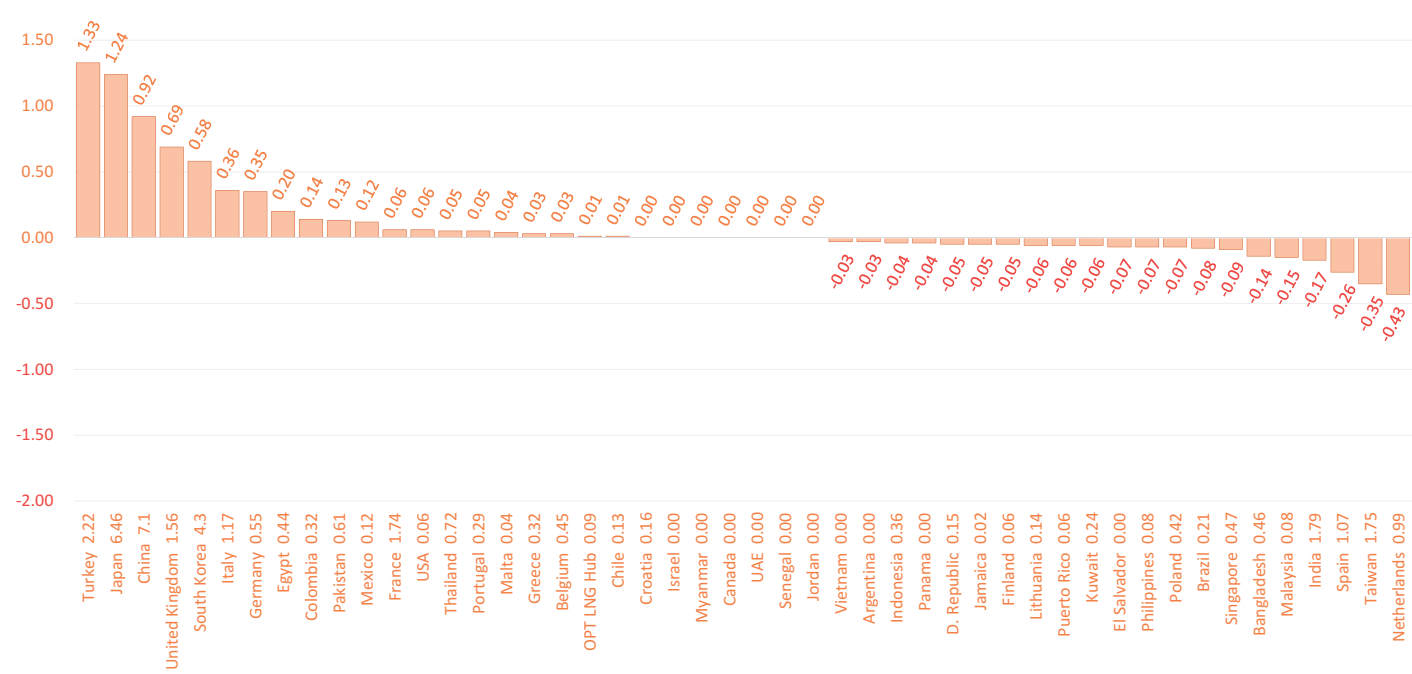
Global LNG Imports (MMt)

December 2024



Source: LNG Journal

Incremental LNG Imports by Country (MMt)
December 2024



Source: LNG Journal

0.08mmt during November.

Atlantic Basin

In line with net growth in the Pacific, the Atlantic Basin’s overall shipped LNG increased by 0.91mmt (6 percent) to 15.18mmt om December from 14.27mmt this time in November. This translated into annualised export capacity utilisation of 81 percent for the Basin. Accordingly, exports were up slightly by 0.30mmt (2 percent) year-on-year.

North Africa & Europe: The amount of LNG shipped from within its north-eastern part - comprising the EEA, Russia and North Africa (and not including re-exports) - amounted to 3.15mmt in December and thus saw exports remain broadly steady at 0.03mmt (1 percent) from 3.12mmt in November.

Russia's Atlantic Basin capacity boosted exports by 0.28mmt (15 percent) to 2.13mmt in December compared to 1.85mmt in November. Yamal LNG shipments rose from 1.72mmt in November to 1.94mmt, representing an increase of 0.22mmt (13 percent), whilst Portovaya LNG volumes grew from 0.13mmt to 0.19mmt, showing a rise of 0.06mmt (46 percent). Arctic LNG 2 was not seen in the market again.

Exports from Russia's Atlantic coast to France remained steady at 0.60mmt in December, whilst Belgium's volumes increased from 0.16mmt to 0.40mmt, showing a rise of 0.24mmt (150 percent). Spanish imports grew from 0.34mmt to 0.36mmt, an uptick of 0.02mmt (6 percent).

Portugal, Turkey and Italy all maintained their import volumes at

0.07mmt, 0.07mmt and 0.06mmt respectively compared to November. We were also tracking 0.22mmt that were broadly headed for Europe but still had to declare their destinations. Chinese imports fell from 0.52mmt to 0.15mmt, a decrease of 0.37mmt (-71 percent), and the Netherlands reduced volumes from 0.16mmt to 0.12mmt, down by 0.04mmt (-25 percent), whilst were still tracking 0.08mmt broadly headed for the Pacific.

According to our data, Norway's Snohvit LNG recorded a production increase of 0.03mmt to 0.38mmt in December, representing a growth of 9 percent compared to November, when it produced 0.35mmt. The plant's annualised capacity utilisation rate thus stood at 107 percent. Norwegian LNG exports to the Netherlands, Poland, France, Lithuania and Turkey remained stable at 0.12mmt, 0.08mmt, 0.06mmt, 0.06mmt and 0.06mmt respectively in December compared to November. Finland and the United Kingdom were not seen in the market with offtakes from Norway in December, down from 0.05mmt and 0.06mmt respectively during the previous period.

In contrast, Algeria ended the month with a significant decrease in shipments of 0.28mmt (-30 percent) to 0.64mmt in December compared to 0.92mmt in November. Skikda's shipments decreased from 0.31mmt in November to 0.05mmt, showing a reduction of 0.26mmt (-84 percent), whilst Arzew volumes fell from 0.61mmt to 0.59mmt, a decrease of 0.02mmt (-3 percent). The plants thus operated at 7 and 33percent of their annualised capacity utilisation, respectively.

West Africa: Concurrently, West African LNG flows were up slightly by 0.08mmt (4 percent) to 2.10mmt from 2.02mmt in November.

Bonny Island's shipments rose from 1.18mmt to 1.32mmt, an increase of 0.14mmt (12 percent), whilst Cameroon FLNG volumes grew from 0.12mmt to 0.13mmt, up by 0.01mmt (8 percent). Congo FLNG saw volumes increase from 0.05mmt to 0.06mmt, showing growth of 0.01mmt (20 percent), and Angola LNG maintained deliveries at 0.35mmt. EG LNG shipments remained steady at 0.32mmt. The facilities operated at 66 percent, 64 percent, 118 percent, 79 percent and 102 percent of their annualised capacity utilisation respectively.

Chinese imports from West Africa led volume increases, growing from 0.12mmt to 0.28mmt (133 percent), followed by the Netherlands rising from 0.07mmt to 0.15mmt (114 percent). France and Japan each grew from 0.08mmt to 0.15mmt (88 percent), whilst Turkey increased from 0.14mmt to 0.16mmt (14 percent) and India edged up from 0.26mmt to 0.27mmt (4 percent). Italy, Portugal, Jamaica, Europe and Brazil maintained volumes at 0.15mmt, 0.14mmt, 0.08mmt, 0.06mmt and 0.05mmt respectively. The United Kingdom saw the steepest decrease from 0.22mmt to 0.07mmt (-68 percent), whilst Spain fell from 0.28mmt to 0.16mmt (-43 percent) and Pakistan reduced from 0.11mmt to 0.07mmt (-36 percent). Croatia, Germany, OPT LNG Hub, the Philippines, South Korea and Thailand were not seen in the market with offtakes from West Africa in December, down from 0.08mmt, 0.07mmt, 0.08mmt, 0.08mmt,

0.14mmt and 0.07mmt respectively. We were also tracking 0.16mmt broadly headed for the Pacific.

Americas: Our US LNG export data for December showed shipments grew by 0.64mmt (8 percent) to 8.90mmt in December from 8.26mmt in November.

Freeport LNG shipments rose from 1.27mmt to 1.50mmt, an increase of 0.23mmt (18 percent), whilst Cameron LNG volumes grew from 1.31mmt to 1.50mmt, up by 0.19mmt (15 percent). Elba Island LNG flows increased from 0.12mmt to 0.22mmt, showing growth of 0.10mmt (83 percent), and Sabine Pass LNG edged up from 2.78mmt to 2.81mmt, a rise of 0.03mmt (1 percent). Calcasieu Pass LNG and Corpus Christi LNG, meanwhile, kept monthly flows broadly steady at 0.86mmt and 1.42mmt, respectively. LNG also made its debut with a 0.08mmt export in December. As such, US LNG export growth in December was only marginally dampened by a 0.01mmt (-2 percent) flow reduction to 0.51mmt at Cove Point LNG. Annualised US capacity utilisation thus averaged 109 percent, with only Calcasieu Pass LNG producing below full utilisation at 90 percent.

Northern European exports held at 2.99mmt, while Southern Europe increased to 2.20mmt (5 percent). Caribbean flows grew to 0.23mmt (35 percent). Far East declined to 0.48mmt (-66 percent), Middle East fell to 0.08mmt, and Southeast Asia dropped to 0.07mmt (-77 percent). Additionally, 1.06mmt of US cargoes were headed to the Pacific and 1.20mmt to Europe with unconfirmed destinations.

In South America, Atlantic LNG in Trinidad & Tobago recorded a production increase of 0.08mmt to 0.85mmt in December, representing a growth of 10 percent compared to November, when it produced 0.77mmt. The plant's annualised capacity utilisation rate thus stood at 65 percent. Concurrently, NFE's Altamira Fast LNG project maintained shipments at 0.10mmt.

Middle East

Middle Eastern LNG exports in December amounted to 8.05mmt and thus constituted an increase of 0.33mmt (4 percent) from 7.72mmt in November. Our data thus showed the Basin’s annualised utilisation of operational export capacity (i.e., excluding Yemen) at 102 percent. The Middle East’s exports were nevertheless down significantly by 1.06mmt (-12 percent) year-on-year.

The Middle East’s exports were led by flows from Qatar’s Ras Laffan LNG complex. Our December data indicated the facility had increased exports by 0.24mmt to 6.65mmt in December, representing growth by 4 percent compared to November, when it produced 6.41mmt. The plant’s annualised capacity utilisation rate thus stood at 101 percent.

Qatari exports to the Far East grew from 3.19mmt to 3.46mmt (8 percent), whilst the Middle East increased from 0.58mmt to 0.73mmt (26 percent) and Southeast Asia rose from 0.22mmt to 0.31mmt (41 percent).

The Indian Subcontinent saw imports from Qatar fall from 1.34mmt to 1.21mmt (-10 percent), whilst Northern Europe decreased from 0.47mmt to 0.38mmt (-19 percent) and Southern Europe reduced from 0.61mmt to 0.37mmt (-39 percent). We were also still tracking three December cargoes that had not yet declared their destinations, amounting to 0.13mmt and 0.06mmt for the Pacific and

Atlantic Basins, respectively.

Meanwhile, an export increase of 0.03mmt (3 percent) to 0.90mmt in Oman was compounded by a more significant increase in volume terms of 0.06mmt (14 percent) to 0.50mmt by the UAE’s Das Island plant. This meant annualised capacity utilisation at Oman LNG stood at 102 percent whilst at Das Island LNG that figure stood at 107percent.

Concurrently, Egypt had not yet made an appearance in the market in December, according to our data at the time of writing. The country had last shipped a cargo in April.

Imports & Domestic Trade

Global LNG imports at the time of writing had increased significantly by 4.17mmt (13 percent) to 37.32mmt from the 33.15mmt we recorded this time in November. Demand growth at the time of writing was observed in all three Basins, led by the fastest growth in the Atlantic Basin.

Pacific Basin

Period-on-period Pacific Basin imports were up by 1.87mmt (8 percent) net to 23.88mmt from 22.01mmt in November. The roster of larger-scale importers comprising China, India, Taiwan, South Korea and Japan collectively increased their offtakes by 2.22mmt (12 percent) to 21.40mmt from 19.18mmt in November.

Concurrently, the roster of smaller Pacific buyers collectively saw imports decrease by 0.35mmt (-12 percent) to 2.48mmt from 2.83mmt in November. This decrease was primarily due to negative demand growth in Malaysia, where offtakes were down by 0.15mmt (-65 percent) to 0.08mmt. Bangladesh had also curtailed imports by 0.14mm (-23 percent) to 0.46mmt from 0.60mmt. Concurrently, Singapore cut offtakes by 0.09mmt (-16 percent) to 0.47mmt from 0.56mmt. Indonesia and the Philippines, meanwhile, reduced offtakes by 0.07mmt and 0.04mmt, respectively, whilst Vietnam and El Salvador were not seen in the market in December. In November, they had imported 0.03mmt and 0.07mmt, respectively.

The roster’s overall demand reduction was thus only partially offset by increases in Mexico, Thailand and Chile. Mexico returned to the market with imports amounting to 0.12mmt, whilst Thailand saw growth of 0.05mmt (7 percent) to 0.72mmt and Chile an increase of 0.01mmt (8 percent) to 0.13mmt. Moreover, we were still tracking a stranded Arctic LNG 2 cargo in the Pacific amounting to 0.06mmt.

Atlantic Basin

LNG demand in the Atlantic Basin increased by 2.03mmt (20 percent) to 12.15mmt, with annualised utilisation of installed capacity at 43 percent. This includes stranded Arctic LNG 2 volumes currently in Russian storage.

European LNG imports showed substantial changes across different markets, with Turkey leading the increases as volumes rose by 1.33mmt to 2.22mmt from 0.89mmt (149 percent). The United Kingdom followed with imports growing by 0.69mmt to 1.56mmt from 0.87mmt (79 percent), whilst Italy added 0.36mmt to reach 1.17mmt from 0.81mmt (44 percent). German offtakes grew by 0.35mmt to 0.55mmt from 0.20mmt (175 percent), and France showed modest growth of 0.06mmt to 1.74mmt from 1.68mmt (4 percent).

Portugal and Russia each showed an increase of 0.05mmt, with Portuguese

volumes reaching 0.29mmt from 0.24mmt (21 percent) whilst Russia’s import constituted a stranded Arctic LNG 2 cargo put into storage at Murmansk. Malta maintained steady demand at 0.04mmt, whilst Greece added 0.03mmt to reach 0.32mmt from 0.29mmt (10 percent). Belgian offtakes showed slight growth of 0.03mmt to 0.45mmt from 0.42mmt (7 percent). Croatia maintained stable volumes at 0.16mmt.

In contrast, the Netherlands saw the largest decrease as volumes fell by 0.43mmt to 0.99mmt from 1.42mmt (-30 percent), whilst Spain reduced imports by 0.26mmt to 1.07mmt from 1.33mmt (-20 percent). Lithuanian imports decreased by 0.06mmt to 0.14mmt from 0.20mmt (-30 percent), and Polish volumes fell by 0.07mmt to 0.42mmt from 0.49mmt (-14 percent). Finland showed a reduction of 0.05mmt to 0.06mmt from 0.11mmt (-35 percent).

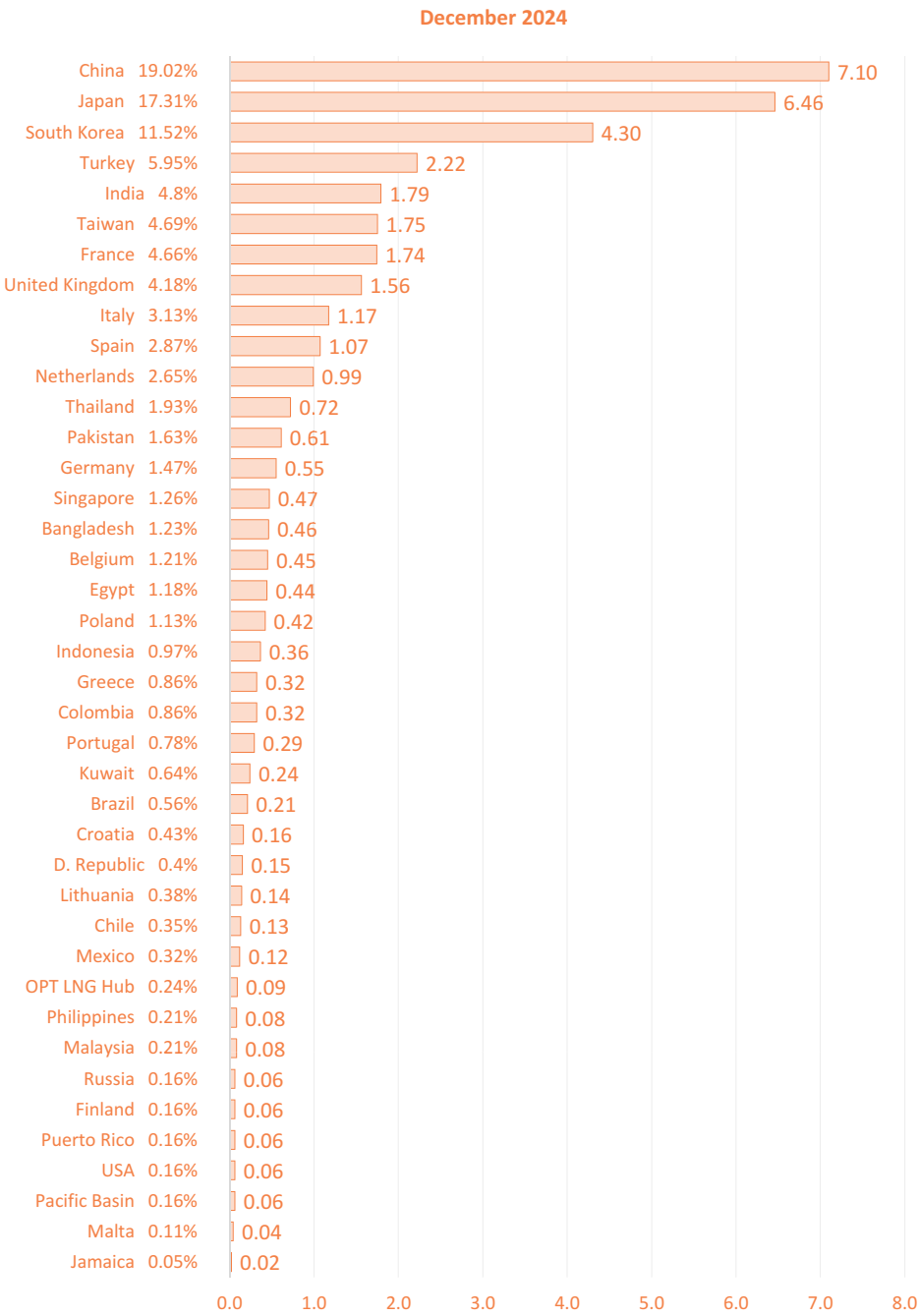
In the Americas, Colombian imports led demand growth as the country ramped up volumes by 0.14mmt to 0.32mmt from 0.18mmt (78 percent), whilst the USA returned to the market with an offtake of 0.06mmt. The OPT LNG Hub added a modest 0.01mmt to reach 0.09mmt from 0.08mmt (13 percent).

On the other hand, Brazilian volumes took the largest hit with a decrease of 0.08mmt to 0.21mmt from 0.29mmt (-28 percent). Puerto Rico halved its imports to 0.06mmt from 0.12mmt, marking a reduction of 0.06mmt (-50 percent). Both Jamaica and the Dominican Republic pulled back, with Jamaican volumes falling by 0.05mmt to 0.02mmt from 0.07mmt (-71 percent) and Dominican imports dropping by 0.05mmt to 0.15mmt from 0.20mmt (-25 percent). Meanwhile, Argentina and Panama were absent from the market in December, having received 0.03mmt and 0.04mmt, respectively, in November.

Middle East

In the Middle East, Egypt and Pakistan both saw strong demand growth with Egyptian volumes increasing by 0.20mmt to 0.44mmt from 0.24mmt (83 percent), utilising 163 percent of its annualised capacity. Pakistani imports also increased by 0.13mmt to 0.61mmt from 0.48mmt (27 percent), operating at 98 percent of its annualised capacity. Kuwait moved in the opposite direction as volumes decreased by 0.06mmt to 0.24mmt from 0.30mmt (-20 percent), with its Al Zour terminal running at just 13 percent of annualised capacity.

Market Share & LNG Imports by Country (MMt)



Source: LNG Journal

Fulkrum invests in Iraq - wins major contract

Fulkrum, a supplier of inspection, expediting, auditing, and technical staffing services, has unveiled a new Iraqi company.

This milestone comes as the company secured a multi-million US dollar contract to provide surveillance services for a major gas hub development project in the area.

The new entity, fully incorporated and registered in Basra, enhances Fulkrum's presence in Iraq and strengthens its ability to bid for and secure large-scale contracts, the company said.

Fulkrum's Regional Manager for the Middle East and Caspian, Muhammad Tayyab, said: "The launch of our Iraq entity highlights our dedication to the region.

"Being locally based allows us to streamline operations and deliver customised services that meet the evolving needs of our clients. This positions us to better support our existing partners and pursue further opportunities with key operators in Iraq."

Fulkrum's contract involving a major gas hub development project in Iraq, is set to be executed in phases. The hub will play a key role in the country's

energy infrastructure.

Its first gas processing train is designed for future growth, ensuring scalability in plant layout, integrated control and safety systems (ICSS), and power infrastructure.

Quality control

Under the contract, Fulkrum will monitor quality control, quality assurance, expediting, project & procurement management and other activities.

Tayyab added: "This major project is a significant win for Fulkrum and marks the beginning of an exciting new chapter for our team in Iraq. We are proud to contribute to a project that will enhance the region's energy capabilities and are committed to delivering our high standards of service throughout its execution."

Fulkrum has worked with several major energy companies, including bp, Chevron, Equinor, Exxon, Shell, TotalEnergies on their oil, gas and LNG export plants. ■



Fulkrum's Mohammad Tayyab

Synectics introduces oil and gas facilities' risk protection

Synectics, a supplier of security and surveillance systems for the oil and gas industry, has launched a suite of AI-powered tools to automate critical risk detection.

Collectively referred to as 'Synergy DETECT', the solution is suitable for any facility using Synergy security and surveillance software - from onshore refineries, LNG plants and pipelines to vessels, platforms, FPSOs, and other offshore units - and allows operators to activate up to 12 AI-driven tools for enhanced workforce safety and site security.

PPE Detection is one of the safety-orientated tools available. It automatically generates alerts when workers appear in the frame without protective helmets or high-visibility vests.

Users can also activate a Hazardous Area tool when people or vehicles enter zones designated as dangerous, such as areas surrounding potentially hazardous equipment or processes.

This is claimed to be a valuable capability, given that 25% of oil and gas

industry deaths involved machinery last year.

Another essential safety-focused tool is Fall Detection.

In the US, a Centres for Diseases Control and Prevention (CDC) study found that slips, trips, and falls account for about 20% of non-fatal injuries in the oil and gas industry. This trend is similar worldwide, Fulkrum claimed.

This tool will not prevent falls, but it will help ensure these incidents are immediately detected, and help is dispatched quickly, while also reducing false positives common with more traditional monitoring techniques - for example, radio-integrated man-down sensors.

Synergy DETECT also features tools for identifying potential security risks.

For example, Intrusion Detection uses detectors with long-range accuracy to

identify and classify people or ground vehicles accessing restricted zones - where breaches could threaten operations.

Loitering Detection is also beneficial, especially for monitoring areas where regular comings and goings by people and vehicles are common - including logistics depots and transfer sites.

The AI tool can flag suspicious behaviour based on lingering for time periods outside the norm.

In addition, Multi-Object Detection and Multi-Object Counting mean operators are alerted to vehicles in the wrong place or if they appear at the wrong time - for example, an unscheduled equipment delivery.

Simple activation

Activating Synergy DETECT is simple, the company claimed. Once the hardware

is installed, users can connect any of the cameras in their network, including fixed, PTZ and thermal models.

The tools can also be tailored to suit specific operational needs and re-configured depending on evolving requirements.

Settings include zone size, time period, motion tolerances, sensitivity, and alarm frequency thresholds.

Dan Noble, Synergy's Head of Product Strategy, said, "AI truly does have the power to supercharge surveillance-based risk detection, but only if the AI tools themselves are easy and intuitive to use.

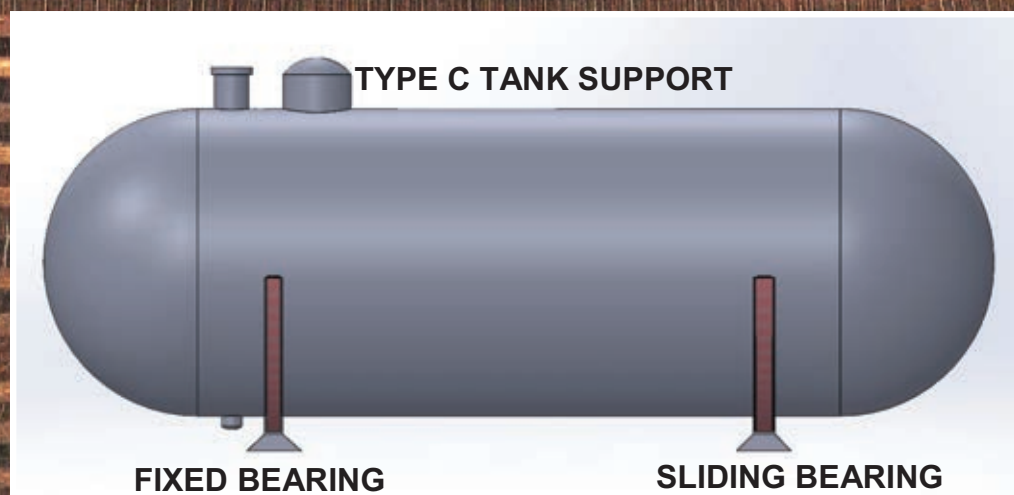
"Synergy DETECT meets this important requirement, putting powerful capabilities at the fingertips of the busy oil and gas surveillance teams protecting our critical assets in a way that is completely tailored to an organisation's exact needs," he claimed. ■

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Kongsberg Maritime wins large FLNG equipment order

Norway's Kongsberg Maritime has secured a large contract to provide an integrated package of electrical, control, safety and propulsion systems for the Golar MkII FLNG project.

Valued at more than \$25 mill, this contract will see Kongsberg's technology form a key part of the new on board systems for a major rebuild project in which Golar's LNGC 'Fuji LNG', will be lengthened by nearly 100 m and converted into an FLNG.

The work is being undertaken at the CIMC Raffles shipyard in Yantai, China, with Black & Veatch supplying the topside LNG process plant.

FLNG technology represents a significant advancement in the LNG industry, offering a floating liquefaction plant that is ideal for both offshore and

remote locations, Kongsberg said.

With a compact footprint and optimised capital expenditure, FLNG installations eliminate the need for permanent infrastructure, such as pipelines and onshore facilities. Their mobility and reusability allow for redeployment to other fields once gas reserves are depleted, thus enhancing their economic viability.

Kongsberg Maritime's equipment package for the FLNG features two UUC305 azimuth thrusters, electrical systems, and an integrated control and safety system (ICSS). The thrusters will be

equipped with a heading control system, leveraging Kongsberg's expertise in dynamic positioning (DP) without requiring full DP capabilities for the FLNG.

Kongsberg's ICSS is a comprehensive solution that ensures the safe and efficient operation of the FLNG, the company claimed.

It integrates control of the process plant, energy management, power distribution, cargo handling, ballast control, and auxiliary systems.

Safety systems

The ICSS safety systems include the emergency shutdown system (ESD), fire and gas detection system (F&G), and process shutdown system (PSD), ensuring robust protection and operational integrity.

Morten Skjong, Golar LNG's Project Manager for the MKII FLNG, said: "Kongsberg Maritime has been a trusted supplier to Golar LNG's floating portfolio for decades and we are pleased to have them as a key provider for our next generation floating LNG production

unit, the MKII FLNG.

"As an FLNG operator that takes on 20 plus year contracts, Golar is reliant on quality solutions not only for the project execution phase but products and services, such as Kongsberg's that will serve us reliably during the full term of the operations contract," he said.

Lisa Edvardsen Haugan, Kongsberg Maritime President, added: "Golar is a long-standing player in the LNG market and a pioneer with their conversion concepts for the 'Fuji LNG' to FLNG. KM is proud to continue our support and co-operation on this innovative conversion project, to support the growing global demand for LNG."

Vegard Skår, Kongsberg's Vice President – Sales, Offshore Production Units, added: "We have worked closely with Golar from the early design phase of this complex project, securing a large scope of supply for their MkII vessel. The systems to be delivered are all critical components in the safe and reliable operation of an FLNG vessel.

"There has been excellent collaboration with CIMC Raffles, and Black & Veatch during the design phase, and we look forward continuing this progressive approach to ensure full integration of many systems during this complex conversion project," he said. ■



Golar has contracted Kongsberg Maritime to supply equipment for its MKII FLNG

GasLog LNGCs to be monitored by Wärtsilä Gas Solutions

Wärtsilä Gas Solutions, part of technology group Wärtsilä, has signed a three-year service & maintenance agreement with GasLog LNG Services.

This agreement covers five 180,000 cu m LNGCs, all of which are fitted with Wärtsilä mixed refrigerant (MR) Reliq liquefaction plants.

By optimising the operation of the ships' MR Reliq plants, the LNG cargo's boil-off gas (BOG) can be efficiently managed, thus reducing emissions while also minimising cargo losses, thereby improving the vessels' economic performance, Wärtsilä claimed.

Under the terms of the agreement, technical support will secure the availability of spare parts and specialised field service personnel, as well as the Reliq plants' performance monitoring.

Remote technical support and

operational data monitoring is provided by Wärtsilä digital services.

"GasLog is a leading global provider of LNG shipping services, helping the world transition to a lower carbon future. We at Wärtsilä Gas Solutions are excited to support them in this by ensuring the efficient and sustainable operation of their on board liquefaction plants.

"We look forward to continuing our long-term partnership and collaboration," said Saman Siahpoush, Head of Services Sales, Wärtsilä Gas Solutions.

GasLog LNG Services has long been a Wärtsilä customer, as its fleet operates with a range of the group's solutions. ■



GasLog has opted for Wärtsilä Gas Solutions monitoring

Emissions innovations drives LNG powered energy transition

As the energy sector faces mounting pressure to decarbonize, a wave of new emissions regulations and breakthroughs in detection technology are poised to reshape the LNG landscape. Fuelling Editor Malcolm Ramsay has more.

From advanced methane monitoring systems to unified reporting frameworks, the industry is gearing up to optimize supply chains and solidify LNG's role as a critical bridge in the energy transition.

A significant change for many operators will be the EU Methane Regulation, which initially came into force on August 4, 2024, but which will see requirements gradually tightened over the next 12 months.

In February, routine flaring and venting will largely be prohibited, and operators must report and notify any additional events. These requirements must be implemented by February 2026 for existing sites and within 12 months for new operations. Additionally, by May 2025, operators will be required to implement regular leak detection and repair (LDAR) surveys to identify both 'type 1' and 'type 2' methane leaks.

"An LDAR campaign typically begins by identifying potential sources of fugitive emissions," Angelo Lo Nigro, Vice President - Energy North America at RINA, tells LNG Journal. "Accessibility to these sources poses a major challenge, but technologies like optical gas imaging (OGI) cameras—now undergoing further refinement—enable accurate methane concentration detection. Drones are also used in emissions detection, though they can face obstacles in congested environments, while Flame Ionization Detection (FID) instruments remain widely applied for emissions quantification."

These considerations add significant overhead for operators but also hold the promise of more efficient processes and cost savings down the line. As such, much

planning is required to ensure the maximum returns from investments ahead of the deadline for existing sites to submit an LDAR program by May 2025. New sites will have a six-month timeline to complete the requirements.

"The core challenge is accurate leak detection, and our focus is on enabling swift, actionable insights using advanced technology," Nigro says, adding that advanced detection solutions will typically need to optimize methane emissions management "across complex infrastructure and distribution networks."

Headquartered in Genoa, Italy, RINA employs over 5,000 staff worldwide and specializes in testing, inspection, certification, and engineering solutions across a wide range of markets, including marine, energy, mobility, real estate, infrastructure, space and defence, and industry 4.0.

Mobile Detection

As regulations tighten, the need for effective emissions monitoring has never been more urgent. Natural gas distribution networks are one of the key areas of focus for regulators, due to the hundreds of miles of small-diameter pipelines required for monitoring, and this challenge is also driving innovation in the LNG sector. One such solution is mobile detection technology, exemplified by Picarro's AMLD system, which offers real-time, highly sensitive detection of methane leaks across extensive infrastructure.

Based in California, Picarro's Advanced Mobile Leak Detection (AMLD) system uses cutting-edge sensors to



RINA worker

achieve a minimum detection limit as low as 0.01 standard cubic feet per hour, enabling it to identify even the smallest leaks in real time. The system provides high accuracy, with a leak find rate of over 90%, fewer than 10% false positives, and can be integrated with Picarro's P-Cubed analytics platform. This offers detailed insights into network performance and enables data-driven decision-making for emissions reduction strategies. The vehicle-mounted system also allows operators greater visibility at sites that might otherwise be restricted.

"The need for accuracy and efficiency (scalability) is the ultimate arbiter of technology in the quest to quantify emissions accurately at a large scale," a spokesperson for Picarro said. "Along with accurately measuring leaks, it is vital to have enough infrastructure coverage to truly understand the severity of the leak."

Integrated Approach

The challenge of monitoring data across complex infrastructure means that from the outset, systems must be designed to do more than simply monitor a single source of emissions or identify a single leak. Instead, technology must be closely integrated across an entire supply chain to provide a macro view.

This unified approach also ties back to the EU Methane Regulation, as reporting standards become more demanding. By August 2025, operators must submit verified annual reports detailing methane emissions from their facilities, with the level of detail increasing progressively over the next four years. This will lead to more stringent emissions tracking across the industry.

Additionally, by May 2026 and annually thereafter, operators will need to

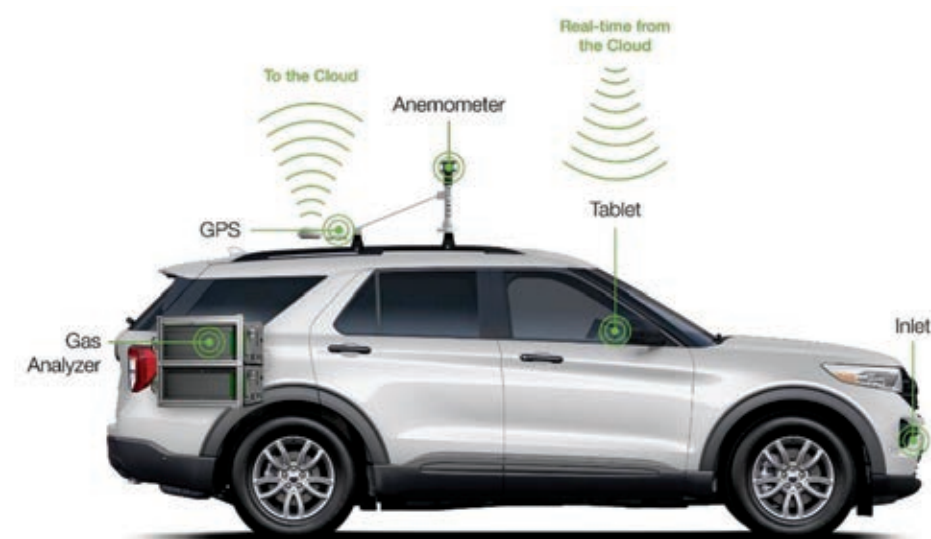
report methane emissions from inactive, temporarily plugged, and permanently abandoned wells. This new mandate ensures accountability for emissions throughout the lifecycle of LNG infrastructure, promoting transparency and further reducing emissions.

"We are actively contributing to the development of unified reporting standards for methane emissions between the EU and the US by combining technical expertise with collaboration across the energy sector," Nigro explains. "As an independent service provider, we work with key energy operators, conducting audits and emissions measurements to support accurate reporting aligned with UNEP's OGMP 2.0 voluntary framework."

Since 2021, RINA has also coordinated a working group within the Italian energy association AssoRisorse, focusing specifically on methane emissions. This group brings together major industry participants, including operators, upstream and midstream companies, distribution and engineering firms, to contribute to the development of a global MMRV (Measurement, Monitoring, Reporting, and Verification) framework.

Supported by the US Department of Energy, the European Commission, and 19 countries, this framework aims to enhance emissions tracking throughout the LNG supply chain — from extraction to processing to transport and storage — enabling global trade to benefit from a single, commonly recognized standard.

As regulations tighten and technologies continue to evolve, collaborations and standards are set to become more central across the industry as the next generation of efficient LNG systems is built. ■



Picarro AMLD solution

For the Record

ADNOC: ADNOC has signed a third sales and purchase agreement (SPA) for the Ruwais LNG project with Germany's EnBW Energie Baden-Württemberg (EnBW), one of the largest operators of German energy infrastructure and across Europe.

This 15-year SPA to supply 0.6 mill tonnes per annum of LNG converts a previous heads of agreement (HoA) between ADNOC and EnBW into a firm contract.

The LNG will primarily be sourced from Ruwais LNG, which is currently under development in Al Ruwais Industrial City, Abu Dhabi.

Deliveries are expected to start in 2028 upon commencement of its commercial operations.

To date, over 8 mill tonnes per annum of the project's 9.6 mill tonnes production capacity has been committed to international customers through long-term agreements.

The EnBW agreement is Ruwais LNG's second SPA with a German company, following a 15-year, 1 mill tonnes per annum agreement signed in November with SEFE Marketing and Trading Singapore, a subsidiary of Germany's SEFE Securing Energy for Europe.

Fatema Al Nuaimi, ADNOC Executive Vice President, Downstream Business Management and incoming CEO, said: "We are very pleased to partner with EnBW, one of the largest energy supply companies in Germany, in our second sales and purchase agreement to the country from the Ruwais LNG project.

"This partnership underscores ADNOC's dedication to fostering sustainable and strategic energy collaborations. By supplying lower-carbon LNG to EnBW, we are not only enhancing our partner's energy security but also contributing to de-carbonisation efforts, reaffirming ADNOC's position as a trusted partner in the evolving energy landscape," she said.

This agreement builds on the UAE/Germany Energy Security and Industry Accelerator (ESIA) agreement, signed by both countries in 2022, which aims to advance co-operation in energy security, de-carbonisation and lower-carbon fuels.

It also further advances the Joint Declaration of Intent for Sustainable Energy Co-operation between the UAE's Ministry of Industry and Advanced Technology and the German state of Baden-Württemberg, which was signed in February, 2024.

Peter Heydecker, EnBW Board Member for Sustainable Generation Infrastructure, said: "We are very pleased to establish a long-term LNG contract with ADNOC. Finalising this contract is a significant step in furthering our relationship and expanding our LNG portfolio.

"We will continue to work with our esteemed partner ADNOC to develop other opportunities in LNG and adjacent businesses and look forward to a mutually beneficial long-term relationship and joint business success," he said.

ADNOC Gas had announced last month that it intends to acquire ADNOC's 60% stake in the Ruwais LNG project for an estimated \$5 bill, in the second half of 2028.

Upon its completion, Ruwais LNG, comprising two 4.8 mill tonnes per annum liquefaction trains, will more than double ADNOC Gas' existing operated LNG production capacity to around 15 mill tonnes per annum.

ASIA MOC: Trading activity in Asia's LNG physical market-on-close (MOC) process for January has reached an all-time high.

This was driven by increased trading of winter delivery cargoes, S&P Global said.

The total number of bids, offers, and trades reported during the pricing period, which ran from 16th November to 15th December, surpassed the previous record set in the same period last year.

The January JKM pricing period saw a total of 367 bids, offers, and trades, exceeding the previous record of 335.

This surge in activity was attributed to traders actively managing their portfolios in anticipation of fluctuating demand during the winter months.

Traders often speculate on potential price spikes during winter, leading to increased trading volume as they attempt to position themselves favourably in the market, S&P Global explained.

Eight major players – bp, Engie, Glencore, PetroChina, Shell, TotalEnergies, Trafigura, and Vitol – reported 16 trades for December and January shipments to the

Japan/Korea/Taiwan/China (JKTC) region, representing around 1.04 mill tonnes of LNG cargoes.

Other market participants involved in the physical Platts MOC, included ADNOC Trading, DGI, ENN, Freepoint Commodities, Hartree, Jera GM, Marubeni, Mercuria, SEFE, and Uniper.

ADNOC Trading and bp also reported 17 bids for first-half January delivery cargoes to Thailand.

A significant portion of the bids, offers, and trades – 59.13% – were priced against the JKM index.

Market sources suggested that this approach was preferred over using a flat price, as it allowed traders to mitigate potential risks associated with price fluctuations.

The average cash differential for bids, offers, and trades linked to the JKM balance-month next-day contract was reported at parity to the balance-month contract.

This contrasts with the deeper discounted cash differential observed during the December JKM pricing period.

Despite the record trading activity, end-users across Northeast Asia remained on the sidelines, due to mild temperatures and the availability of cheaper alternative fuels.

Several sources indicated that most LNG cargo purchases were executed by portfolio players and trading houses.

Meanwhile, Asian spot LNG prices were supported by market concerns over the global LNG balance amid geopolitical and supply-side risks.

Platts JKM, the benchmark price for LNG delivered to Northeast Asia, was assessed at \$14.877 per MMBtu for January, up 9.56% from the December pricing period.

The derivatives Platts MOC saw a total of 1,519 bids, offers, and trades for the January JKM pricing period, down by 19.4% from the December JKM pricing period.

Market sources attributed this decline to difficulties in reaching price agreements during the January JKM pricing period, as well as the upcoming holiday season, S&P reported.

BOTAS: Turkey's incumbent gas importer BOTAS has issued a tender for delivery of five LNG cargoes in the first quarter of 2025 that will support the supply and demand balance in the EU gas market this winter. Analysts caution, however, Egypt's new FSRU poses upside risk to non-European demand.

"The recent Turkey tender indicates the country will take on additional supply in early 2025 and similarly, Egypt's acquisition of a new FSRU – likely from neighbouring Jordan – adds around 2.5 billion cubic metres (bcm) of upside to Egyptian LNG imports next year," analysts at the London-based consultancy Energy Aspects said.

This development is expected to ease bottlenecks in Egypt's LNG imports, especially during the peak cooling season in the third quarter of 2025.

On the European side, TTF Cal-25 gas prices are closely tracking Energy Aspects' forecast, though analysts see a flatter structure than the backwardated CME curve. Commodity traders are already factoring in the expected loss of Russian pipeline gas supply via Ukraine from the start of January 2025.

Combined with higher year-on-year demand and lower stock levels going into the summer, this is reducing the supply balance substantially. Energy Aspects' balances show end-March stocks at 38 bcm, or 35% of total capacity – a substantial 26 bcm less than end-March filling levels this year.

"It will be challenging to reach the European storage target of 90 to 92 bcm by end-October," analysts noted, pointing at exemptions in various EU member stations, national targets, and UK storage considerations.

"While there's downside risk to Russian supply through Turkey from US sanctions, workarounds are already beginning to take shape," analysts said. "Europe will hence remain highly dependent on attracting LNG, but the structural, price-insensitive demand in Asian markets complicates this."

Downside risks to demand and prices are a potential slowdown from US tariffs or reduced demand due to a milder-than-forecast winter. "There is very limited capacity for stocks to drop further, meaning Europe has little room to manoeuvre if a market-tightening shock occurs in winter 2024/25," analysts noted, adding:

In the power generation sector, further reductions in gas demand through fuel-switching are limited: A 2.6 bcm tightening in the global market could exhaust Europe's remaining gas-to-coal switching capacity, meaning higher TTF prices would be necessary to curb demand in less price-sensitive sectors like residential, commercial, and industry.

As for Russian pipeline gas delivering to Europe, the addition of Gazprombank

to the US Treasury's SDN list complicates payments, but there will likely be workarounds to that regulation in a bid to ensure continued gas flows, analysts noted. The recent removal of the rouble payment requirement by President Putin, for instance, allows international buyers to make payments through other Russian banks.

Hungary and Turkey are seeking exemptions for their gas purchases, which is expected to help maintain Russian gas flows to Europe, albeit to a smaller volume than what is currently delivered.

"We believe it's unlikely that major supply losses will occur, as replacing this gas would drive global prices to unsustainable levels," analyst commented.

Europe's LNG import strategy will hence hinge on reversing this year's losses. Energy Aspects forecast a 23.6 bcm increase in LNG imports to the EU in 2025, following a 31 bcm drop in 2024.

"Europe will need to absorb most of the 29.6 bcm global LNG growth, driven by new North American projects," analysts said, adding "Asian demand is expected to grow by just 7.7 bcm, constrained by higher prices."

While prices at the Dutch TTF may not easily surpass Japan-Korea-Marker (JKM) prices to attract significant LNG supply into Northeast Asia, competition from countries like South Korea and Taiwan will limit Europe's ability to secure additional cargoes at competitive prices.

In conclusion, analysts deem the Turkey LNG tender will be supportive to Europe's LNG balance as it adds some length to a tightly supplied market. Egypt's new FSRU, in contrast, is viewed as a "significant upside risk" to global LNG demand outside of Europe, potentially chipping away shipments of some spot cargoes that may otherwise have been destined for countries like the Netherlands, Germany or the UK.

CPC: Taiwan's environment ministry has approved plans for a new LNG receiving terminal at Kaohsiung, despite criticism from local environmental groups.

State-owned energy company, CPC Corp said that the project, also known as the seventh terminal, is expected to be completed in 2031.

CPC also said that the seventh terminal would help Kaohsiung transition from coal power, as the Talin power plant will be one of the terminal's main customers.

By substituting coal for gas, the plant would produce around 95,000 tonnes less sulphur oxide, 50,000 tonnes less nitrogen oxide, and 6.26 mill tonnes less carbon dioxide annually, it was claimed.

CPC added that the new terminal would also supply gas to power industries, homes, and other users.

The economic ministry said in October that it planned to increase Taiwan's natural gas reserves from the current seven-day storage level to 14.

EU SANCTIONS: For the first time, an EU sanctions package against Russia has targeted Yamal LNG by including an Arc7 LNGC in the list of ships to be hit.

In the 15th round of sanctions revealed by the EU this week, the list included the LNGC 'Christophe de Margerie', the first of the 15 vessel series built to export gas from Yamal.

She is allegedly affiliated with Russian shipping company, Sovcomflot, although her direct ownership is now being shown as UAE-based Zelitiko Shipping, according to the Equasis database.

Since the end of 2017, Yamal has delivered around 100 mill tonnes of LNG to Europe.

It was believed that the sanction against the Arc7 will come to the fore when the EU's transshipment ban on Russian LNG takes effect at the end of March, 2025.

This transshipment ban will mean that EU terminals, such as Belgium's Zeebrugge and France's Montoir, will no longer be allowed to transfer LNG from Yamal Arc7s to conventional LNGCs for onward shipment, thus increasing the Arc7s sailing distance to a final destination, or requiring ship-to-ship (STS) transfers, probably in Russian waters, near Murmansk.

In addition, at least three LNGCs, believed connected to Russia's 'shadow fleet' carrying gas from Arctic LNG 2, were said to be idling in the Barents Sea and the Sea Japan, as no buyer could be found for the cargoes.

Additional measures are expected in the 16th sanctions package, possibly due as early as January, next year.

GECF: UAE-based Gas Exporters Countries Forum (GECF) has increased its global gas consumption growth forecast for this year by 2.4%, in its November report.

Last month, the EU recorded its third consecutive year-on-year increase in gas consumption, rising by 12% to 35 bill cu

m, following seven months of continuous decline.

This rise was primarily driven by the electricity and residential sectors, influenced by an early-month cold spell and significantly low wind power output throughout the month.

Similarly, US gas consumption saw a modest y-o-y increase of 0.3%, reaching 79 bill cu m.

Meanwhile, China's apparent gas demand in October, 2024 rose by 13% y-o-y to 35.4 bill cu m, fuelled by increased LNG demand for trucks and higher gas-fired power generation.

As for gas production, the projected growth for 2024 was estimated at 2.5%, the same as the previous forecast.

In November, 2024, US gas production continued to fall to 88.9 bill cu m, representing a 2.1% y-o-y reduction.

This decline reflected the combined effect of Hurricane 'Rafael' on Gulf of Mexico operations and production cuts in response to low Henry Hub prices.

In October, 2024, Europe's gas production increased by 1.5% y-o-y to stand at 15.7 bill cu m, supported by higher Norwegian output and limited maintenance.

As for Asia/Pacific, gas production was estimated to have risen by 0.5% y-o-y, driven by significant Chinese production growth of 9.7%, however this regional effect was countered by the reduction of some other major Asian gas producers' outputs.

Global LNG trade was on track to grow by 2% this year, driven mainly by stronger imports in Asia/ Pacific, which offset a sharp decline in Europe.

In November, global LNG imports declined by 3.4% y-o-y to 34 mill tonnes, marking the lowest level for the month since 2021, which was primarily due to a sharp y-o-y reduction in LNG cargo floating storage in October, as the steep price contango observed in October, 2023 was less pronounced this year, GECF said.

This dynamic led to a spike in imports in October, followed by a decrease in November.

Europe accounted for the majority of the decline, with LNG imports falling by 14% y-o-y to 9.1 mill tonnes, while PNG imports matched the volume of one year ago to reach 13.4 bill cu m.

In contrast, Asia/Pacific LNG imports rose slightly by 0.2% y-o-y to 22.9 mill tonnes, the weakest monthly level since June, 2024, due to tight LNG supply.

Turning to gas storage, GECF said

that European net gas withdrawals began, with the onset of winter conditions in the northern hemisphere.

In November, the monthly average volume of EU gas in storage decreased to 95 bill cu m (92% of the regional capacity), compared with 103 bill at the same time last year.

US net gas injections continued during the month, boosting the average gas storage level to 112 bill cu m (84% of the country's capacity), which was 3.9 bill higher than a year ago.

In Asia, the combined volume of LNG in storage in Japan and South Korea increased to an estimated 15.5 bill cu m, compared with 14.3 bill in storage in November, 2023.

Both European and Asian gas and LNG spot prices continued their upward trajectory for the second consecutive month in November.

The TTF spot price averaged \$13.83 per MMBtu, marking an 8% m-o-m increase, while the average NEA spot LNG price averaged \$14.03 per MMBtu, up by 7% m-o-m.

Meanwhile, in the US, the Henry Hub spot price experienced a slight decline, averaging \$2.18 per MMBtu, but exhibited high volatility during the month.

Looking ahead, weather conditions will remain a key driver of spot price movements, with colder-than-usual temperatures expected to exert additional upward pressure on prices, the GECF report concluded.

IGNEO: Igneo Infrastructure Partners (Igneo) is to take a 50% ownership stake in Larus Holding, the 100% owner of Höegh Evi, from funds managed by Morgan Stanley Infrastructure Partners (MSIP).

Aequitas Limited (Aequitas) will retain the other 50% shareholding and its long-term commitment as owner in the company.

"Höegh Evi and Aequitas deeply value the close collaboration we have had with MSIP through an extraordinary period where we strengthened our role as a market leader in LNG infrastructure and key provider of energy security in Europe.

"As we expand our focus to include clean energy solutions, Igneo offers deep expertise and resources to support innovation and further growth, aligning with Höegh Evi's position as global leader in floating infrastructure for energy security and the transition," said Morten Høegh, Höegh Evi Chairman.

“Höegh Evi is a global leader in delivering floating energy infrastructure to countries advancing energy security and a pioneer in the energy transition.

“As long-term, responsible investors, we are fully aligned with Höegh Evi’s strategy to continue as a trusted provider of FSRUs and LNG infrastructure, while expanding its focus to include infrastructure for ammonia, hydrogen and carbon molecules,” said Niall Mills, Igneo’s Managing Partner and Global Head.

“MSIP identified Höegh Evi early as a trusted owner and operator of floating storage and regasification import terminals with strong growth potential.

“During our ownership, the company significantly strengthened its commercial and strategic standing. We are grateful for having had the opportunity to support Höegh Evi during this period,” said Alberto Donzelli, MSIP Managing Director and Co-Head of Europe.

Höegh Evi is the issuer of senior unsecured bonds listed on Oslo stock exchange and said that it intends to repay the bonds at maturity before the transaction’s closing, which is expected in the first half of 2025, subject to regulatory approvals and customary closing conditions.

Morgan Stanley and DNB Markets, a part of DNB Bank, are acting as financial advisors to the company, while White & Case, Kirkland & Ellis International and Watson Farley & Williams, are acting as legal advisors to the seller, Aequitas and company, respectively.

Citigroup Global Markets is acting as financial advisor and Weil, Gotshal & Manges (London) and Advokatfirmaet Schjødt, are legal advisors to Igneo.

In an earlier announcement, Höegh Evi revealed it had officially transferred ownership of the FSRU ‘Independence’ to KN Energies and the country of Lithuania, which marks a significant milestone in the nation’s energy development.

‘Independence’ was commissioned by Lithuania in 2014 and was fitted with regasification capacity to fully meet the country’s needs.

The agreement between Höegh Evi and the Republic of Lithuania provided for the option to acquire and own the FSRU by the end of 2024.

Following the transfer of ownership, Höegh Evi will continue to technically and operationally manage the FSRU for five years with an option to extend the period for another five years.

INDIA: India's LNG imports are expected to rise next year by about 4% to 10%.

The increase is due to strong local consumption, resilient economic growth and policy development, although it could be tempered by international fuel prices amid supportive global demand/supply fundamentals, industry sources and analysts said.

According to a S&P Global Commodity Insights report, a gradual rise in offshore gas production, strengthening pipeline infrastructure and increased regasification capacity were believed to be positive for natural gas consumption, as India targets a 15% share LNG in its overall primary energy mix by 2030, up from the current 6%-7%.

India's 2023 LNG imports were around 22.6 mill tonnes, while this year’s imports were projected to grow to about 27 mill tonnes, overtaking the record 26 mill tonnes per year recorded in 2020, according to Commodity Insights data.

"The [global] LNG market in 2025 remains tight, which will leave prices volatile and subject to movements following supply or demand shocks," James Taverner, senior director at Commodity Insights, said.

"We forecast the Platts JKM price to average about \$14.3 per MMBtu in 2025, up from \$11.8 per MMBtu in 2024," he added.

The forecast increase in 2025 spot LNG prices could be attributed to Europe seeking more LNG following the halt of Russian pipeline flows via Ukraine and delays in new supplies that were expected to come online in 2024, Ayush Agarwal, LNG analyst at Commodity Insights, said.

He predicted that, as a price-sensitive buyer, the country's imports will reach about 28 mill tonnes per year, due to tight international markets, supported spot prices and a rise in domestic natural gas production.

"When it comes to domestic gas production, we are expecting some additional volumes from ONGC in Q1 2025," said Indian Gas Exchange Managing Director and CEO, Rajesh Kumar Mediratta.

However, he thought that LNG imports would remain strong to fill the demand/supply gap, forecasting a 10% year-on-year growth next year.

Among gas using sectors, the fertiliser segment is likely to drive only marginal incremental demand in 2025, while the city gas distribution (CGD) sector is

poised for a 10% year-on-year growth, Mediratta said.

The CGD sector currently consumes about 40 mill standard cu m per day of gas, he added.

Meanwhile, a recent HSBC Global Research report forecasts at least a 25% year-over-year increase in the country's LNG regasification capacity.

"The power sector will face more peak shortages and continue to take on more [gas] next year," Mediratta said.

The Central Electricity Authority expects power demand in India, the world's third-largest electricity market, to grow at a compound annual growth rate of about 7% in the coming years.

"India's increasing peak power requirements, especially during summer months, necessitate flexible power generation sources," said Anish De, KPMG’s global head for energy, natural resources and chemicals.

"Gas based power plants can be utilised at peak demand times, due to their ability to ramp up quickly," he added.

Currently, the share of natural gas in India's electricity generation mix is less than 2%, while over 70% of the electricity mix is coal-based.

For a successful coal-to-gas switch, the key lies not only in pricing but also in harnessing structural reforms, according to Essar Exploration and Production CEO, Pankaj Kalra.

"With indigenous coal priced at \$3-\$5 per MMBtu and imported coal around \$4.5-\$6 per MMBtu, LNG pricing needs to fall within the \$6-\$8 per MMBtu range for gas to become competitive for power generation," Kalra explained.

Large-scale battery storage can work alongside gas-based power generation, he added.

With the right pricing and structural reforms, gas could become an essential part of the energy mix, complementing renewables in the energy transition, Kalra said.

Meanwhile, enablers, such as increased allocation of domestic gas to the power sector, the imposition of a carbon tax or any other carbon pricing mechanism for coal-based power generation and round-the-clock bundled regas tenders, may also be explored to boost gas consumption in power, De added.

NORWAY: Energy companies operating in and around Norway expect to invest a record NOK275 bill (\$24.68 bill) in 2025, up from NOK263.7 bill this

year, according to Offshore Norge, the industry association this week.

This figure is more than was originally forecast, as the industry group had predicted that oil and gas investments for 2024 and 2025 would total NOK240 bill and NOK225.9 bill, respectively.

The higher investment is being driven by a mix of cost inflation, accelerated development and increased workload at several fields and the drilling of extra wells at existing oil and gas fields, Offshore Norge said.

Companies also plan to start drilling 45 exploration wells in Norwegian waters next year, up from 41 so far in 2024 and the highest level since 2019, the association added.

Norway is western Europe's largest oil and gas producer, with a total output of just over 4 mill barrels of oil equivalent per day and aims to extend production for decades to come.

The forecast was based on responses from 14 companies, including Equinor, Aker BP, Vaar Energi, ConocoPhillips and Shell, representing close to 100% of the country's production.

After 2025, Offshore Norge predicted that oil investments would gradually decline to NOK251 bill in 2026 and NOK203 bill in 2029, as ongoing development projects are completed.

Investment estimates for 2029 could still increase, however, with energy companies adding new projects, although limited by a dearth of large new discoveries, the association said.

OMAN: Oman’s next LNG production project hinges on private investments from the world’s energy companies, the country’s Energy Minister said in an interview with Bloomberg.

The country’s economy relies heavily on oil and gas production and increasing exports would boost its finances, which were described as strained.

However, the government is no longer willing to provide state funds resulting in any future projects being financially viable.

Oman’s Ministry of Energy and Minerals is to open discussions with energy companies already involved in the country’s projects, including bp, Shell and TotalEnergies, in the first quarter of next year, Energy Minister, Salim Al-Aufi said.

“If we are unable to get enough gas suppliers participating, then the whole project will be cancelled,” he said, adding “it all depends on being able to secure - without government intervention- the gas

feedstock to the fourth train. If we are unable to secure the gas feedstock, then we will call it a day.”

Oman’s public finances have been the weakest in the Gulf region for some time.

Since becoming the head of the country in January, 2020, Sultan Haitham bin Tariq has introduced measures to balance the books that were severely hit during the pandemic, resulting in its credit rating improving during the last few years.

The government holds majority stakes in Oman’s three LNG production facilities, together with minority investors, which include international energy companies and large gas buyers.

However, only companies that can commit to providing gas supplies to the planned fourth LNG train would be eligible to take a stake in the project.

Oman is currently conducting a study for the 3.8 mill tonnes per annum train to be located near the existing Qalhat facilities. If it becomes operational, the country’s LNG production would rise to 15.2 mill tonnes per annum.

It is the second largest Middle East LNG exporter behind Qatar.

SEATRIUM: Singapore engineering company, Seatrium has announced that the contract signing period for the conversion of ‘Golar Gandria’, a Moss type LNGC into an FLNG for Golar Gandria, a subsidiary of Golar LNG, had lapsed.

The first two FLNGs delivered by Seatrium to Golar LNG were ‘Hilli Episeyo’ deployed in the Kribi gas field located offshore Cameroon, and ‘Gimi’ deployed in the Greater Tortue Ahmeyim field located offshore Mauritania and Senegal.

Following Golar LNG’s sale of the 1977-built ‘Golar Gandria’ for recycling in 2023, Seatrium said it and Golar LNG decided to let the third conversion contract lapse on 16th December, 2024.

Thus far, Seatrium had not started any physical work on the vessel and is not expected to have any material financial impact on the earnings per share and net tangible asset per share of Seatrium for the current financial year.

The demand for sustainable gas solutions remained healthy, underpinned by the energy transition.

With a strong 60-year track record and product expertise, Seatrium is well positioned along the gas value chain to support the development of offshore energy assets.

The Group remains committed to

providing efficient and sustainable offshore and energy solutions, it stressed.

SHELL: UK energy giant Shell is to help Argentina’s state-run energy company, YPF to develop its LNG export potential, replacing PETRONAS.

YPF’s Executive Chairman, Horacio Marin, signed the agreement in the Netherlands with Shell’s LNG chief, Cederic Cremers, the company said in a statement yesterday.

Shell will help to develop the first phase of the ‘Argentina LNG’ project, which involves building FLNGs with capacity to export 10 mill tonnes of LNG per year.

However, no firm decision was taken to proceed with the engineering and design for the liquefaction units. That decision will be taken at a later date, it was explained.

To help procure the investment needed, President Milei - who is attempting to deregulate Argentina’s economy and open it up for business - has included LNG export projects in an incentives programme.

Shell’s interest comes as YPF tries to introduce a single LNG plan through a joint venture to bring its huge Vaca Muerta shale gas reserves to market.

YPF has already agreed to charter a FLNG from Golar LNG starting in 2027, in a deal with the Pan American Energy Group.

This week, YPF boosted its shale gas reserves by acquiring ExxonMobil’s stake in a field.

TAIWAN: Taiwan is one of the few markets in Asia where LNG demand is rising at a steady and substantial pace. Over 4.4 GW of new gas-fuelled power generation capacity is scheduled to start operations, underpinning LNG imports, while Taiwan’s law-making court is reviewing if the runtime of the final 951 MW unit at Maanshan nuclear power station can be extended.

Situated in Hengchun, Maanshan is Taiwan’s only operating nuclear power plant and Unit 1 has already been shuttered on the 26th of July upon expiry of its operating license.

Unit 2 is due for decommissioning on the 17th of May 2025, when its license expires – though the run-time of 951 MW reactor may be extended in an effort to avert acute power shortage on the island of Taiwan. The GE-manufactured PWR reactor, operated by Taiwan Power Company (Taipower), has been running

with a 90% capacity factor and has an annual net output of 15,000 GWh.

IF the run-time extension of Maanshan Unit 2 fails, as most markets observers assume, LNG-fuelled combined-cycle power plants will have to fill the gap in baseload power generation capacity.

In the short-run, downside risk prevails to purchased volumes and prices, analysts at Energy Aspects noted, referring to the delayed start-up of some new gas power plants and the fact that Taiwan’s incumbent gas importer CPC has been facing a bottleneck of LNG regas capacity. The island nation off mainland China has a nameplate regas capacity of 16.5 mtpa, and Energy Aspects expects LNG demand to reach 21 million tons in 2024, up from around 19.8 mt in the past four years.

CPC Corp, Taiwan’s state-owned petroleum, natural gas, and gasoline company, has vowed trial operations at its 3 mtpa Taoyuan LNG regas terminal will start around March 2025, which is meant to partially alleviate the current bottlenecks in terms of shippers having to find regas slots to get their delivered cargoes discharged and the regasified LNG fed into Taiwan’s natural gas system.

A warmer-than-average summer in northeast Asia has pushed up gas-burn for power generation, though most of the additional electricity needed for cooling and air-conditioning in the region came from coal-fired power units.

Japanese cooling degree days, for instance, have been 16% above the 10-year average from June through most of August, which according to Energy Aspects was posing upside to power-sector gas burn – especially since nuclear availability dropped by 1.5 GW y/y that month due to heavy planned maintenance at existing operational units. But as soon as autumn weather arrived, gas-burn of Japan’s electric utilities has fallen – as it did in most industrialised countries in Northeast Asia, the world’s premium LNG market.

US DoE: In a final study on new US LNG export facilities released yesterday by the US Department of Energy (DoE), five key considerations were outlined.

The study has now entered a 60 day public comment period.

US Secretary of Energy, Jennifer Granholm said; “Given that the comment period for the study will continue into the next Administration – and that there are a limited number of applications that are

concurrently ready for the DOE ‘public interest’ review – decisions about the future of LNG export levels will necessarily be made by future Administrations. (The) publication reinforces that a business-as-usual approach in neither sustainable nor advisable.”

The key findings and considerations highlighted in the report were -

First, the pace of growth of US natural gas exports in recent years is astounding and many analysts say continued growth on this trajectory will quickly outpace global demand.

By itself, this rapid growth – and the continued growth expected under existing authorisations – recommends a cautious approach going forward. US LNG exports have already tripled over the past five years, will double again by 2030, and could double yet again under existing authorisations.

Volumes already approved for export equate to roughly half of the US’ total current natural gas production today. In four of five modeling scenarios included in the study, the amounts that have already been approved will be more than sufficient to meet global demand for US LNG for decades to come.

Second, while these increasing LNG exports generate wealth for the owners of export facilities and create jobs across the natural gas supply chain, the DoE’s public interest review requires a comprehensive economic analysis.

The study found that a wide range of domestic consumers of natural gas – from households to farmers to heavy industry – would face higher prices from increased exports.

Unfettered exports of LNG would increase wholesale domestic natural gas prices by over 30%. Unconstrained exports of LNG would increase costs for the average American household by well over \$100 more per year by 2050.

The DOE’s analysis exposed a triple-cost increase to US consumers from increasing LNG exports – the increasing domestic price of the natural gas itself, increases in electricity prices (natural gas being a key input in many US power markets), and the increased costs for consumers from the pass-through of higher costs to US manufacturers.

On the latter point, the new study found that from 2020 to 2050, the overall energy costs for the industrial sector would go up by \$125 bill, leading to additional potential price increases for a wide range of consumer goods.

The more volumes of US LNG are exported, the greater the risk of this global price volatility being imported into the domestic market and impacting domestic consumers and manufacturers.

Third, LNG facilities tend to be concentrated in communities that are being asked to shoulder the additional burden of pollution from increased natural gas production and liquefaction.

This comes on top of existing environmental burdens from refining, petrochemical, and other industries already concentrated near these communities.

Pollutants lead to higher mortality rates in communities where oil and gas are extracted and processed – a problem that, absent regulatory intervention, will only get worse, if volumes of LNG exports continue to dramatically increase.

Recently, the US Federal Energy Regulatory Commission (FERC) required supplemental Environmental Impact Statements (EIS) for two LNG projects with export applications pending before the DoE – CP2 and Commonwealth – to undertake further analysis on air pollution impacts to surrounding communities.

With its latest final analysis, the DoE has specifically requested additional public input from affected communities, including stakeholders about the various impacts – health, economic, and environmental – on those most directly affected by gas exports.

Fourth, the climate impact of ever greater exports of LNG merits a close and rigorous focus, especially in a world that needs to quickly reduce greenhouse gas emissions substantially across the board to meet global commitment of limiting warming to 1.5 deg C.

While some say LNG is a means to reduce the use of coal overseas (and to date that has been the case with some importing countries), the study showed a world in which additional US LNG exports displace more renewables than coal globally, the DoE said.

In a scenario in which US LNG exports exceed currently authorised levels, the annual direct emissions associated with exports in 2050, not considering market effects of the exported gas, would be 1.5 gigatons of CO₂ equivalent, or just over 25% of current US annual greenhouse gas emissions.

In every scenario, increases in LNG exports would lead to global net emissions rises – despite very aggressive assumptions in the model regarding

deployment of carbon capture, utilisation, and storage (6.6 Gt CO₂ to 20 Gt CO₂ annually in 2050 across the scenarios).

Special scrutiny needs to be applied toward very large LNG projects. An LNG project exporting 4 bill cu ft per day – considering its direct life cycle emissions – would yield more annual greenhouse gas emissions by itself than 141 of the world’s countries each did in 2023, the report claimed.

Fifth, any approach for considering additional authorisations should consider where those LNG exports are headed.

Over the past few years, US LNG has proved to be critical for Europe, as it reduces its usage of Russian gas. However, European demand for natural gas has flattened and is set to decline substantially in line with its efforts to reduce its climate footprint. LNG demand has already peaked in Japan, and growth is expected to flatten in South Korea by 2030.

Conversely, based on current global LNG demand, China is the world’s largest importer. China’s LNG exports are expected to nearly double between now and 2030, and its LNG imports are expected to be the highest of any country through 2050.

Chinese entities have already signed several contracts with operating or proposed US LNG projects. Future authorisation decisions of what is in the ‘public interest’ need not be made solely on a binary – yes or no – basis but could be undertaken using a broader framework of requirements for all authorisations.

“In the decade to come, we will see strong and mounting pressure within our democratic system to ensure that the US uses its market position in a way that truly advances our national interest and energy security, which must include the needs of American workers, American families, and our responsibility to address the climate crisis.

“In our view, the question is not whether US export policy will be forced to respond to those interests, but when and what that response is,” Secretary Granholm said.

WISON: China’s offshore engineering company, Wison New Energies has signed a FEED contract for an FLNG and power barge project with Ace Gas & FLNG.

They are to be deployed offshore Nigeria.

Wison had completed the pre-FEED for this project earlier this year.

The project involves an FLNG with a

production capacity of around 3 mill tonnes per annum liquefaction capacity, which is to be moored about 10 km offshore in a water depth of about 20 m, receiving and processing up to 500 mill cu ft of gas per day.

CHART’s IPSMR technology will be utilised for the liquefaction technology to ensure the project’s efficient operation.

In addition, natural gas will be delivered from the FLNG to a 230 MW power barge for power generation and for the supply of electricity to Ace Gas’ operated gas processing facilities within the Escravos and Forcados hub.

WOODSIDE: Energy giants, Woodside and Chevron, have agreed to a major asset swap.

This will involve the Australian oil and gas developer acquiring Chevron’s interest in the North West Shelf (NWS) project, the NWS oil project and the Angel Carbon Capture and Storage (CCS) project.

In return, Woodside will transfer all of its interest in both the Wheatstone and Julimar-Brunello projects to Chevron.

Chevron will also make a cash payment to Woodside of up to \$400 mill.

According to Woodside, the transaction’s highlights include:

- Streamlines the Australian company’s portfolio and consolidates focus on operated LNG assets.
- Simplifies NWS joint venture ownership, unlocking economic recovery of existing production and future development opportunities; and
- Strengthens near-term cash flow to support shareholder distributions and ongoing investments.

“The strategic and commercial rationale for this asset swap is compelling for Woodside,” said CEO, Meg O’Neill. “This transaction simplifies our portfolio, improving our focus and efficiency by consolidating our position in our operated LNG assets. It is immediately cash flow accretive and includes a cash payment upon both execution and completion.

“This year, the North West Shelf project and its Karratha gas plant celebrated 40 years of operations. The Western Australian Government’s recent decision to extend the environmental approval for the North West Shelf project supports its ongoing contribution to reliable energy supply for local and global customers.

“This transaction creates greater opportunity to fill emerging processing capacity and maximise value accretive

recovery from the North West Shelf Project.

“It also provides greater alignment and improves the commercial prospects for the proposed Browse to North West Shelf project.

“Additionally, this improves joint venture planning for de-carbonisation opportunities at Karratha gas plant. Our increased equity in the Angel CCS project also supports future development of this large-scale, multi-user carbon capture and storage hub in Western Australia,” she concluded.

Under the proposed deal, Woodside will transfer its 13% non-operated interest in the Wheatstone project and 65% operated interest in the Julimar-Brunello project and will acquire in exchange Chevron’s 16.67% interests in the NWS project and the NWS oil project and a 20% interest in the Angel CCS project.

Its completion is subject to customary conditions precedent, including Australian Competition and Consumer Commission and Foreign Investment Review Board clearances and other applicable State and Federal and regulatory approvals, relevant third-party consents and pre-emption rights of the continuing joint venture participants.

The transaction is also subject to the completion of Julimar Phase 3 project execution and handover, which is expected in 2026, and the completion of certain ongoing abandonment activities.

Julimar Phase 3 is a four well tie-back to the existing field production system and is currently in execution phase.

Woodside will continue to operate the execution phase, transferring the asset to Chevron at project start-up.

The transaction is expected to close in 2026.

The cash payment by Chevron to Woodside of up to \$400 mill comprises a cash payment of \$300 mill at completion, and additional contingent payments of up to \$100 mill in aggregate related to handover of the Julimar Phase 3 and subsequent production performance.

In addition, cash flows forecast of about \$400 mill, are expected from utilising otherwise depreciable tax bases on completion.

At the completion there will be customary adjustments for net working capital and interim period cash flows. Chevron will provide a \$100 mill advance payment to Woodside on execution of the transaction, which is refundable by Woodside if the transaction fails to complete, the companies revealed. ■

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.

In addition to our own database, the information in these tables has been derived and cross-referenced from multiple sources, including GEM, IEEJ, IGU, GIE, GIIGNL and facility operators/ developers.

Comments, corrections or additional information would be most welcome. They should be sent to alexander@lngjournal.com

Conventional LNG Terminals

Country	Location (Project)	Owners	Start up	Nom. Capacity (MTPA)	Storage Tanks	Capacity
Belgium	Zeebrugge	Fluxys	1987	6.6	5	566,000
Canada	St. John (Canaport) LNG	Repsol	2009	7.1	3	480,000
Chile	Mejillones LNG	Tractebel Engie, Ameris Capital AGF	2010	1.5	1	187,000
	Quintero	ENAP, Metrogas, Enagas	2009	3.8	3	334,000
China	Beihai LNG	PipeChina	2013	6.0	4	640,000
	Caofeidian LNG	PetroChina	2012	10.0	8	1,280,000
	Caofeidian Xintian LNG	China Suntien Green Energy Corp.	2023	5.0	2	–
	Dalian LNG	PipeChina	2011	6.0	3	480,000
	Dongguan LNG	JOVO Energy	2010	1.5	2	160,000
	Fujian LNG	CNOOC	2008	6.3	6	960,000
	Guangdong Dapeng LNG	CNOOC	2006	6.8	4	640,000
	Hainan LNG	PipeChina	2014	3.0	2	320,000
	Hainan Transfer Station	PetroChina	2020	0.6	2	40,000
	Jiangsu LNG	PetroChina	2011	10.0	5	1,080,000
	Jieyang LNG	PipeChina	2018	4.2	3	480,000
	Nansha LNG	Guangzhou Gas	2023	1.0	2	160,000
	Pinghu LNG	Zhejiang Hangjiixin Clean Energy	2022	1.0	2	200,000
	Qidong LNG	Guanghui Energy	2009	4.0	5	620,000
	Qingdao LNG	Sinopec	2006	7.0	6	960,000
	Shanghai (Yangshan) LNG	CNOOC	2009	3.0	5	895,000
	Shanghai Peak Shaving	Shenergy	2008	1.5	5	320,000
	Shenzhen Peak Shaving	Hua'an	2012	0.8	1	80,000
	Shenzhen Diefu LNG	PipeChina	2018	4.0	4	640,000
	Tianjin - Nangang LNG	Sinopec	2018	6.0	4	640,000
	Tianjin LNG	PipeChina	2013	6.0	7	397,000
	Tianjin Binhai LNG	Beijing Gas	2023	5	10	–
	Wenzhou LNG	Zhejiang Energy, Sinopec	2023	3.0	4	–
	Yancheng LNG	CNOOC	2022	3.0	4	880,000
	Zhangzhou LNG	PipeChina	2024	3.0	3	
	Zhejiang LNG	CNOOC	2018	6.0	6	960,000
	Zhoushan LNG	ENN	2018	5.0	4	640,000
	Zhuhai LNG	CNOOC	2014	3.4	3	480,000
Dominican Republic	Andres LNG	AES Andres	2003	1.9	1	160,000
France	Dunkerque Le Clijton	EDF, Fluxys, TotalEnergies	2016	9.5	3	600,000
	Fos-sur-Mer	TotalEnergies, Elengy	2010	9.2	4	410,000
	Montoir-de-Bretagne	Elengy	1980	8.0	3	360,000
Greece	Revithoussa	DESFA	2000	7.1	3	225,000
India	Cochin	Petronet	2013	5.0	2	368,000
	Dabhol	GAIL, NTPC	2007	5.0	3	480,000
	Dahej	Petronet	2004	17.5	6	932,000
	Ennore LNG	IndianOil LNG	2019	5.0	2	360,000
	Hazira	Shell, TotalEnergies	2005	5.0	2	320,000
	Mundra LNG	Adani, GSP	2019	5.0	2	320,000
	Dhamra LNG	Adani, TotalEnergies	2023	6.5	2	360,000
	Chhara LNG	HPLNG	2024	5.0	2	400,000
Indonesia	Arun Conversion	Pertamina	2015	3.0	4	508,000
Italy	Panigaglia	Snam	1963	2.5	2	100,000
	Rovigo Adriatic LNG	QatarEnergy, ExxonMobil, Snam	2009	6.6	2	250,000
Jamaica	Montego Bay	New Fortress Energy	2020	0.5	7	7,000
Japan	Chita	JERA, Toho Gas	1977	24.0	14	1,560,000
	Fukuoka	Saibu Gas	1993	0.8	1	70,000
	Futtsu	JERA	1985	20.0	10	1,110,000
	Hachinohe	ENEOS	2015	1.6	2	280,000
	Hatsukaichi	Hiroshima Gas	1996	0.9	2	170,000
	Hibiki LNG	Saibu Gas, Kitakyushu Gas	2014	4.0	2	360,000
	Higashi-Ogishima	Tokyo Electric	1984	15.0	9	540,000
	Himeji	Kansai Electric, Osaka Gas	1979	12.9	15	1,360,000
	Hitachi LNG	JERA	2015	2.2	2	230,000
	Ishikari LNG	Hokkaido Gas	2012	1.4	1	180,000
	Joetsu LNG	JERA	2012	2.3	3	540,000
	Kagoshima	JERA	1996	0.2	1	86,000
	Kawagoe	Chubu Electric	1997	8.0	3	480,000
	Mizushima	Chugoku Electric, ENEOS	2006	1.7	2	320,000
	Nagasaki LNG	Saibu Gas	2003	0.1	1	35,000
	Nakagusuku LNG	Okinawa Electric	2012	0.7	2	280,000
	Negishi	TEPCO, JERA	1969	11.0	14	1,180,000
	Niigata	Tohoku Electric	1984	10.0	8	720,000

Conventional LNG Terminals (Continued)

Country	Location (Project)	Owners	Start up	Nom. Capacity (MTPA)	Tanks	Storage Capacity
Japan (continued)	Ogishima	JERA	1998	3.0	4	850,000
	Oita	Kyushu Electric	1990	5.1	5	460,000
	Sakai	Kansai Electric	2006	6.4	4	420,000
	Sakaide	Shikoku Electric, Cosmo Oil, Shikoku-Gas	2010	1.2	1	180,000
	Senboku	Osaka Gas	1972	12.5	20	1,675,000
	Shin Sendai	Tohoku Electric	2016	1.0	2	320,000
	Sodegaura	JERA	1973	29.4	35	2,660,000
	Sodeshi Shimizu	Shizuoka Gas, ENEOS	1996	2.9	3	337,200
	Soma LNG	JAPEX	2018	1.5	2	460,000
	Tobata Ward	Kita-Kyushu LNG	1977	7.6	8	480,000
	Toyama LNG	Hokuriku Electric	2018	1.8	1	180,000
	Yanai	Chugoku Electric	1990	2.4	6	480,000
	Yokkaichi	Chubu Electric	1987	7.2	2	320,000
Kuwait	Al Zour LNG	KIPIC	2022	22.0	8	1,800,000
Malaysia	Pengerang LNG	Petronas	2017	3.5	2	400,000
Mexico	Energia Costa Azul	Sempra	2008	7.6	2	320,000
	Manzanillo	Samsung, KOGAS, Mitsui	2012	3.8	2	300,000
Netherlands	Maasvlakte Gate Terminal	Gasunie	2011	8.9	3	540,000
Panama	AES Costa Norte LNG	AES	2018	1.5	1	130,000
Philippines	PHLNG	AG&P	2023	5.0	1	137,512
Poland	Swinoujscie LNG	Polskie LNG	2015	3.6	2	320,000
Portugal	Sines	REN	2004	5.6	3	390,000
Puerto Rico	Penuelas	EcoElectrica	2000	1.4	1	160,000
Singapore	Singapore LNG	Singapore LNG Corp.	2013	11.0	4	800,000
South Korea	Boryeong	GS Energy	2017	10.8	6	1,200,000
	Gwangyang	POSCO Energy	2005	7.1	5	730,000
	Incheon	KOGAS	1996	54.4	23	3,480,000
	Pyeongtaek	KOGAS	1986	41.0	23	3,360,000
	Samcheok	KOGAS	2014	11.6	12	2,400,000
	Tongyeong	KOGAS	2002	26.6	17	2,600,000
	Jeju Island	KOGAS	2019	1.1	2	90,000
	Korea Energy Terminal	SK Gas, KNOC	2024	2.4	–	–
Spain	Bahia de Bizkaia LNG	BP, Enagás, EVE	2003	6.9	3	450,000
	Barcelona	Enagás	1969	12.6	6	760,000
	Cartagena	Enagás	1989	8.7	5	587,000
	Huelva	Enagás	1988	8.7	5	619,500
	Mugardos	Reganosa	2007	2.6	2	300,000
	Sagunto	Enagás	2006	6.4	4	600,000
	El Musel	Enagás	2023	5.8	2	300,000
Taiwan	Taichung	CPC	2009	7.0	6	960,000
	Yung-An	CPC	1990	10.5	6	690,000
Thailand	Map Ta Phut LNG	PTT	2011	19.0	6	940,000
Turkey	Izmir	EgeGaz	2006	10.6	2	280,000
	Marmara Ereglisi	BOTAS	1994	4.2	3	255,000
UK	Dragon LNG	Shell, Ancala Partners	2009	6.5	2	320,000
	Isle of Grain	National Grid	2005	14.8	8	1,000,000
	South Hook LNG	QatarEnergy, ExxonMobil, TotalEnergies	2009	15.6	5	775,000
United States	Everett Marine Terminal	Constellation Energy	1971	5.1	2	155,000
Vietnam	Thi Vai LNG	PetroVietnam Gas	2023	1.0	1	180,000

FSRU Terminals

Country	Location (Project)	Owners	Start up
Argentina	Escobar GasPort	Excelerate/Enarsa	2011
	Bahia Blanca	YPF	2023
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
	Terminal Gás Sul	New Fortress Energy	2024
	Barcarena FSRU	NFE	2024
	GNL de Sao Paulo	edge	2024
	KARMOL LNGT Sepetiba	Karpowership	2024
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
El Salvador	Acajutla	Energía del Pacífico	2022
Finland	Inkoo FSRU	Gasgrid Finland	2022
France	Le Havre	TotalEnergies	2023
Germany	Wilhelmshaven FSRU	Uniper	2022
	Lubmin FSRU	Deutsche ReGas	2022
	Brunsbüttel	RWE	2023
Ghana	Tema LNG	Helios/GNPC	2021
Greece	Revithoussa FSU	DESFA	2022
	Alexandroupolis	Gastrade	2024

Country	Location (Project)	Owners	Start up
Hong Kong, China	FSRU Bauhinia	CLP Power	2023
India	Jaigarh (Mothballed)	H-Energy	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
Italy	Livorno	OLT Offshore LNG Toscana	2013
	Piombino	Snam	2023
Jamaica	Old Harbour	Golar FSRU, New Fortress	2019
Jordan	Aqaba, Jordan	Golar LNG	2015
Lithuania	Klaipeda	Klaipedos Nafta Hoegh LNG	2014
Malaysia	Malacca FSRU	Petronas	2012
Malta	FSU Armada Mediterrana	ElectroGas	2016
Myanmar	Thanlyin	CNTIC Vpower	2020
Netherlands	Eemshaven	Gasunie	2022
Pakistan	Port Qasim	Excelerate, Engro Corp	2015
	Port Qasim	BW-Mitsui, PGP Consortium	2017
Philippines	PHLNG	AG&P International	2023
	FGEN Batangas LNG	First Gen Corp.	2023
Russia	Kaliningrad FSRU	Gazprom	2020
Senegal	Dakar	KarMOL	2023
Turkey	Iskenderun & Saros FSRUs	BOTAS	2016 & 2023
	Aliaga (ETKI LNG)	Etki Liman	2017
	Ruwais, Abu Dhabi	Gasco (UAE)	2016
UAE	Jebel Ali Port, Dubai	DSA (UAE)	2010

Future LNG Import Projects

Country	Location/Project	Owners	Start up	Nom. Capacity (MTPA)	Storage Tanks	Capacity	Status
Albania	Port of Vlora FSRU	Excelerate Energy, ExxonMobil	–	3.5	–	–	Speculative
Australia	Port Phillip Bay FSRU	Vopak	2024	–	–	–	Speculative
	Geelong FSRU	Viva Energy	2024	–	–	–	Speculative
	Adelaide FSRU	Venice Energy	2024	–	–	–	Speculative
	Port Kembla FSRU	Squadron Energy	2026	1.9	1	170,000	U. Construction
Bangladesh	Matarbari LNG	Petrobangla	2028	7.5	–	–	Speculative
	Payra FSRU	Excelerate Energy	2028	–	–	–	Speculative
Belgium	Zeebrugge Exp. I	Fluxys	2024	4.6	–	–	U. Construction
	Zeebrugge Exp. II	Fluxys	2026	1.3	–	–	U. Construction
Brazil	Tergás Rio Grande LNG	Grupo Cobra	2024	1.61	–	–	Speculative
	Geramar FSRU	–	2026	–	–	–	Speculative
	Porto Norte Fluminense FSRU	Porto Norte Fluminense SA	2027	5.64	–	–	Speculative
	Imetame LNG	Imetame	2025	–	–	–	Speculative
China	Penglai LNG	Shandong Penglai Baota Ina Natural Gas Co., Ltd.	2026	2.8	–	–	Proposed
	Wuhan LNG	Hubei Minsheng Petroleum Liquefied Gas Co., Ltd.	2035	1.86	–	–	Speculative
	Zhiwan Island LNG	Macau Gas Co.	–	5	–	–	Speculative
	Yueyang LNG	Yueyang LNG Co., Ltd.	2024+	1.5	–	–	Speculative
	Yangjiang LNG	Guangdong Yangjiang Hailing Bay LNG Co., Ltd.	2024+	2.8	2	–	U. Construction
	Rudong LNG (Jiangsu Guoxin)	Jiangsu Guoxin LNG Co., Ltd.	2024	2.95	–	–	U. Construction
	Jiangyin LNG (Garson Gas)	Jiangsu Jiasheng Gas Co., Ltd.	2024	3	–	–	U. Construction
	Huizhou LNG	Guangdong Huizhou LNG Co., Ltd.	2024	4	–	–	U. Construction
	Longkou	PipeChina	2024	5	6	1,420,000	U. Construction
	Yingkou LNG	China Urban Rural Energy	2025	6.5	4	800,000	U. Construction
	Yancheng LNG Expansion	CNOOC	2024	3	–	1,620,000	U. Construction
	Yantai LNG	China Urban Rural Energy	–	5.9	5	1,000,000	U. Construction
Colombia	Buenaventura FSRU	Unidad de Planeación Minero Energética (UPME)	2024	–	–	–	Speculative
Cyprus	Vasilikos FSRU	DEFA	2024	0.6	–	–	U. Construction
Ecuador	Jambelí FSRU	Sycar LLC	2025	0.38	–	–	Proposed
Estonia	Paldiski LNG	Espa	2024	1.8	–	–	Proposed
Germany	Stade LNG	Buss Group, Dow Chemical, Fluxys, Partners Group	2026	9.78	–	–	Proposed
	TES Wilhelmshaven LNG	Tree Energy Solutions	2025	11.76	–	–	Proposed
	Stade FSRU	German company Hanseatic Energy Hub	2024	3.5	–	–	U. Construction
Greece	Dioriga FSRU	Motor Oil	2024	1.91	–	–	Proposed
	Argo FSRU	Mediterranean Gas	2024	3.38	–	–	Proposed
	Thessaloniki FSRU	Edison, Hellenic Petroleum	2025	5.37	–	–	Proposed
India	Jaigarh LNG	H-Energy	–	8	–	–	Speculative
	Kakinada FSU	H-Energy	2024	4	–	–	Speculative
	Kukrahati LNG	H-Energy	2024	3	–	180,000	Speculative
	Chhara LNG Terminal	Hindustan Petroleum	2025	5	–	–	U. Construction
	Karaikal LNG	AG&P	TBC	5	–	–	Speculative
Indonesia	Karimun Island LNG	Panbil Group	2024	–	–	–	Speculative
	Sengkang LNG	Energy World	–	2	–	–	U. Construction
Ireland	Mag Mell FSRU	Predator Oil & Gas	–	1.91	–	–	Speculative
Italy	Porto Torres FSRU	Snam	2024	0.5	–	–	Proposed
	Gioia Tauro LNG	Iren Group, Sorgenia	2026	8.6	–	–	Proposed
	Portovesme FSRU	Snam SpA	2024	–	–	–	Speculative
Morocco	Jorf Lasfar LNG	SIGER/ERGIS Group	2025	5.15	–	–	Speculative
Mozambique	Matola FSRU	Gigajoule, TotalEnergies, CTB, Matola Gas Co.	2025	0.5	–	–	Speculative
Myanmar	Mee Laung Gyaing FSRU	Supreme Group, ZHEFU Hydropower	2025+	–	–	–	Speculative
	Ahlone LNG	TTCL	2025+	–	–	–	Speculative
	Thilawa LNG	Eden Group, Marubeni Corp., Mitsui, Sumitomo Corp.	2026	–	–	–	Speculative
Pakistan	Tabeer Energy FSRU	Mitsubishi	–	5.7	–	–	Speculative
Philippines	Vires FSRU	Argo Group	–	3	–	–	Speculative
	Pagbilao Power	Energy World	–	3	2	260,000	U. Construction
Poland	Gdańsk FSRU	PGNiG	2028	8.82	–	–	Speculative
South Africa	Richards Bay FSRU	South Africa Department of Public Enterprises	2027	1	–	–	Speculative
South Korea	Dangjin LNG	POSCO	2027	3.5	–	–	Proposed
	Hanyang LNG	Hanyang Group	2024	–	–	–	Speculative
Sri Lanka	New Fortress Colombo LNG	New Fortress Energy	–	0.71	–	–	Speculative
Taiwan	Hsieh-Ho LNG	Taipower	2025	1.8	–	–	Proposed
	Taichung (TaiPower) LNG	Taipower	2025	3	–	–	Proposed
Thailand	Chana LNG	–	2028	2	–	–	Speculative
Vietnam	Hai Linh	Hai Linh Co. Ltd.	2020	3	3	219,000	Mothballed
	Mui Ke Ga FSRU	B.Grimm Power, Energy Capital Vietnam, Gunvor	2025	1.5	–	–	Proposed
	Son My LNG	AES, PetroVietnam	2026	3.6	–	–	Proposed
	Thai Binh FSRU	–	2026	0.5	–	–	Speculative
	South West FSRU	–	2030	1	–	–	Speculative
	Bac Lieu LNG	Delta Offshore Energy	–	2	–	–	Speculative
	Cat Hai FSRU	Chubu Electric, ExxonMobil, Government of Hai Phong, TEPCO	2030	3	–	–	Speculative
	Khanh Hoa LNG	Millenium Energy	2030	3	–	–	Speculative
	Long Son LNG	EVN	2025	4.4	–	–	Speculative
	Tien Lang FSRU	ExxonMobil, Chubu Electric Power, Tokyo Electric Power Co.	2026	–	–	–	Speculative
	Ca Na LNG	Novatek	2024	–	–	–	Speculative
	Chan May LNG	Chan May LNG	2024	–	–	–	Speculative
	Vung Ang LNG	KG Electric Power Corp., PECC2, Siemens	2026	–	–	–	Speculative
	Hai Lang LNG	T&T Group, Hanwa, KOGAS, KOSPO	2026	1.5	2	160,000	U. Construction

LNG Export Plants

Country	Location/Project	Shareholders	Start up	Liquefaction		Storage	
				Trains	Nom. capacity (MTPA)	No. of tanks	Capacity m³
UAE	Das Island	ADNOC, Mitsui, BP, TotalEnergies	1977/1994	3	5.7	3	240,000
Algeria	Arzew	Sonatrach	1964-2014	13	20.8	6	920,000
	Skikda	Sonatrach	1980/2013	4	7.9	5	308,000
Angola	Soyo	Sonangol, Chevron, BP, Eni, TotalEnergies	2012	1	5.2	2	370,000
Australia	NWS LNG	BP, Chevron, MIMI, Shell, Woodside Energy, CNOOC	1989-2004	5	16.3	6	520,000
	Darwin LNG	Santos, Eni, INPEX, JERA, Tokyo Gas	2006	1	3.7	1	188,000
	Australia Pacific LNG	ConocoPhillips, Origin, Sinopec	2016	2	9.0	2	320,000
	Gladstone LNG	Santos, Petronas, TotalEnergies, KOGAS	2015-2016	2	7.8	2	280,000
	Gorgon LNG	Chevron, Shell, ExxonMobil, Osaka Gas, Tokyo Gas, JERA	2016-2017	3	15.6	2	360,000
	Pluto LNG	Woodside Energy, Kansai Electric, Tokyo Gas	2012	1	4.9	2	240,000
	Queensland C. LNG	Shell, CNOOC	2014	2	4.5	2	280,000
	Wheatstone LNG	Chevron, KUFPEC, Woodside Petroleum, Kyushu Electric Power Co., PEW	2017	2	8.9	2	300,000
	Ichthys LNG	INPEX, TotalEnergies, CPC, Tokyo Gas, Osaka Gas, Kansai Electric, JERA, Toho Gas	2018	2	8.9	2	330,000
	Prelude FLNG	Shell, INPEX, CPC, KOGAS	2018	1	3.6	6	228,000
Brunei	Brunei LNG	Gov. of Brunei, Shell, Mitsubishi	1972-74	5	7.2	3	195,000
Cameroon	Cameroon FLNG	Golar LNG	2018	4	2.4	1	125,000
Egypt	Damietta	Eni, EGAS, EGPC	2004	1	5.0	2	300,000
	Idku	EGPC, EGAS, Shell, Petronas, TotalEnergies	2005	1	7.2	2	280,000
Equ. Guinea	EG LNG	Marathon, Sonagas, Marubeni	2007	1	3.4	2	272,000
Indonesia	Bontang (E-H)	Pertamina, VICO, JILCO, TotalEnergies	1990-1998	4	11.5	5	635,000
	Dongi-Senoro	Medco Energi, Pertamina, Mitsubishi	2015	1	2.0	1	170,000
	Tangguh	BP, Mitsubishi, Inpex, CNOOC, JX Nippon, KG Mitsui, LNG Japan	2008-2023	3	11.4	2	340,000
Malaysia	Malaysia LNG	Petronas, Shell, Sarawak, Mitsubishi, Nippon Oil	1983-2016	9	29.3	6	445,000
	PFLNG Satu	Petronas	2016	1	1.2	4	177,000
	PFLNG Dua	Petronas	2020	1	1.5	4	177,000
Mexico	Altamira Fast LNG	New Fortress Energy	2024	1	1.4	–	–
Mozambique	Coral Sul FLNG	Eni, ExxonMobil, CNPC, GALP, KOGAS, ENH	2022	1	3.4	8	227,840
Nigeria	Bonny Island	NNPC, Shell, TotalEnergies, Eni	1999-2007	6	22.2	6	505,200
Norway	Snøhvit LNG	Equinor, TotalEnergies, Petoro, Neptune Energy, Wintershall DEA Norge	2007	1	4.2	2	250,000
Oman	Oman LNG	Oman Gov., Shell, TotalEnergies, Korea LNG, Mitsubishi, Mitsui, Partex O&G, Itochu Corp.	2000	3	10.4	4	480,000
Papua New Guinea	PNG LNG	ExxonMobil, Oil Search, Santos, JX Nippon Oil	2014	2	8.3	2	320,000
Peru	Pampa Melchorita	Hunt Oil, Shell, Marubeni, SK Group	2010	1	4.5	2	260,000
Qatar	Ras Laffan	QatarEnergy, Shell, ExxonMobil, TotalEnergies, ConocoPhillips et al.	1997-2010	14	77.4	18	2,340,000
Republic of the Congo	Congo FLNG Ph. I	Eni	2024	1	0.6	1	177,000
Russia	Sakhalin-2 LNG	Gazprom, Sakhalin Energy, Mitsubishi, Mitsui	2009	2	9.6	2	200,000
	Yamal LNG	Novatek, TotalEnergies, CNPC, Silk Road Investment Fund	2017-2019	3	17.4	4	640,000
	Portovaya LNG	Gazprom	2022	1	1.5	-	-
Trinidad & Tobago	Atlantic LNG	BP, Shell, NGC	1999-2005	4	15.3	4	640,000
USA	Sabine Pass LNG	Cheniere	2016-2022	6	30.0	5	800,000
	Corpus Christi LNG	Cheniere	2019-2021	3	15.0	3	480,000
	Freeport LNG	Freeport LNG, JERA, Osaka Gas	2019-2020	3	15.5	3	480,000
	Cameron LNG	Sempra, TotalEnergies, Mitsui, Mitsubishi	2019	3	15.0	3	480,000
	Calcasieu Pass LNG	VentureGlobal	2022-2023	18	11.3	2	440,000
	Cove Point LNG	BHE GT&S, Dominion Energy, Brookfield Asset Management	2017	1	5.3	7	695,000
	Elba Island LNG	Kinder Morgan, EIG Energy, Blackstone	2019-2020	10	2.5	5	560,000
Yemen	Balhaf LNG (Mothballed)	TotalEnergies, Hunt Oil, SK Innovation, Hyundai, KOGAS, Yemen Gas Corp., GASSP	2009	2	6.7	2	320,000

LNG Export Projects U. Construction

Country	Project	Project Developers	Planned Start Up	Number of Trains	Capacity In MTPA
Canada	LNG Canada	Shell, Petronas, PetroChina, Mitsubishi	2025	2	14
	Woodfibre LNG	Pacific Energy Corp., Enbridge	2027	2	2.2
Indonesia	Sengkang LNG	Energy World	2023+	4	2
Malaysia	ZLNG FLNG	Petronas	2027	1	2
Mauritania	Greater Tortue Ahmeyim FLNG	BP, Kosmos Energy	2024	–	2.52
Mexico	Costa Azul Export	Sempra Energy, TotalEnergies	2024	1	3.25
Mozambique	Mozambique LNG Ph. I	TotalEnergies, Mitsui, ONGC, ENH, PTTEP, Bharat Petroleum, Oil India	2024+	2	–
Nigeria	Nigeria LNG Expansion	Nigeria LNG	2024	1	8
Qatar	Ras Laffan Expansion I	QatarEnergy	2026	4	33
	Ras Laffan Expansion II	QatarEnergy	2027	2	16
Russia	Ust Luga LNG	RusKhimAlyans	2027	2	13
	Arctic LNG 2 T1	Novatek et al	2024+	1	6.6
United States	Golden Pass LNG T1-2	Golden Pass LNG	2024	2	12
	Golden Pass LNG T3	Golden Pass LNG	2025	1	6.03
	Corpus Christi LNG Stage 3	Cheniere Energy	2027	7	11.48
	Plaquemines LNG Ph. I	Venture Global	2024	1	10
	Plaquemines LNG Ph. II	Venture Global	2025	1	10

Future LNG Export Projects

Country	Project	Project Developers	Estimated Start Up	Number of Trains	Capacity In MTPA
Argentina	Vaca Muerta (YPF) LNG	YPF	2024+	–	5.37
Australia	Browse FLNG	Woodside Energy, Japan Australia LNG, Shell, BP, PetroChina	–	2	11.4
	Darwin LNG Life Extension	Santos, SK E&S, JERA, INPEX, Eni SpA, Tokyo Gas	2025	1	3.7
	Pluto LNG T2	Woodside Burrup Train 2A Pty Ltd., Global Infrastructure Partners	2026	1	5
Cameroon	Etinde FLNG	Perenco, Bowleven	2023+	–	1.3
Canada	Bear Head LNG	Bear Head LNG	2027	4	12
	Cedar FLNG	Haisla Nation, Pembina Pipeline Corp.	2027	–	3
	Energie Saguenay LNG	GNL Quebec	2026	2	11
	Ksi Lisims FLNG	Ksi Lisims LNG GP Ltd.	2027	–	12
	Placentia Bay FLNG	Horizon Maritime Services, LNG Newfoundland and Labrador Ltd.	2030	–	4
	Tilbury Island LNG T1	FortisBC	2026	1	0.9
	Tilbury Island LNG T2	FortisBC	2028	1	2.5
Equatorial Guinea	Fortuna FLNG	New Fortress Energy	–	1	–
Gabon	Boudji FLNG	Petronas	–	–	–
Guinea	Guinea LNG	West Africa LNG Group	2026+	1	–
Indonesia	Abadi FLNG	INPEX Masela Ltd.	2030	–	9.5
Israel	NewMed FLNG	NewMed Energy	2026	–	5
Mauritania	New Fortress Banda LNG	New Fortress Energy	2024	–	1.4
Mexico	Mexico Pacific LNG Ph. I	AECOM Capital, DKRW Energy	2025	2	9.4
	Mexico Pacific LNG Ph. II	AECOM Capital, DKRW Energy	2026+	1	4.7
	AMIGO LNG	Epsilon LNG, LNG Alliance	2026	1	4.2
	Vista Pacifico LNG	Sempra Energy	2025+	–	4
	Lakach FLNG	New Fortress Energy	–	1	1.4
	Altamira FLNG	New Fortress Energy	–	2	2.8
Mozambique	Rovuma LNG	Eni, ExxonMobil, CNPC, ENH, Galp, KOGAS	2025+	2	15.2
Nigeria	Brass LNG	Brass LNG Ltd.	–	2	10
	Greenville LNG	Greenville LNG	–	1	1.1
	UTM Offshore FLNG	UTM Offshore	2026	–	1.52
Papua New Guinea	Papua LNG	TotalEnergies, ExxonMobil, Papua New Guinea Gov., Santos	2027	2	5.4
	PNG LNG Expansion	ExxonMobil, Kumul Petroleum, Santos, JX Nippon O&G, MRDC	2025	1	2.6
Republic of the Congo	Congo FLNG Ph. II	Eni Congo	2025	1	2.4
Russia	Yakutia LNG	A-Property, Globaltek, Zhejiang Energy	2027	–	18
	Far East LNG I	ExxonMobil, SODECO, ONGC, Rosneft	2027+	1	6.2
	Far East LNG II	ExxonMobil, SODECO, ONGC, Rosneft	2035	1	10
	Vladivostok LNG	Gazprom, INPEX, Itochu Corp., JAPEX, Marubeni Corp.	2025	3	1.5
	Arctic LNG II	Novatek	2027	–	19.8
	Obsky LNG	Novatek	2026	–	6.6
	Chernomorsky LNG	Gazprom	2025	–	1.5
	Arctic LNG III	OOO Arctic LNG 3	2032	–	19.8
	Kara LNG	Rosneft	2030	–	30
Tanzania	Tanzania LNG	Equinor, ExxonMobil, Ophir Energy, Pavilion Energy, Shell, TPDC	2027	2	10
United Arab Emirates	Ruwais (ex Fujairah) LNG	ADNOC	2027+	2	6
United States	Fourchon LNG	Energy World	–	1	2
	Alaska LNG	Alaska Gasline Development Corp.	2030	3	20.1
	Cameron LNG Expansion	Cameron LNG LLC	2026	1	6.75
	Commonwealth LNG	Commonwealth LNG	2026	6	9.3
	Corpus Christi LNG Midscale Expansion	Cheniere Energy	2031	2	3.28
	Delfin FLNG	Delfin LNG LLC	2026+	4	12
	Driftwood LNG T1-5	Tellurian	–	5	27.6
	Freeport LNG Expansion	Freeport LNG Dev.	2026	1	5.1
	Gulf LNG	KinderMorgan	–	2	10.86
	Lake Charles LNG	Energy Transfer	2026+	3	17.79
	Magnolia LNG	Glenfarne Group	–	4	8.8
	Port Arthur LNG Ph. I	PALNG Common Facilities Co., Port Arthur LNG, LLC	–	2	13.5
	Port Arthur LNG Ph. II	PALNG Common Facilities Co., Port Arthur LNG, LLC	–	2	13.5
	Texas LNG	Glenfarne Energy Transition	2027	2	4
	Rio Grande LNG Ph. I	NextDecade	2026	2	10.8
	Rio Grande LNG Ph. II	NextDecade	–	3	16.2
	Pointe LNG	Pointe LNG, Pointe Pipeline Co.	2026	3	6
	Repauno Works LNG	Delaware River Partners LLC	–	–	1.5
	Qilak LNG	Qilak Energy	2026	–	4
	CP2 LNG Ph. I	Venture Global	2026+	9	10
	CP2 LNG Ph. II	Venture Global	2027+	9	10
	Delta LNG Ph. I	Venture Global	2028+	–	10
	Delta LNG Ph. II	Venture Global	2029+	–	10
	West Delta LNG Deepwater Port	LNG21 Group	2026+	6	6.1
	Grand Isle FLNG	New Fortress Energy	2025+	–	2.8



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