



NASDAQ: "CGBS"

LNG infrastructure for harsh weather conditions

Crown LNG's vision is to enhance energy security & support a responsible green energy transition.

The Crown LNG value chain



Licensed capacity
7.2 MTPA

Capacity under permitting
5.0 MTPA

Future capacity
+15.0 MTPA

EXHIBITION & CONFERENCE
FIERA MILANO | MILAN | 9-12 SEPTEMBER 2025

Call for Papers 2025 is now open

Showcase groundbreaking innovations and inspiring visions at the world's largest exhibition and conference for natural gas, LNG, hydrogen, climate technologies, AI, and low carbon solutions.



SUBMIT YOUR 500 WORD ABSTRACT
by 7 February 2025 to apply to speak at the
Gastech Technical & Commercial Conference



50,000
Attendees

1,000
Exhibitors

1,000
Speakers

7,000
Delegates

150
Countries represented

gastchevent.com @gastchevent #Gastech    

In this issue:

- America's shale industry is changing gear**
Growth-at-all cost approach gives way to a CAPEX-focussed, more long term thinking
- Global LNG: Navigating crosscurrents**
Global LNG faces short-term demand weakness amid warm weather, while supply delays and geopolitical tensions cloud the longer-term horizon
- Global LNG supply growth, but demand in seasonal transition**
Our October data for the month-to-date showed a small LNG trade increase globally. Meanwhile, demand was weighed down by decreases in the Middle East, Asia and South America
- The need for fully automated LNG Custody Transfer Measurement Systems (CTMS)**
Custody transfer refers to the process of transferring ownership and responsibility of a product or commodity from one party to another
- Mobile LNG solutions target emerging transport markets**
As the transport sector grapples with the need to balance efficiency, sustainability, and energy security, LNG is slowly emerging as a leading fuel choice thanks to a range of novel solutions
- A round-up of latest events, company and industry news**
For the Record
- Tables of import and export LNG terminals and plants worldwide**

Presidential race unlikely to stall US shale industry growth

Bickering between the US Vice President Kamala Harris and former President Donald Trump in the run-up to Election Day is not hampering the steady growth of the American shale gas industry and LNG majors. Focus on profitability and shareholder returns – rather than production growth – means the industry is unlikely to be influenced by promises of support or potential regulations from either candidate; our Correspondent Anja Karl was told.

This shift in strategy is emerging for some time. It's a departure from the industry's earlier growth-at-all-costs approach, which had been fuelled by easy access to capital and rapid production expansion. These days, production is impacted by rising oil prices, improving operator efficiency and increasing long-term investment from acquisitions.

Despite Trump's vocal support for the oil and gas industry, analysts doubt that a second term in office for the Republican candidate could increase US shale production above its current trajectory.

"The US onshore industry has learned to live with a high degree of uncertainty, and the presidential election is just one of many factors on operators' radars. Shale production has proven to be incredibly resilient, and we expect it to continue to play a major role in the global energy landscape for years to come.

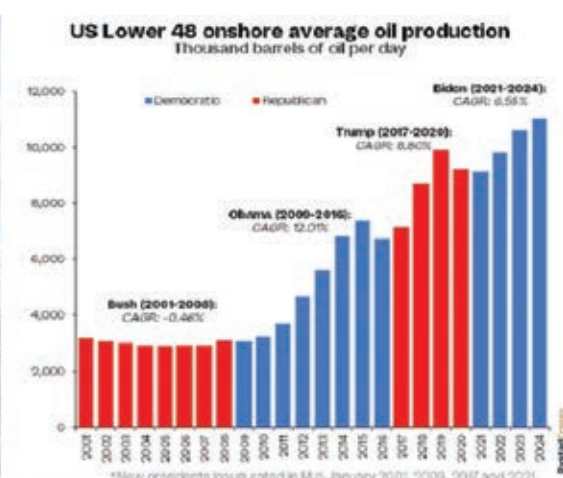
"At the end of the day, the industry is driven by market fundamentals, not by politics," said Matthew Bernstein, senior research analyst, upstream at Rystad Energy.

Broken link between price & production

In fact, the industry's shift towards prioritizing shareholder returns and long-term growth through acquisitions has led to a more disciplined approach to investment: Even if prices rise, companies do not significantly increase spending, as production has somewhat decoupled from oil and gas prices.

"The traditional link between high prices and increased drilling activity has been weakened. Companies now focus on maintaining capital discipline and maximizing returns, instead," he said.

A Democratic administration, on the



other hand, could pose potential risks but these seem highly unlikely for political and economic reasons:

"Past administrations may have imposed stricter regulations, drilling restrictions and heightened scrutiny of mergers and acquisitions, but Harris has not communicated a desire to pursue these options," Bernstein commented.

Impact of Hurricane Milton recedes

Florida's retail petrol and natural gas prices are stable despite interim fuel shortages in the wake of Hurricane Milton. Rain, heavy winds and flooding had disrupted supply chains in Florida,

but the average retail price of gasoline remained fairly range-bound regardless.

Unlike most other US states, Florida doesn't have refineries or inter-state gasoline pipelines and hence relies on fuel shipped from both domestic and international sources. Due to intense storms and rainfall accompanying Hurricane Milton, several ports were temporarily closed, but others remained open with restrictions.

Further along the Gulf coast, Hurricane Helene made landfall on the Florida Panhandle on September 26, leaving a path of destruction behind him. Taking precautions, Chevron, Exxon and Shell temporarily shut-in substantial



The World's Leading LNG publication

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

Publisher
Stuart Fryer

Markets & Commissioning Editor
Anja Karl
anja@lngjournal.com

Markets Editor
Alexander Wilk
alexander@lngjournal.com

Technical Editor
Ian Cochran
lancochran74@gmail.com

Fuelling Editor
Malcolm Ramsay
malcolmraysay@gmail.com

Advertising
David Jeffries, Only Media Ltd
Tel: +44 (0)20 8150 5293
djeffries@lngjournal.com

Subscriptions Sales Manager
Stephan Venter
venter@lngjournal.com

Subscriptions Renewals Manager & Customer Care
Gabi Weck
gabi@lngjournal.com

Production
Vivian Chee
chee@thedigitalship.com

Subscription

Print & online **£900/€1020/US\$1320**

Online only **£830/€920/US\$1190**

See website for more details
www.lngjournal.com
hotline +44 (0)20 7253 2700

No part of this publication may be reproduced or stored in any form by any mechanical, electronic, photocopying, recording or other means without the prior written consent of the publisher. Whilst the information and articles in LNG journal are published in good faith and every effort is made to check accuracy, readers should verify facts and statements direct with official sources before acting on them as the publisher can accept no responsibility in this respect. Any opinions expressed in this magazine should not be construed as those of the publisher.

Printed by The Manson Group Ltd
Reynolds House, 8 Porters' Wood
Valley Road Industrial Estate
St Albans, Herts AL3 6PZ, U.K.

volumes of oil and natural gas production facilities in and along the Gulf Coast prior to Hurricane Milton's landfall.

This, in return, cut short supply and impacted both West Texan Intermediary (WTI) crude oil prices and natural gas prices at Henry Hub – and hub-indexed US LNG exports shipped across the Atlantic to northern Europe, countries around the Mediterranean and transiting the Suez Canal or the Panama Canal to northeast Asia.

Game of scale in upstream markets

Following a string of high-profile mergers and acquisitions (M&A), the actual growth of US shale oil and gas output is now concentrated in the hands of a few large players.

Research shows that the top six companies in the Permian Basin, the largest shale play in the US, now control over 60 percent of the remaining commercial net oil resources in the region. And this consolidation is expected to continue, as smaller players struggle to compete with the scale and efficiency of their larger rivals.

“The industry is rapidly becoming a game of scale,” analysts noted, and only the largest and most efficient players will be able to compete in the long term.

Traditional oil majors are also trying to adapt to accelerated investment in alternative energy projects, which could speed up the transition away from fossil

fuels. A ban on new permitting on federal land – though unlikely, would have a significant impact on production in key basins such as the Delaware Basin, the larger of the two major lobes of the Permian formation.

What's in the making

North America's total LNG export capacity is on track to more than double from 11.4 billion cubic feet per day (Bcf/d) last year to 24.4 Bcf/d in 2028.

Over the coming four years, analysts working for the Energy Information Administration (EIA) estimate LNG export capacity will grow by 0.8 Bcf/d in Mexico, 2.5 Bcf/d in Canada, and 9.7 Bcf/d in the United States from a total of ten new projects that are currently under construction in these three countries.

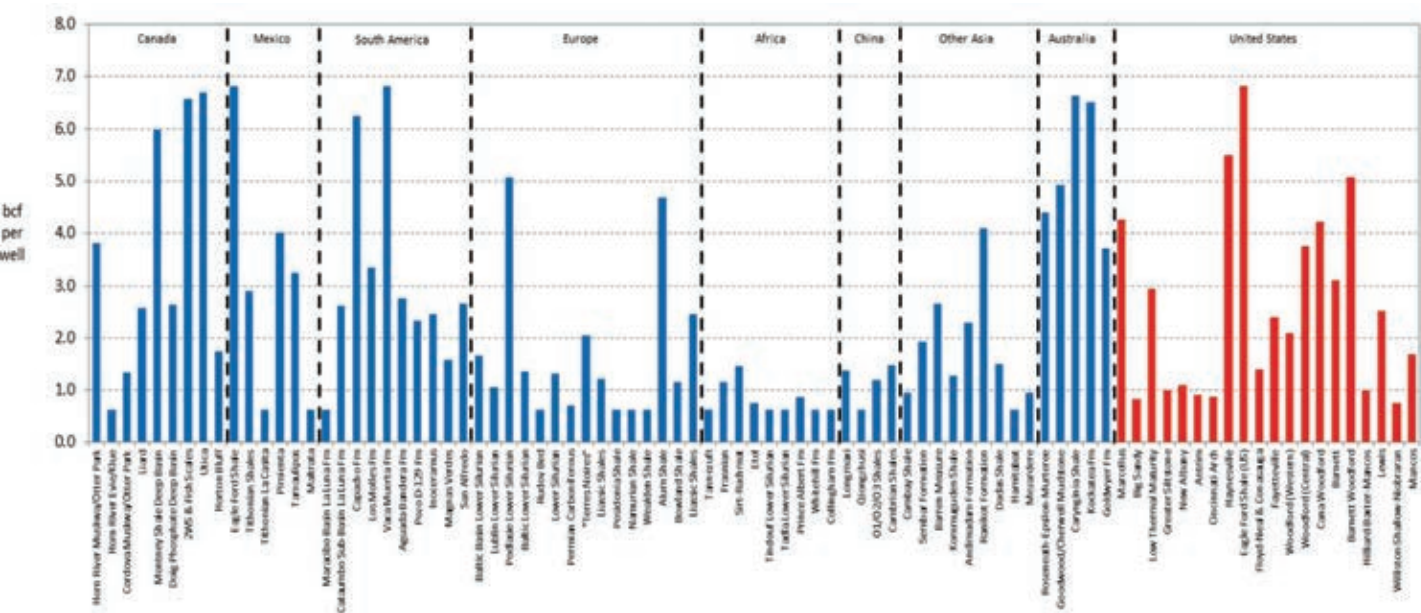
The five American projects that are currently under construction include Plaquemines (Phase I and Phase II),

Corpus Christi Stage III, Golden Pass, Rio Grande Phase I, and Port Arthur Phase I.

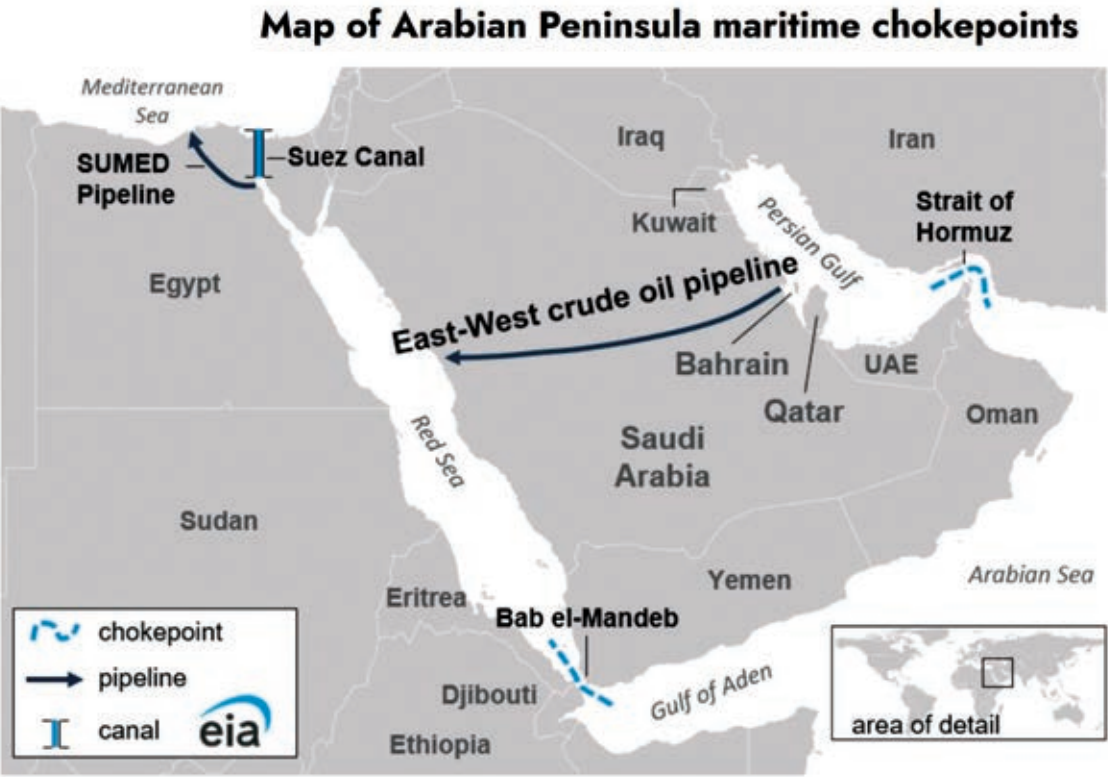
Developers expect to produce the first LNG from Plaquemines LNG and Corpus Christi LNG Stage III and ship first cargoes from these projects by the end of this year, or early 2025.

Further north in Canada, three projects with 2.5 Bcf/d capacity combined are in the making in British Columbia – all supplied with natural gas from Alberta, western Canada.

Developers of the massive, Shell and Petronas-led 1.8 Bcf/d LNG Canada project plan to export a first cargo from Train 1 in the summer 2025. Meanwhile, the 0.3 Bcf/d Woodfibre LNG terminal targets a 2027 start-up and the Cedar FLNG's 0.4 Bcf/d project is following suit swiftly, having reached a final investment decision (FID) in June 2024, with a view to start exports in 2028.



Drilling costs per well



Drop in JKM-TTF spreads for bal-winter JKM seems 'overdone'

LNG price spreads between the Japan Korea Market (JKM) and the Dutch Title Transfer Facility (TTF) for balance of winter 2024/25 contracts have fallen, but analysts reckon "this drop is overdone." Analysts expect the JKM-TTF spread will rise above US shipping differentials via the Panama Canal, opening the arbitrage for US spot cargoes to head to Asia.

Spreads narrowed to \$0.53 per million British thermal units (MMBtu) in recent days, down from around \$1.13/MMBtu in mid-September – with little fundamental change. Though freight rates have fallen, key US shipping differentials via the Panama Canal have delinked only by an average \$0.18/MMBtu month-on-month.

London-based consultancy Energy

Aspects hence upholds its bullish view on balance-of-winter outturn JKM prices, mainly due to their similar views on TTF winter 2024–25 prices amid rising geopolitical tensions in the Middle East and systematic buying at the TTF near-curve.

The likely end of Russian gas transits through Ukraine starting from January 2025 and Europe's increased gas demand in an average winter may lead to supply constraints in the EU, which in turn propel up fuel prices.

"Our base case outturn JKM price forecasts average \$14.55 per MMBtu, \$0.85 per MMBtu above the latest CME settlements," they explain.

LNG buyers worldwide have launched tenders for 22 cargoes so far this month, with eight of

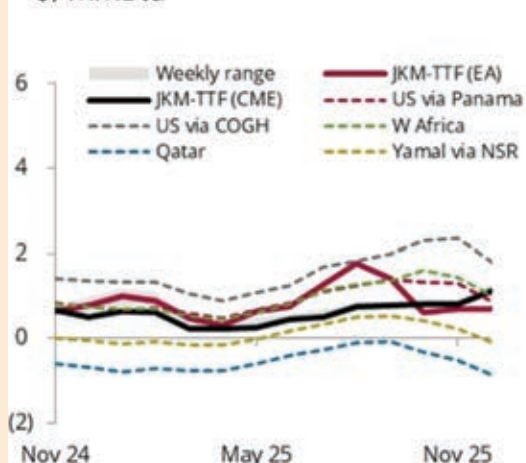
these confirmed, against 10 cargoes tendered and confirmed last October. Of the 80 cargoes tendered in September, 53 were confirmed and 40 were bought by Asian companies.

"Japan has bought three spot cargoes via tender issued month-to-date, with two December deliveries and one January delivery," analysts disclosed. LNG stocks held by major Japanese power utilities, a subset of aggregate LNG stocks, reached 2.02 million tons, up from a multi-month low of 1.63 million tons in mid-October.

At the same time, Indian buyers keep issuing tenders which analysts believe is "likely to stock up pre-emptively before power demand increases in late October due to Diwali." Indian LNG inventories are understood to be quite high currently.

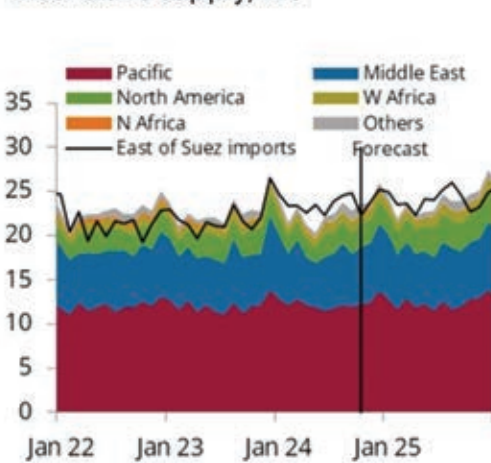
China's Sinopec, meanwhile, secured a December delivery via a tender, after about a year of not purchasing any cargoes that way. Chinese LNG stocks at ten selected LNG terminals have reached 1.93 million tons, up by 0.33 million tons year-on-year.

JKM-TTF spreads, LNG freight diffs, \$/MMBtu



Note: Freight diffs are the increases in freight costs to send cargoes to Northeast Asia instead of Europe.
Source: CME, Fearnleys, Argus Media Group,

Asia-Pacific imports vs assumed price-insensitive supply, Mt



Source: GTT, LSEG, Energy Aspects

LNG Journal Subscription Package

Your LNG Journal subscription includes broad coverage of LNG across the globe – from trade and shipments through to LNG prices, plus in-depth technical coverage. With over 20 years of LNG reporting experience, we remain the market leading source of information for decision makers in the LNG industry.

Subscription Contacts

For new subscriptions or general subscription queries please contact:

Stephan Venter
venter@lngjournal.com
 +44 207 017 3407

To renew an existing subscription or to upgrade your package, please contact:

Gabi Weck
gabi@lngjournal.com

Sign up now for an Online
 Subscription at only
 US\$1190; €920 or £830

Discount options are
 available for multi-users

Contact us for more
 information or to arrange
 a free trial

LNG Daily News

Delivered to your inbox and online



LNG Journal

The flagship LNG monthly



LNG Unlimited

Your fortnightly summary of LNG news



LNG Market Tracker

Weekly empirical insight into the LNG market



LNG North America

Bi-monthly report on LNG in the US, Canada



LNG Transition

In-depth look at LNG as a transition fuel



LNG Shipping News

Fortnightly coverage of LNG shipping



LNG China

Bi-monthly review of LNG in China



LNG Monthly Markets

Key developments in LNG markets



Gas to Power Journal

Peakload power and energy storage





Fast Solution for all your LNG Storage
& Transport needs.

Factory-built 1,200+ m³ LNG Tanks

**On-site or Factory-Built Storage Tanks, Intermodal ISO
Tank Trailers, Ship/Barge Cargo Tanks, Railroad Tank**

We can build your small-scale LNG terminal or peak-shaving plant

Call or e-mail us to find out how your
company can benefit from our comprehensive
natural gas products and services today.

www.CorbanEnergyGroup.com

CORBAN ENERGY
Your Solution

T. 201.509.8555 info@corbanenergy.com
418 Falmouth Avenue, Elmwood Park, NJ 07632



Storage



Tank-Containers,
Wagons, & more..

Plant within 18 months.

Y GROUP

sion for LNG



corbanenergygroup.com

Wood Park, NJ 07407, USA



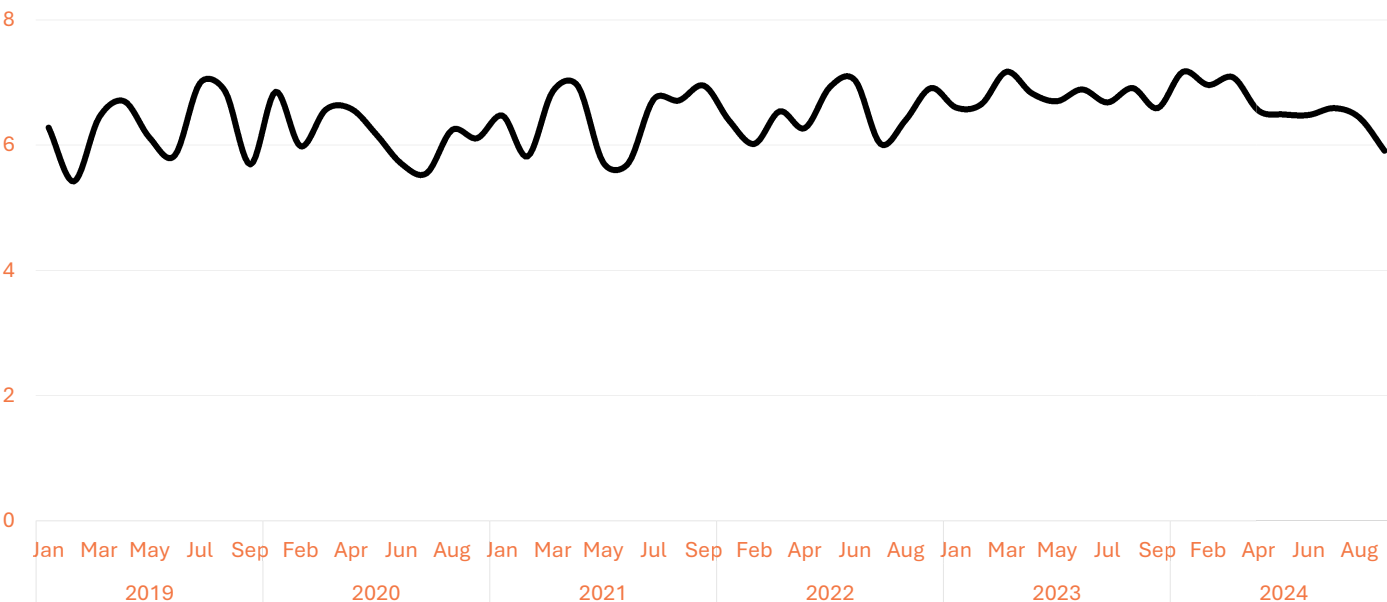
Global LNG: Navigating crosscurrents

Global LNG faces short-term demand weakness amid warm weather, while supply delays and geopolitical tensions cloud the longer-term horizon. Yet market fundamentals remain strong, writes our Markets Editor, Dr Alexander Wilk

The global LNG market is at a pivotal juncture, characterised by a complex interplay of supply delays, ongoing demand growth – particularly from Asia – and geopolitical tensions. As the industry grapples with these multifaceted challenges, stakeholders are reassessing strategies to navigate a landscape marked by potential volatility and transformative shifts.

The immediate impact of these complex forces is particularly evident in the LNG freight market, with freight rates plummeting to multi-year lows and approaching operational cost thresholds. S&P Global reported towards the end of October that the decline was due to an oversupply of vessels, weak cargo demand pushed by unseasonably high temperatures, and elevated gas storage levels in key markets such as Europe. A lack of arbitrage opportunities further diminished incentives for traders to transport LNG over long distances. Market participants anticipate that these weak conditions may persist into 2025, marking a departure from typical seasonal patterns. The lack of a foreseeable recovery to previous peak levels within the year underscores the broader challenges facing the LNG market.

Australian LNG Exports (MMt)



Source: LNG Journal

Delays and disruptions

These immediate market pressures coincide with broader structural challenges in supply development. Industry forecasts of an imminent surge in LNG supply have been recalibrated due to widespread project delays. TotalEnergies' Senior Vice President for

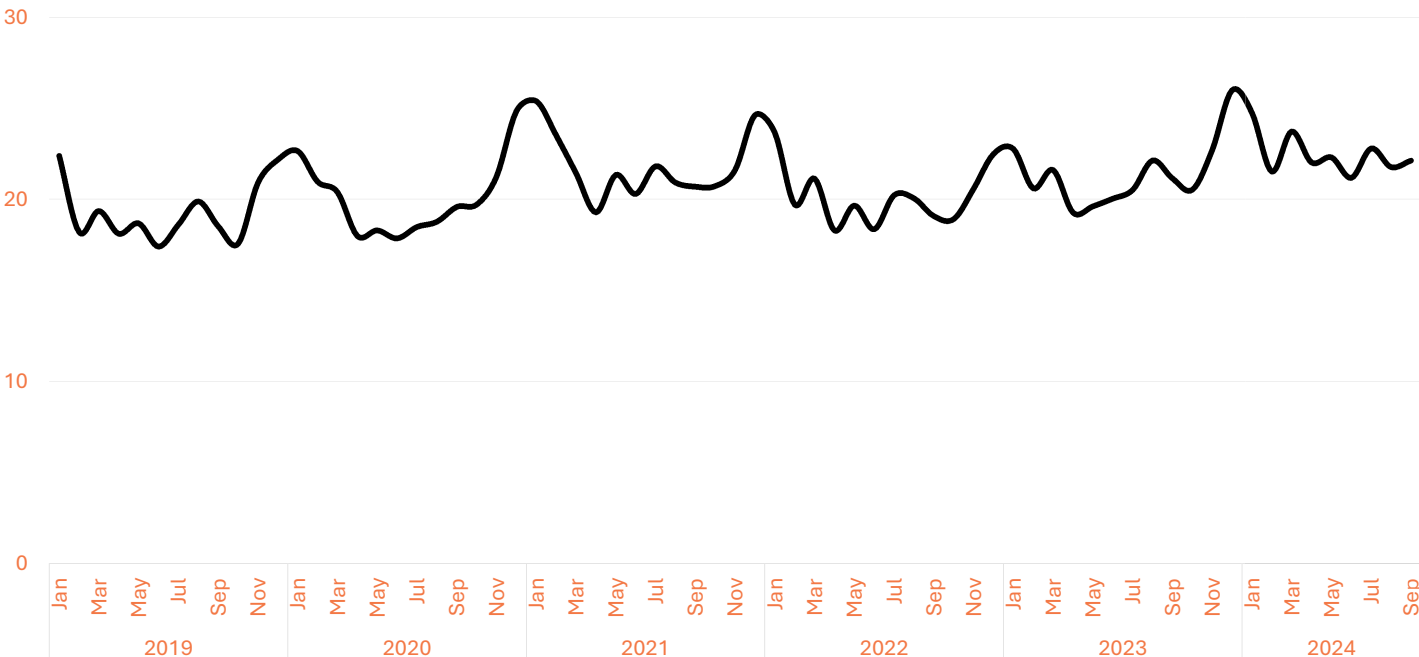
LNG, Gregory Joffroy, recently announced that the anticipated significant increase in LNG supply has been postponed from 2025 to 2027. This delay stems from operational challenges such as skilled labour shortages, wage inflation, and equipment constraints, particularly in the United States. As we have reported

previously, policy uncertainties have further compounded the situation, with President Joe Biden's moratorium on new LNG export approvals introducing ambiguity that affects investor confidence and project planning. These delays are not confined to the United States; several imminent LNG projects worldwide have experienced setbacks, impacting near-term gas balances. These span Novatek's sanctions-hit (and now suspended) Arctic LNG 2 in Russia to Woodfibre LNG in Canada and long-delayed Tanzanian and Mozambican onshore LNG developments.

Accordingly, Wood Mackenzie, a global energy consultancy, has highlighted that legal challenges in the United States and sanctions on Russia could significantly reduce the expected supply wave. US-based risk factors alone might delay up to 60mmt of planned capacity, reshaping previous supply outlooks.

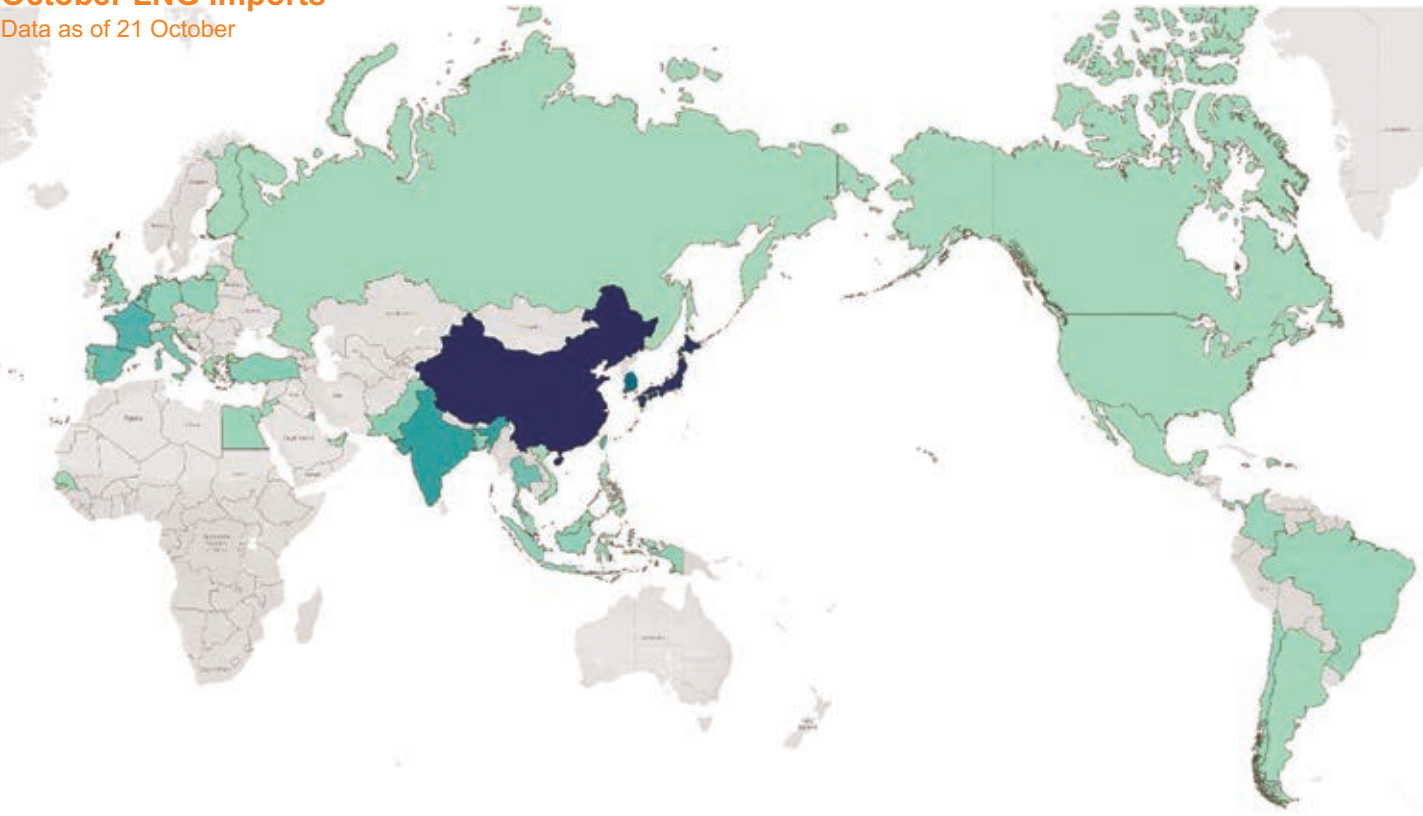
The supply landscape's complexity is further illustrated by developments in Australia, a key global LNG supplier. In a June 2023 paper, the Oxford Institute for Energy Studies' Graeme Bethune highlighted significant risk of a decline in Australian LNG exports, the spectre of which was first raised by INPEX's accusation that year of Australia 'quietly quitting' the LNG market. At the time,

Pacific LNG Demand (MMt)



Source: LNG Journal

October LNG Imports
Data as of 21 October



Bethune argued although the country possesses ample gas resources, a confluence of factors, including government policies, activist opposition, and market uncertainty on the back of a restrictive government gas pricing regime, was hindering new Australian gas developments. This situation would likely result in a gradual decline in LNG exports, he argued, with the country's record LNG exports in 2022 likely representing a peak.

Although the exact timeline is not borne out by our data – Australia saw modest export growth of 1.70mmt (2 percent) year-on-year to 81.78mmt in 2023 – growth has remained elusive in the first nine months of 2024. Indeed, the period marks the first instance of net decline since the COVID pandemic in 2020. Even as our data points towards month-on-month growth in October, Australia's monthly LNG flow is still likely to trail its 2023 equivalent.

Evolving demand patterns

Meanwhile, demand patterns continue to evolve, particularly in Asia where consumption growth remains robust despite market uncertainties.

China's natural gas consumption is projected to soar by over 50 percent by 2040, increasing from 400bcm to more than 600 bcm, according to Cheniere Energy, a leading US LNG capacity developer. This surge is fuelled by energy demand growth, coal-to-gas switching policies, and infrastructure development. China's expanding economy continues to drive energy consumption across various

sectors, and environmental initiatives are prompting a shift from coal to cleaner natural gas, reducing emissions and improving air quality. Ongoing investments in LNG import terminals and gas pipelines are enhancing China's capacity to utilise natural gas effectively. China may thus become the first market to reach 100mtpa of LNG demand, with LNG accounting for 25-30 percent of its total gas consumption.

In line with Cheniere's outlook, Shell, a global LNG leader, forecasts a 50 percent rise in worldwide LNG demand by 2040, inter alia driven by Asian economies like India and South Korea. Moreover, the proliferation of artificial intelligence as a mainstream technology and data centres are expected to further boost LNG demand for power generation in Asia. In our view, the technology sector's expansion in developed Asian economies will increase reliance on gas-fired power, preferred over coal for its lower emissions and suitability for supporting intermittent renewable energy sources.

Geopolitical influences

Our trade data for the year-to-date highlights China's dominance of the global LNG demand landscape, only surpassed by combined European demand, followed by a sizable distance by Japan, South Korea and emerging markets in India and Thailand.

With the roster expansion of both LNG suppliers and buyers, apart from energy policy, global LNG market's dynamics are increasingly influenced by geopolitical events such as the Russia-Ukraine

conflict and tensions in the Middle East. Russia's invasion of Ukraine has compelled Europe to pivot away from Russian pipeline gas, significantly increasing LNG imports and forming a European demand vortex. This shift has helped to double global LNG trade since 2014, reaching 421.71mmt in 2023, according to our data.

Looking ahead, the possibility that Russia may cease gas

Concurrently, European nations are contemplating stricter tracking and potential restrictions on Russian LNG imports as part of expanded sanctions against Moscow. TotalEnergies has cautioned that such measures would lead to increased energy costs for Europe, which still relies on Russian gas for approximately 15 percent of its imports. The Oxford Institute for Energy Studies notes that Europe has forfeited the volume flexibility previously offered by Russian pipeline supply, now paying a premium for LNG flexibility. This loss of flexibility underscores the broader implications of geopolitical tensions on energy markets and cost structures.

Diverging views

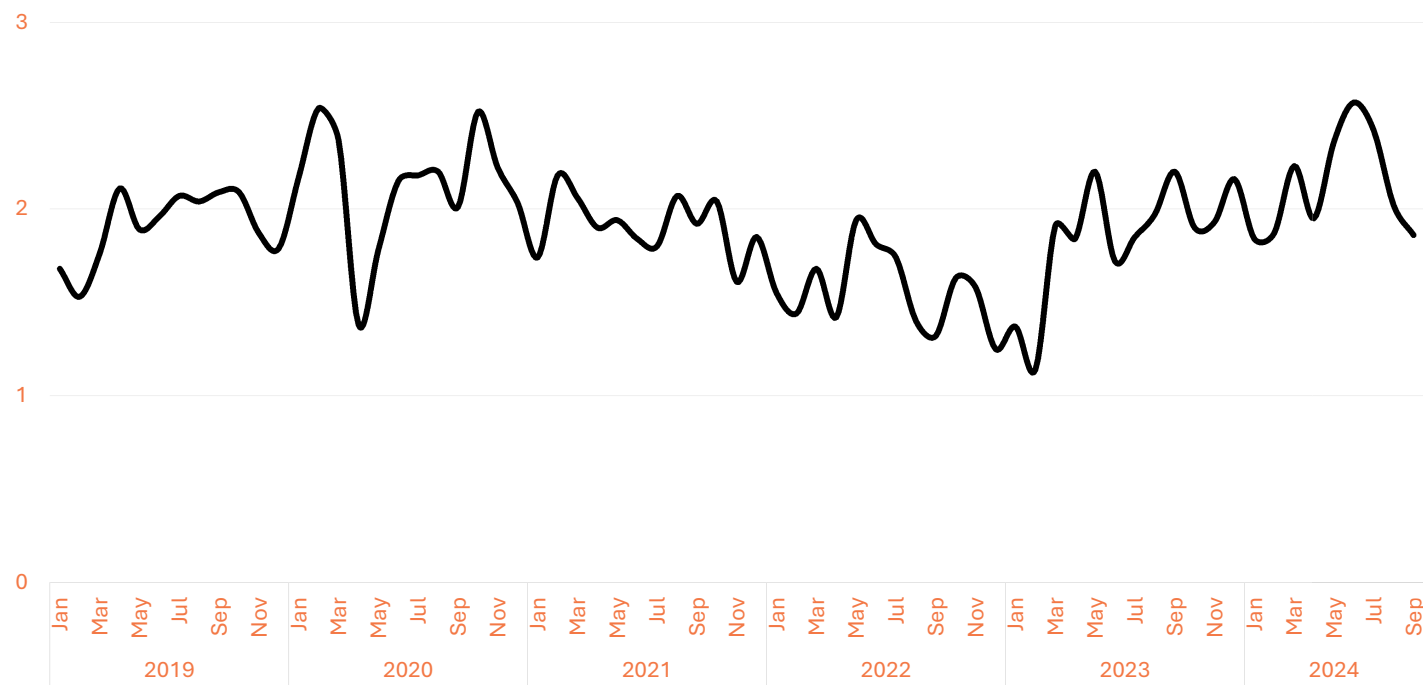
These operational challenges directly influence market participants' divergent views on future supply adequacy. Some analysts forecast an extended period of oversupply in the LNG market from late 2026 through 2030, potentially pushing prices below double digits. RBC Capital Markets suggests that this supply expansion will fundamentally reshape trading patterns, with broader implications than previous growth cycles. Global liquefaction capacity is expected to increase by 50 percent by the end of the decade, with the United States and Qatar set to

Some analysts are forecasting an extended period of oversupply in the LNG market from late 2026 through 2030, potentially pushing prices below double digits

deliveries to Europe through Ukraine after existing contracts expire in late 2024 poses a substantial risk. The International Energy Agency (IEA) warns that this could necessitate increased European LNG imports in the future, tightening global supply balances.

maintain dominance, controlling nearly half of the market share. Suppliers are prioritising shipping utilisation over arbitrage opportunities, reflecting concerns about growing oversupply and its impact on prices. However, others are sceptical

Indian LNG Demand (MMt)



Source: LNG Journal

about these oversupply forecasts. Executives from Woodside Energy and MidOcean Energy have challenged oversupply warnings citing previous unrealized predictions of supply gluts and current project development challenges that would prevent an oversupply scenario. MidOcean Energy's chief executive has dismissed concerns over stranded assets due to oversupply as unfounded, calling them "the biggest red herring."

Market volatility

The argument over an impending supply overhang to one side, there nonetheless remains the fundamental risk of price volatility borne out of a sudden supply and demand imbalance. Shipping bottlenecks in critical maritime passages such as the Panama Canal and Red Sea have not yet materially impacted the supply-demand balance but underscore vulnerabilities in LNG trade that could become problematic if the market were to suddenly tighten.

The IEA's recent Global Gas Security Review underscores the delicate equilibrium between supply and demand in the global gas market. While demand is anticipated to increase by over 2.5 percent in 2024 and maintain similar growth in 2025 — driven by Asian markets and recovering European industrial demand — LNG production growth remains constrained. Keisuke Sadamori, the IEA's Director of Energy Markets and Security, emphasizes the "clear risks of future volatility" and the need for enhanced collaboration between

producers and consumers during the energy transition. The global push towards decarbonisation has accelerated the shift from coal to natural gas, especially in power generation. In turn, it will require increasing sophistication in managing volatility. Utilities worldwide are transitioning to gas-fired power plants to reduce carbon emissions, given natural gas's lower environmental impact compared to coal. Natural gas is increasingly recognised as a reliable tandem solution for renewable energy sources, providing necessary backup during periods of intermittency. TotalEnergies' Gregory Joffroy describes natural gas as "a perfect solution" for power stability. The expansion of energy-intensive industries like AI and data centres in Asia is expected to drive additional demand for natural gas, as these sectors seek stable and cleaner energy sources.

Some market analysts such as the Institute for Energy Economics and Financial Analysis have taken LNG market volatility in the wake of Russia's Ukraine invasion as a sign of LNG as an unsuitable transition fuel for price sensitive demand centres such as India, highlighting derivative risks to energy security, affordability and of stranded assets. Indeed, India's LNG imports slumped in 2022-23 due to high prices but have since rebounded from 16.2mmt in January-September 2023 to 19.12mmt for the same period this year.

It should be noted that relatively little

of India's LNG requirements were hedged through longer-term contracts at the time due to a protracted preceding period of low prices. Indian importers have since moved to increase the share of longer-term supply deals within their LNG portfolios and ventured into building a dedicated fleet of LNG carriers such as the GAIL Urja. At the end of October, India's leading LNG aggregator and gas pipeline utility, GAIL, announced it would be seeking long-term LNG import agreements totalling 5.5mtpa, which would boost its capacity to 21mtpa by 2030, according to finance director Rakesh Kumar Jain.

The state-owned enterprise currently maintains supply agreements for almost 16mtpa, having recently finalised 10-year supply arrangements with trading firm Vitol and the UAE's ADNOC, the operator of the Das Island LNG plant. To fund its pipeline network expansion and enhance its petrochemicals capacity, GAIL intends to secure loans worth 40 billion rupees (US\$618mln) in the current financial year, Jain noted.

To mitigate potential volatility, the IEA has advocated for the enhancement of market flexibility mechanisms. Improving global LNG market liquidity is crucial for encouraging more active trading and diversification of market participants to reduce price volatility. Integrating Ukrainian gas storage into global markets can leverage the country's substantial capacity to enhance supply security and market stability. Developing voluntary gas reserve frameworks would establish

strategic reserves to buffer against supply disruptions and demand spikes.

Concluding thoughts

The global LNG market finds itself at a critical juncture, characterised by relative current market weakness and robust long-term fundamentals. Whilst present conditions show depressed freight rates and subdued trade volumes, structural demand growth — particularly from Asia — paints a compelling picture of future market strength. The delay of anticipated supply growth from 2025 to 2027, driven by a combination of labour shortages, equipment constraints and policy uncertainties, could create significant market tightness if demand remains on a growth trajectory. This timing becomes particularly crucial given China's projected 50 per cent consumption increase by 2040 and the emergence of new demand drivers such as AI data centres.

The market's evolving dynamics are further complicated by geopolitical forces reshaping traditional trade flows. Although current Middle East tensions have had surprisingly little impact on prices, the vexing question on how to align the persistent need for Russian gas with sanctions policies looms large over European energy security. Meanwhile, the contrasting views between analysts forecasting oversupply and industry executives remaining sceptical of such predictions underscore the market's inherent uncertainty.

The industry's maturation is evident in how market participants are adapting to these challenges. India's strategic pivot towards long-term contracts following its experience with price volatility exemplifies how importing nations are developing more sophisticated procurement strategies. However, questions persist about natural gas's role as a transition fuel, particularly for price-sensitive emerging markets, highlighting the delicate balance between energy security, affordability and environmental considerations.

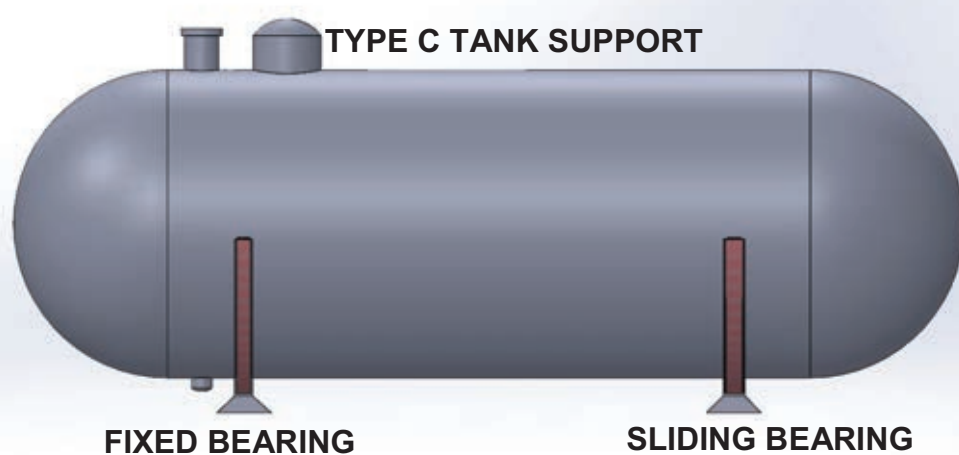
As the sector navigates these complexities, success will likely depend on stakeholders' ability to maintain operational flexibility whilst building resilient supply chains and fostering transparent market mechanisms. The interaction between these various elements suggests that despite current headwinds, the LNG industry's long-term trajectory remains fundamentally sound, though perhaps more nuanced than previously anticipated.

QUALITY & RELIABILITY
MADE IN GERMANY



Fixed bearing

Sliding bearing



DEHONIT® / PERMALI TANK SUPPORTS

- ◆ FOR IMO A, B, C, BILOBE AND TRILOBE TANKS
- ◆ FOR MEMBRANE TANKS
- ◆ FOR VERTICAL IMO TYPE C TANKS

WITH CARGO/ FUEL TYPE

- ◆ LNG, LPG, LH₂, LEG, LCO₂, LNH₃

DEHONIT® / PERMALI MATERIAL IS APPROVED BY

- ◆ DNV (DET NORSKE VERITAS)
- ◆ BV (BUREAU VERITAS)
- ◆ ABS (AMERICAN B. OF SHIPPING)
- ◆ LR (LLOYD'S REGISTER)
- ◆ CLASS NK
- ◆ CCS (CHINA CLASS. SOCIETY)
- ◆ KR (KOREAN REGISTER)
- ◆ GTT
- ◆ DIN ISO 9001:2015

FEATURES OF DEHONIT® / PERMALI

- ◆ MORE THAN 70 YEARS IN SERVICE
- ◆ LOW SPECIFIC WEIGHT
- ◆ HIGH COMPRESSIVE STRENGTH
- ◆ WATER RESISTANT
- ◆ LOW THERMAL CONDUCTIVITY
- ◆ LOW COEFFICIENT OF FRICTION
- ◆ TEMPERATURE STABILITY
- ◆ LOW COEFFICIENT OF LINEAR EXPANSION

Global LNG supply growth, but demand in seasonal transition

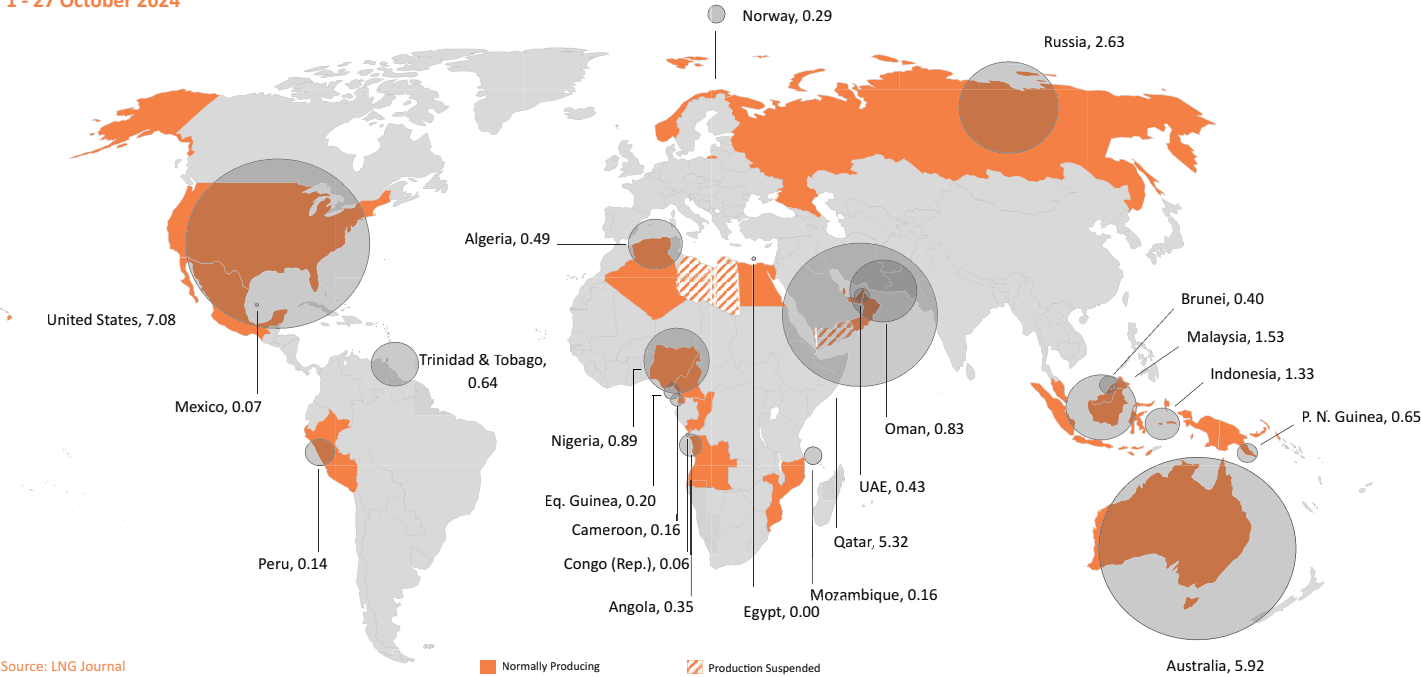
Our October data for the month-to-date showed a small LNG trade increase globally. Meanwhile, demand was weighed down by decreases in the Middle East, Asia and South America, our Market Editor Dr Alexander Wilk reports.

According to our data on 27 October, global LNG exports for the month-to-date amounted to 29.57mmt and were thus up by 0.81mmt (3 percent) from the 28.76mmt we recorded for the month to 27 September.

The higher month-to-date trade outcome was driven by Australia, Russia and Oman, which together increased output by 1.26mmt. However, this was tempered by significant reductions elsewhere. Qatar cut exports by 0.18mmt (-3 percent) to 5.32mmt from 5.50mmt this time in September. Concurrently, Algeria's facilities reduced shipments more drastically by 0.37mmt (-43 percent) to 0.49mmt from 0.86mmt in September. Malaysia had also seen an exports gap to September by 0.22mmt (-13 percent) to 1.53mmt from 1.75mmt at the time of writing. Another notable trade reduction stemmed from Nigeria, which had cut shipments by 0.22mmt (-20 percent) to a total of 0.89mmt in the month-to-date.

Global LNG Exports (MMt)

1 - 27 October 2024



Source: LNG Journal

Global LNG demand, meanwhile, had decreased by 1.02mmt (-3 percent) month-on-month as of 27 October.

Offtakes were still led by China with imports of 5.55mmt even as they were down by 0.62mmt. Alongside China's strong decrease, Japan had slashed offtakes by 1.31mmt (-25 percent) to 4.00mmt at the time of writing. Other notable demand cuts took place in the Middle East and the Americas.

In contrast, European demand showed strong period-on-period growth with imports amounting to 6.52mmt, led by France, Belgium and the Netherlands.

Export - Pacific Basin

For the month-to-date, Pacific exports had accrued to 10.85mmt and had thus increased by 0.77mmt (8 percent) compared to September's equivalent total of 10.08mmt. Consequently, annualised capacity utilisation stood at 82 percent. Exports were nevertheless down by 0.96mmt (-8 percent) year-on-year.

Australia: The Pacific Basin's most significant exporter by installed capacity – Australia – saw exports during the report period increase by 0.74mmt (14 percent), totalling 5.92mmt compared to 5.18mmt during the equivalent period last month.

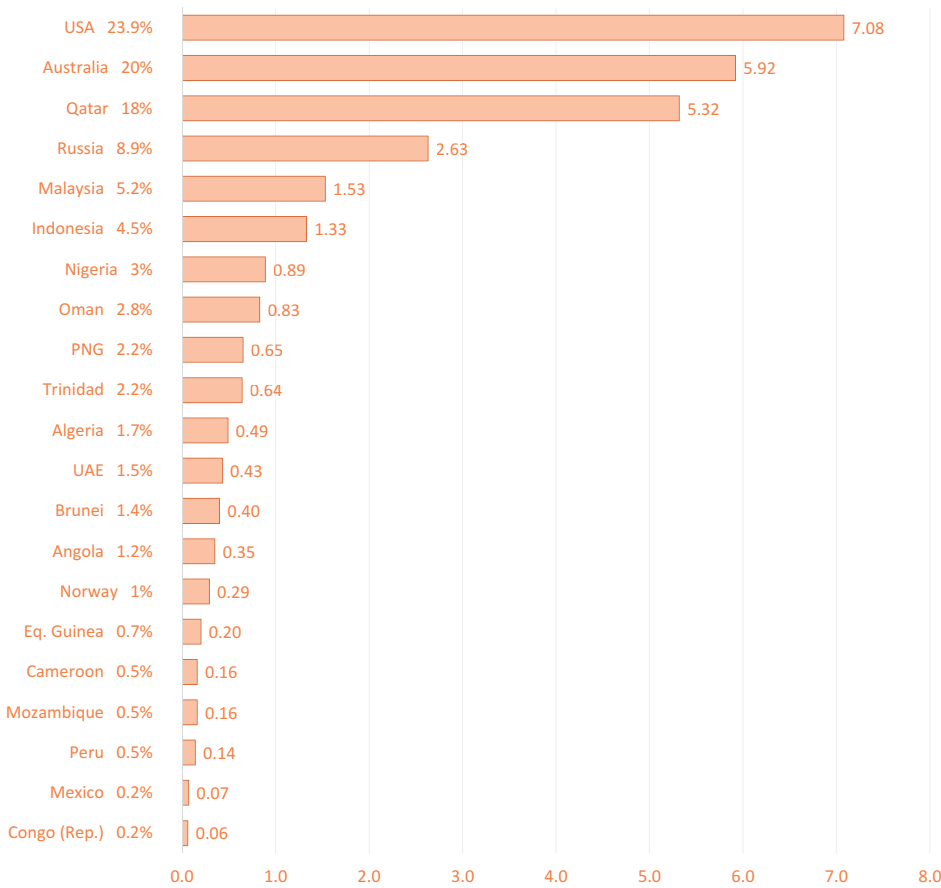
Our data showed most Australian LNG facilities saw notable output growth during the report period. Prelude FLNG

achieved the most substantial growth with shipments climbing by 61 percent to 0.29mmt, whilst Gladstone LNG followed with a significant increase of 41 percent to reach 0.55mmt. Ichthys LNG showed impressive gains as well, with volumes expanding by 33 percent to 0.32mmt. Meanwhile, both Wheatstone LNG and Queensland Curtis LNG maintained steady progress, each producing a 12 percent increase to reach 0.75mmt and 0.67mmt, respectively. Moreover, NWS LNG volumes grew by 21 percent to 0.97mmt, whilst Gorgon LNG shipped 1.37mmt, indicating a 7 percent improvement. Australia Pacific LNG maintained broadly stable operations with a modest 1 percent increase to 0.70mmt. As such, Pluto LNG was the sole plant to experience lower volumes during the report period, with shipments decreasing by 9 percent to 0.30mmt compared to the previous month's figure of 0.33mmt.

Australian exports were predominantly directed to China, which remained the largest importer at 1.91mmt despite a slight decrease of 0.02mmt (-1 percent) month-on-month. Japan maintained its position as the second-largest destination with imports of 1.41mmt, though volumes had

Market Share & LNG Exports by Country (MMt)

1 - 27 October 2024



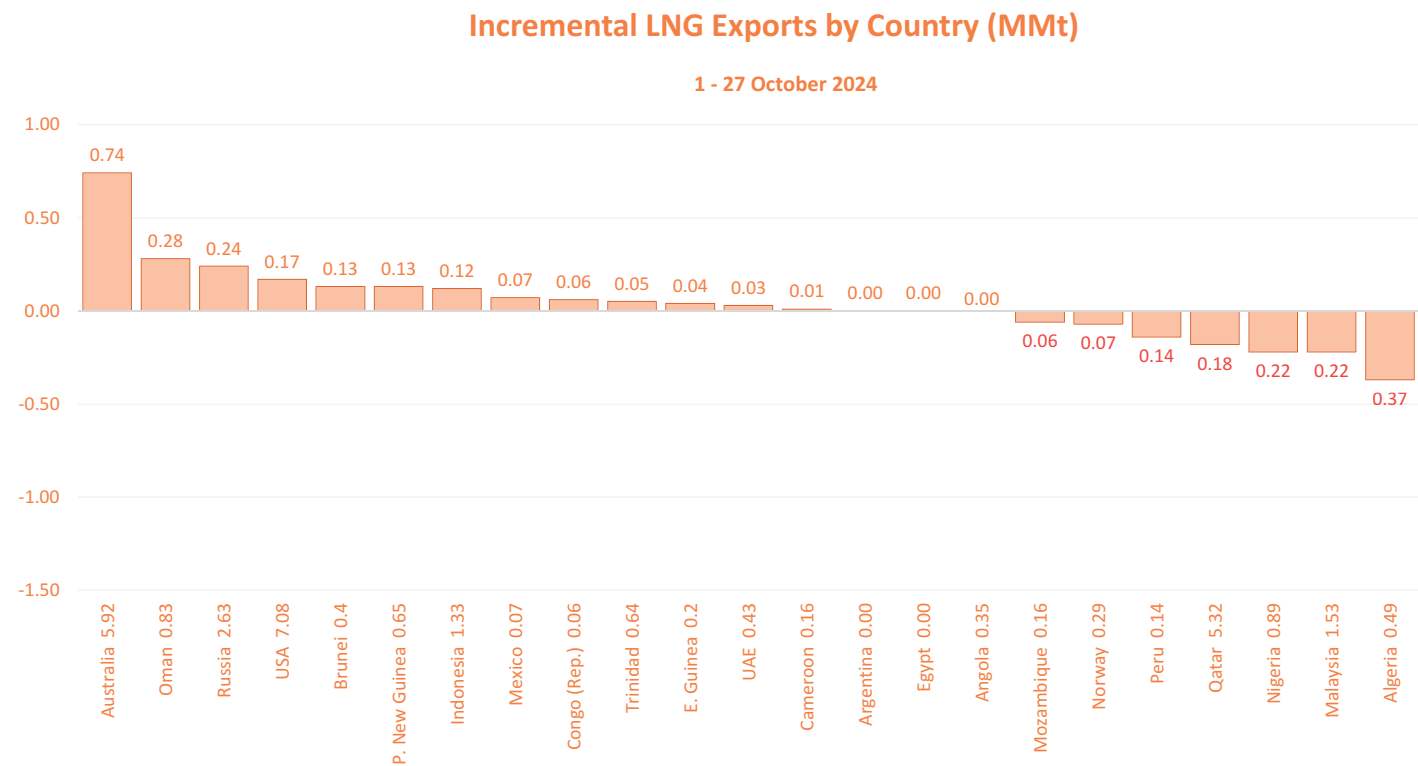
Source: LNG Journal

decreased by 0.29mmt (-17 percent). In contrast, South Korea, the third-largest importer, significantly boosted its intake with an increase of 0.47mmt (81 percent) to 1.05mmt.

Taiwan followed as the fifth-largest importer, though volumes decreased by 0.21mmt (-32 percent) to 0.45mmt. Malaysia and Singapore both showed robust growth, with Malaysia increasing imports by 0.11mmt (110 percent) to 0.21mmt and Singapore's volumes growing by 0.08mmt (114 percent) to 0.15mmt. The Philippines grew Australian offtakes by 0.05mmt (167 percent) to 0.08mmt, whilst Thailand registered the same import volume but marking a 0.03mmt (60 percent) increase. Notably, Indonesia had not yet been seen in the market for Australian LNG at the time of writing, down from a 0.06mmt import this time in September. However, we were still tracking 0.50mmt of cargoes with undeclared destinations in the Pacific Basin at the time of writing.

Southeast Asia: North of Australia, PNG LNG also showed higher output during the report period. The facility's production increased by 0.13mmt (25 percent) to 0.65mmt, up from 0.52mmt in September. This substantial improvement brought the plant's annualised capacity utilisation rate to 110 percent.

During the report period, our data showed PNG exports were primarily directed to Japan at 0.27mmt, though volumes decreased by 0.02mmt (-7 percent). South Korea emerged in the market with imports of 0.22mmt, whilst China showed a modest increase of



Source: LNG Journal

0.01mmt (7 percent) to 0.16mmt. Taiwan was not seen in the market with offtakes from PNG LNG, down from 0.08mmt during the previous period.

Meanwhile, Indonesian exports showed a significant increase of 0.04mmt (10 percent) to 1.33mmt from 1.21mmt in September as the Bontang plant boosted exports by 0.10mmt (59 pct) to 0.27mmt and Tangguh LNG increased shipments by 0.08mmt (9 percent) to 1.01mmt. However, Donggi-Senoro LNG saw lower as its shipments fell by 0.06mmt (-55 percent) to 0.05mmt. Accordingly, Tangguh LNG operated at 124 percent of annualised capacity utilisation, whilst

Bontang and Donggi-Senoro LNG produced at 32 percent and 35 percent, respectively.

In neighbouring Malaysia, exports were down by 0.22mmt (-13 percent) to 1.53mmt from 1.75mmt by 27 September. Malaysia LNG drove this downward movement, with exports decreasing by 0.23mmt (-14 percent) to 1.46mmt. PFLNG 2 only showed modest growth in volume terms with 0.07mmt in exports, up by 0.01mmt (17 percent) from 0.06mmt in September whilst our data showed no shipments from PFLNG 1 during the report period. Malaysia LNG thus operated at 67 percent of its

annualised capacity, whilst PFLNG 2 achieved 79 percent utilisation.

Brunei LNG's exports increased by 0.13mmt (48 percent) to 0.40mmt, up from 0.27mmt in September. This improved performance brought the plant's annualised capacity utilisation rate to 78 percent. Brunei's exports were primarily directed towards Japan at 0.14mmt, showing a decrease of 0.06mmt (-30 percent). Offtakes to the Pacific Basin amounted to 0.12mmt, whilst China and Taiwan each received 0.07mmt.

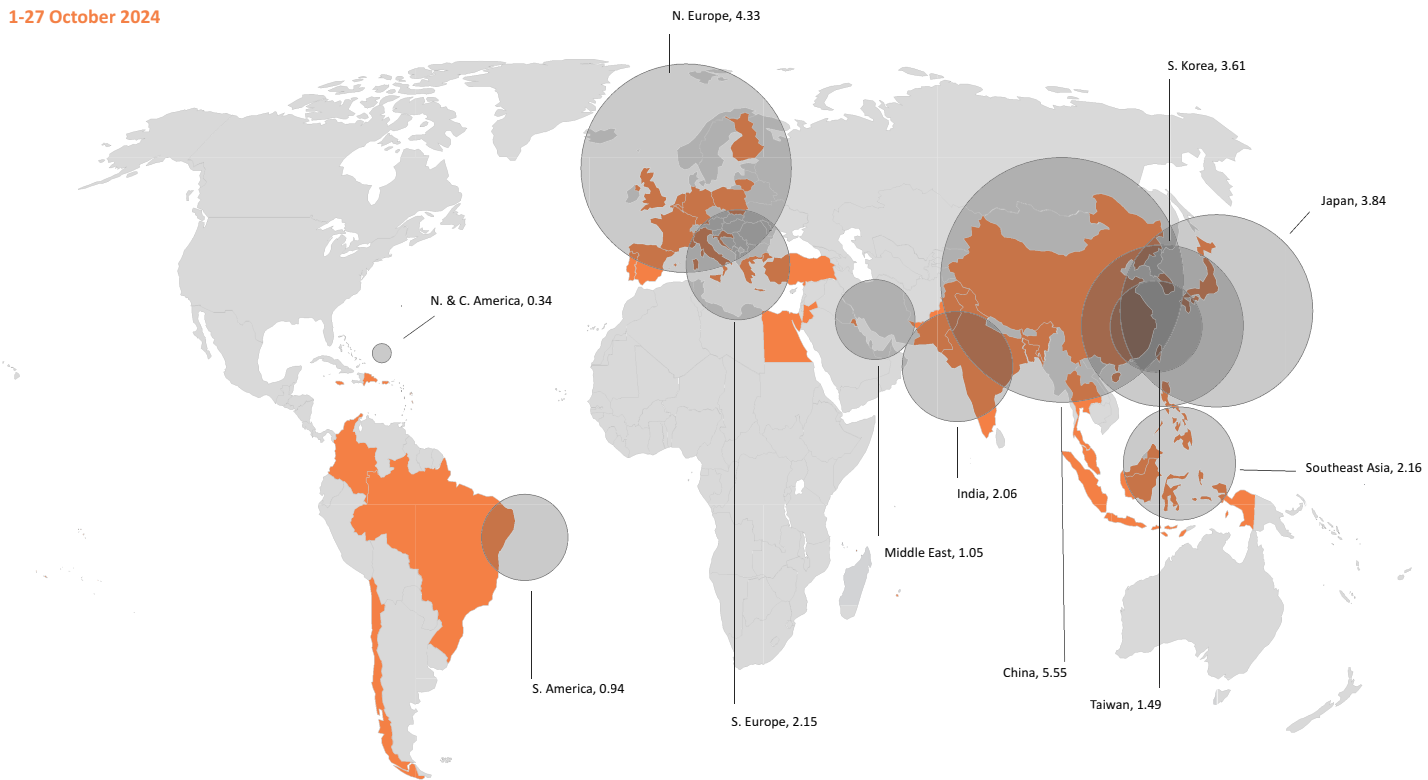
Russia, Peru & Mozambique: Sakhalin-2 LNG's exports increased by 0.07mmt (11 percent) to 0.72mmt from 0.65mmt in September. The plant operated at 105 percent of its annualised capacity utilisation. Japan remained the primary destination with 0.48mmt, up by 0.07mmt (17 percent), whilst China and South Korea each received 0.12mmt.

Concurrently, Pampa Melchorita LNG's exports decreased by 0.14mmt (-50 percent) to 0.14mmt from 0.28mmt in September, operating at 44 percent of its annualised capacity utilisation. Although France and the Netherlands received 0.08mmt and 0.06mmt, respectively, Japan, South Korea, and Taiwan were not seen in the market with offtakes from Peru during the report period, down by a combined 0.28mmt period-on-period.

Finally, Mozambique's Coral Sul FLNG decreased exports by 0.06mmt (-27 percent) to 0.16mmt from 0.22mmt in September, operating at 66 percent of its annualised capacity utilisation. Singapore received the full volume of

Global LNG Imports (MMt)

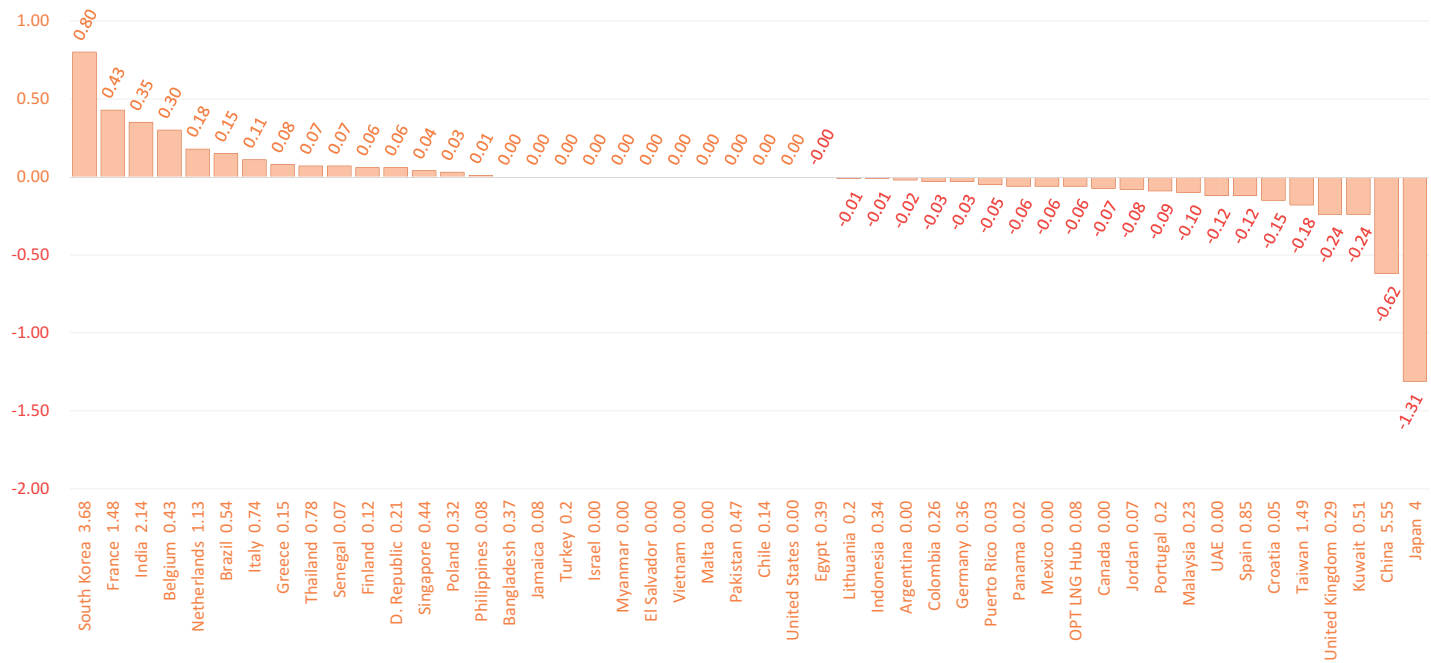
1-27 October 2024



Source: LNG Journal

Incremental LNG Imports by Country (MMt)

1 - 27 October 2024



Source: LNG Journal

0.16mmt, whilst China and Malaysia were not seen in the market, down from 0.06mmt and 0.08mmt, respectively.

Atlantic Basin

In contrast to net growth in the Pacific, the Atlantic Basin’s overall shipped LNG had decreased slightly by 0.19mmt (-2 percent) to 11.98mmt at the time of writing from 12.17mmt this time in September. This translated into annualised export capacity utilisation of 76 percent for the Basin. Accordingly, exports were down slightly by 0.25mmt (-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 2.69mmt for the month-to-date and thus saw a decrease of 0.21mmt (-7 percent) from 2.90mmt this time in September.

The regional increase was mainly due to an Algerian export decrease of 0.37mmt (-43 percent) to 0.49mmt from 0.86mmt in September. Arzew drove this downward movement with exports decreasing by 0.37mmt (-54 percent) to 0.31mmt, whilst Skikda merely maintained stable exports at 0.18mmt. The plants thus operated at 21 and 32 percent of their annualised capacity utilisation, respectively.

According to our data, Norway’s Snohvit LNG also saw a decrease in exports of 0.07mmt (-19 percent) to 0.29mmt during the report period, down from 0.36mmt this time in September. The plant’s annualised capacity

utilisation rate stood at 97 percent.

Norway’s LNG exports were led by shipments to Lithuania, which amounted to 0.12mmt, whilst France, Germany and Puerto Rico each received 0.06mmt. However, Finland, Greece, the Netherlands, Poland and the United Kingdom were not seen in the market with LNG offtakes from Norway.

Russia’s Atlantic Basin capacity, meanwhile, saw exports increase by 0.23mmt (14 percent) to 1.91mmt from 1.68mmt in the September period. Yamal LNG carried this upward trend with exports rising by 0.29mmt (19 percent) to 1.78mmt, whilst Arctic LNG 2 only maintained stable exports at 0.06mmt. Portovaya LNG even saw a decrease of 0.06mmt (-46 percent) to 0.07mmt. Yamal LNG thus operated at 144 percent of its annualised capacity, whilst Arctic LNG 2 and Portovaya LNG achieved 9 and 49 percent, respectively.

Russian Atlantic exports were primarily directed towards China at 0.39mmt, which nonetheless constituted a decrease of 0.14mmt (-26 percent). France, meanwhile, received 0.36mmt, down by 0.13mmt (-27 percent), whilst Belgium and Spain each received 0.24mmt. Moreover, the Netherlands imported 0.08mmt, showing a decrease of 0.16mmt (-67 percent) whilst Portugal, Russia and South Korea were not seen in the market with offtakes during this period. However, we were still tracking 0.42mmt of Russian cargoes en route to the Pacific and 0.18mmt to Europe at the time of writing.

West Africa: Concurrently, West

African LNG flows were down by 0.11mmt (-6 percent) to 1.66mmt from 1.77mmt in for the month-to-date on 27 October.

Notably, Congo FLNG re-entered the market with an export of 0.06mmt, whilst EG LNG increased shipments by 0.04mmt (25 percent) to 0.20mmt. Exports from Cameroon FLNG edged up by 0.01mmt (7 percent) to 0.16mmt whilst Angola LNG’s shipments held steady at 0.35mmt. However, these increases were overshadowed by Bonny Island, which saw a significant decrease of 0.22mmt (-20 percent) to 0.81mmt. The plants operated at 140 percent, 76 percent, 94 percent, 94 percent and 76 percent of their annualised capacity utilisation, respectively.

At the time of writing, Spain emerged as the primary destination for West African exports, importing 0.25mmt—which represents a substantial increase of 0.19mmt (317 percent)—and we are also tracking 0.34mmt still en route to undisclosed destinations in the Pacific. While India’s imports had decreased significantly by 0.52mmt (-73 percent) to 0.19mmt, Thailand and Portugal showed growth by importing 0.14mmt and 0.13mmt, respectively. Moreover, France and South Korea each received 0.13mmt, and Kuwait imported 0.08mmt, whereas Bangladesh and Pakistan each received 0.07mmt. China showed only modest demand for West African LNG with imports of 0.05mmt; however, during this period, Egypt, Japan, the OPT LNG Hub, and Taiwan did not receive any deliveries from the region.

Americas: Our US LNG export data for the report period showed shipments rose slightly by 0.17mmt (2 percent) to 7.08mmt. Elba Island LNG showed the strongest growth rate with exports up by 0.09mmt (129 percent) to 0.16mmt, whilst Calcasieu Pass LNG increased shipments by 0.08mmt to 0.71mmt. Sabine Pass LNG and Freeport LNG added 0.13mmt and 0.04mmt to reach 2.46mmt and 1.24mmt, respectively. Moreover, Corpus Christi LNG contributed to the overall increase with exports up by 0.09mmt (8 percent) to 1.26mmt. In contrast, Cameron LNG exports decreased by 0.07mmt (-6 percent) to 1.04mmt, whilst Cove Point LNG saw a reduction of 0.19mmt (-48 percent) to 0.21mmt.

Capacity utilisation remained strong at several facilities, with Corpus Christi LNG operating at 118 percent, Freeport LNG at 113 percent and Sabine Pass LNG at 111 percent of annualised capacity. Elba Island LNG and Calcasieu Pass LNG operated at 90 percent and 88 percent respectively, whilst Cameron LNG utilisation stood at 98 percent. Cove Point LNG, however, saw lower utilisation at 56 percent.

In South America, Atlantic LNG had increased its month-to-date LNG exports by 0.05mmt (8 percent), according to our data, with shipments amounting to 0.64mm. The plant’s utilisation rate thus stood at 59 percent.

Middle East

Middle Eastern LNG exports at the time of writing in October amounted to 6.58mmt and thus showed a slight increase of 0.13mmt (-2 percent) from 6.45mmt in September. Our data thus showed the Basin’s annualised utilisation of operational export capacity (i.e., excluding Yemen) at 99 percent. The Middle East’s exports were thus also up by 0.33mmt (5 percent) year-on-year.

The Middle East’s export growth was limited due to fewer exports from Qatar’s Ras Laffan LNG complex. Our month-to-date data indicated the facility had exported 5.32mmt, a decrease of 0.18mmt (-3 percent) from 5.50mmt in September. Accordingly, the plant’s annualised capacity utilisation rate only stood at 93 percent.

China’s offtake from Qatar reached 1.09mmt, though this marked a decrease of 0.51mmt (-32 percent). The Pacific Basin showed steady imports of 0.92mmt, whilst South Korea’s volumes increased by 0.12mmt to 0.73mmt, up 20 percent. Indian imports stood at 0.54mmt, down

0.04mmt (-7 percent), whilst Pakistan's volumes decreased by 0.11mmt (-24 percent) to 0.35mmt. Taiwan saw a slight reduction of 0.02mmt (-6 percent) to 0.33mmt.

In Europe, Italy's imports rose by 0.11mmt to 0.29mmt, showing a 61 percent increase. Bangladesh and Thailand both imported 0.19mmt, with Bangladesh seeing a decrease of 0.10mmt (-34 percent) whilst Thailand's volumes increased by 0.10mmt (111 percent).

Kuwait's imports fell by 0.15mmt (47 percent) to 0.17mmt, and Belgium's volumes decreased by 0.20mmt (-71 percent) to 0.08mmt. Japan also imported 0.08mmt, down 0.14mmt (-54 percent). Singapore and Spain each imported 0.06mmt, with Singapore seeing a decrease of 0.06mmt (-50 percent) whilst Spain added 0.02mmt (50 percent).

Poland and the UAE were not seen in the market with offtakes during this period, down from their previous volumes.

Meanwhile, an export increase of 0.28mmt (51 percent) to 0.83mmt in Oman was compounded by a comparatively minor increase in volume terms of 0.03mmt (7 percent) to 0.43mmt by the UAE's Das Island plant. This meant annualised capacity utilisation at Das Island stood at 106 percent whilst at Oman LNG that figure stood at 108 percent. Still, even this robust growth was insufficient to overcome Qatar's export cut.

Concurrently, Egypt had not yet made an appearance in the market in October, 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 decreased by 1.21mmt (-4 percent) to 28.14mmt from the 29.36mmt we recorded this time in September. Net demand growth at the time of writing was

only observed in the Atlantic Basin, but which was overshadowed by significant decreases in the Pacific and the Middle East.

Pacific Basin

Period-on-period Pacific Basin imports were down by 1.07mmt (-5 percent) net to 19.24mmt from 20.31mmt this time in September. The roster of larger-scale importers comprising China, India, Taiwan, South Korea and Japan collectively decreased their offtakes by 0.96mmt (-5 percent) to 16.86mmt from 17.82mmt this time in September.

Concurrently, the roster of smaller Pacific buyers collectively saw imports decrease by 0.11mmt (-4 percent) to 2.38mmt during the report period. This decrease was primarily due to negative demand growth in Malaysia, where offtakes were down by 0.10mmt (-30 percent) to 0.23mmt. Mexico had also not yet been seen in the market following imports totalling 0.12mmt at Energia Costa Azul and Baja California Sur this time in September. Concurrently, Indonesia cut offtakes by 0.01mmt (-3 percent) to 0.34mmt. Bangladesh and Chile, meanwhile, merely maintained offtakes at 0.37mmt and 0.14mmt, respectively.

The roster's overall demand reduction was thus only partially offset by increases in Thailand, Singapore and the Philippines. Thailand increased imports by 0.07mmt (10 percent) to 0.78mmt, whilst Singapore saw growth of 0.04mmt (10 percent) to 0.44mmt and the Philippines and increase of 0.01mmt (14 percent) to 0.08mmt.

Atlantic Basin

LNG demand in the Atlantic Basin increased by 0.49mmt (7 percent) to 7.81mmt, with annualised utilisation of installed capacity at 28 percent. This includes a Corpus Christi LNG cargo earmarked for the Tortue FLNG cooldown as well as stranded Arctic LNG 2 volumes currently in Russian storage.

European LNG imports increased by 0.55mmt (9 percent) to 6.52mmt. France led the increase with imports up by 0.43mmt (41 percent) to 1.48mmt, whilst Belgium's volumes rose significantly by 0.30mmt (231 percent) to 0.43mmt. The Netherlands increased imports by 0.18mmt (19 percent) to 1.13mmt, and Italy added 0.11mmt (17 percent) to reach 0.74mmt. Greece and Finland also both showed significant growth, with Greek

imports up by 0.08mmt (114 percent) to 0.15mmt, whilst Finland doubled offtakes to 0.12mmt. Poland saw a comparatively modest rise of 0.03mmt (10 percent) to 0.32mmt, and Turkey's imports remained stable at 0.20mmt.

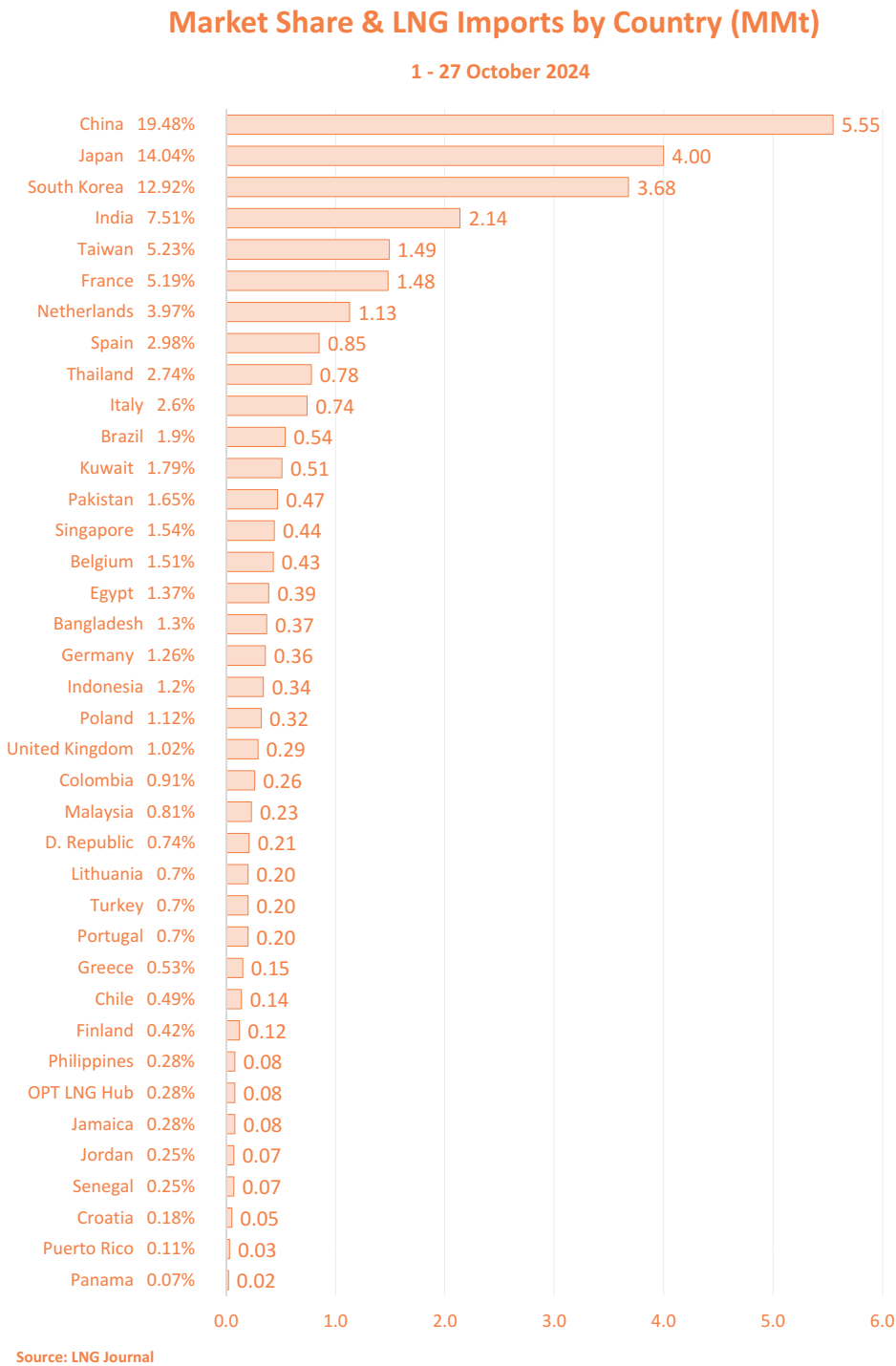
In contrast, the United Kingdom reduced volumes by 0.24mmt (-45 percent) to 0.29mmt, whilst Spain's imports fell by 0.16mmt (-16 percent) to 0.81mmt. Croatia saw a reduction of 0.15mmt (-75 percent) to 0.05mmt, and Portugal decreased by 0.09mmt (-31 percent) to 0.20mmt. Germany and Lithuania showed smaller decreases, with German imports down by 0.03mmt (-8 percent) to 0.36mmt, and Lithuanian volumes declining by 0.01mmt (-5 percent) to 0.20mmt.

The data also showed significant demand decreases in the Americas, with total imports down by 0.08mmt (-6 percent) to 1.22mmt. Whilst Brazil showed robust growth with imports up by 0.15mmt (38 percent) to 0.54mmt, and the Dominican Republic increased volumes by 0.06mmt (40 percent) to 0.21mmt, Jamaica's imports merely remained stable at 0.08mmt.

As such, these increases were overshadowed by cuts elsewhere. Canada and Argentina were not seen in the market, down from 0.07mmt and 0.02mmt in September. Meanwhile, Colombia's volumes had decreased by 0.03mmt (-10 percent) to 0.26mmt, and Puerto Rico saw a reduction of 0.05mmt (-63 percent) to 0.03mmt. Moreover, Panama's imports had decreased by 0.06mmt (-75 percent) to 0.02mmt, whilst the OPT LNG Hub volumes fell by 0.06mmt (-43 percent) to 0.08mmt.

Middle East

Middle Eastern imports were seasonally down by 0.44mmt (-23 percent) to 1.44mmt. Kuwait showed the largest reduction with imports down by 0.24mmt (-32 percent) to 0.51mmt, whilst Jordan's volumes fell by 0.08mmt (-53 percent) to 0.07mmt. The UAE was not seen in the market during this period, down from 0.12mmt the previous month. Pakistan's imports, meanwhile, remained stable at 0.47mmt, whilst Egypt also maintained volumes at 0.39mmt. The region's annualised import capacity utilisation stood at 27 percent, with Egypt showing the highest utilisation at 144 percent, followed by Pakistan at 75 percent. Kuwait and Jordan operated at 28 percent and 23 percent of capacity, respectively.



The need for fully automated LNG Custody Transfer Measurement Systems (CTMS)

*Custody transfer refers to the process of transferring ownership and responsibility of a product or commodity from one party to another.**

It involves the transfer of physical possession, as well as the associated rights and obligations related to the product. Custody transfer is commonly applied in industries such as oil, gas, petrochemicals, and utilities, where the accurate measurement and verification of quantities and qualities of the transferred material are crucial for commercial transactions and accountability.

In the context of LNG, custody transfer specifically involves the transfer of ownership and responsibility from the seller to the buyer. It encompasses the accurate measurement of the quantity and quality of LNG being transferred, typically at loading terminals, storage facilities, or during ship-to-ship (STS) transfers.

Custody transfer ensures transparency, accuracy, and fairness in commercial transactions by providing a standardised process and reliable measurement systems to determine the value and quantity of the transferred LNG.

It is important to note that the specific details and procedures of LNG custody transfer may vary depending on the parties involved, contractual

agreements, regional regulations, etc.

Current standards

LNG custody transfer is based on the GIIGNL Custody Transfer handbook 6th edition and ISO 8943: 2007. ISO 8943: 2007 is focused on the quality of the LNG by means of composite sampling and on-line (gas chromatograph) analysis, while GIIGNL handles the overall coverage. GIIGNL also advises on how to determine the quantity of the LNG transferred, which is done by means of gauging.

Gauging is a manual procedure, taking into account various measured physical properties and process parameters, consulting tables and the need for a highly skilled and experienced surveyor. This is a labour-intensive, time-consuming and costly process, where accuracy and reproducibility depend on the quality of the surveyor.

Everyone knows that one surveyor is not like another surveyor and that even the best has a bad day. In other words, there is a human error factor, which may impact the determination of a high US dollar value of an LNG cargo.

More and more end-users, especially involving the US, request a fully



LNG flows should be measured either via Coriolis flow meters or Ultrasonic flow meters

automated custody transfer measurement system, where the quality sampling can also be automated, based on flow proportional sample intervals.

For complete LNG custody transfer measurement systems, EPC contractors need to have a complete skid-build custody transfer measurements system with clear battery limits and a single point of contact during project execution, commissioning and start-up.

On-line measurements

With the current technology in place, it is

possible to measure the flow of LNG either via Coriolis or Ultrasonic flow meters.

The major challenge for LNG flow meters is metrological traceability and how to determine the accuracy of a flow meter. Based on studies and tests, there is an assumption that there is a correlation between LNG and water measurements for LNG, which is currently used in the market.

However, recent tests show differently and to be sure that LNG flow meters measure accurately during use, they need to be calibrated at cryogenic conditions with LNG. Recently, a new standard – ISO 21903:2020 – was published by the International Standards Organisation (ISO), to specify the metrological and technical requirements for flow meters that can dynamically measure LNG and other refrigerated hydrocarbon fluids.

VSL's calibration/test facility

In March, 2023, the Dutch National Metrology Institute VSL opened its new European Centre for Flow Measurement at Rotterdam's Maasvlakte in the Netherlands.

This unique site includes the LNG calibration and test facility for LNG flow meters for mass and volume at cryogenic conditions with LNG. VSL can determine any output signal utilising the master meter method of calibration.

This calibration facility is traceable to the National Standard of the



VSL's test facility at Rotterdam's Maasvlakte



The flow meters are built on skids

Netherlands, has a low measurement uncertainty (CMC) and is currently the only one in the world. All VSL flow meter calibrations, including LNG, are accepted worldwide. Thus far, the maximum flow meter size is 8 ins.

Currently, for LNG none custody transfer measurement systems, several dynamic measurement systems have already been delivered, installed and are operating successfully. Typical applications are LNG run-down line measurements and LNG allocation measurements.

The flow meters are typically built on skids, where today the complete quality package can be integrated, such as the LNG probe/vaporiser, the online quality measurement and the composite sampling.

Increasingly, the market requests, especially from the US, complete custody transfer measurement systems (CTMS), with ultrasonic flow meters up to 36 ins. Measurement systems are available now, including the complete analysis and sampling part.

It is even possible to integrate the analysis and sampling of both the cooling line and boil-off gas (BOG) return line to create a complete energy transfer equation. The challenge for large size LNG flow meters is how to calibrate them.

Continuous improvement

With an average production of more than 20 LNG quality measurement and sampling systems per year, Amsterdam-

based Analytical Solutions and Products (ASaP) belongs at the top of value providers to LNG customers and end-users.

As a market leader, we see it as our obligation to the market to continuously innovate and to answer every analysis and sampling related question for every cryogenic application properly and effectively. In depth application and system knowledge combined with extensive field experience creates more and more insights and value to those using our systems.

In May, 2022, an article was published about the correct way to measure and sample in a cost effective and most accurate manner. The purpose of this article was to outline the importance of continuously ensuring the proper operation of the analysis and sampling systems and obtaining the highest available accuracy possible for high US dollar LNG cargo values.

ASaP proprietary software, Analysis Information Module (AIM), is multifunctional. Its functions are; the CTMS operating & control system; the online & continuous performance monitoring system and the maintenance optimiser. It allows the automatic generation of both the cargo Quality Certificate and the Bill of Lading. If these two important documents are generated automatically, there must be a guarantee that the measurements and calculations match the LNG cargo characteristics at 100%. With AIM this is ensured.

A new feature within AIM is the online generation of the LNG phase envelope. This is determined by the measured process pressure and temperature near the sample take off probe and the measuring results of the gas chromatograph down-stream of the sample take-off probe. Based on the phase envelope and the sample take-off conditions, the degree of sub-cooling can be determined continuously and online.

As specified in ISO 8932: 2007, the sample must be taken at the highest possible degree of sub-cooling. Up to now, it was never possible to determine the actual degree of sub-cooling, now with AIM, an update of the degree of sub-cooling is given every few seconds.

Recently, the value of the new online phase diagram of the LNG determination feature became clear in a project. During the start-up of an LNG factory, it was assumed that the LNG transfer line was completely filled with LNG and that measurements were done under the right conditions.

However, due to the start-up there was a 2-phase situation in the transfer line, which made the analysis results invalid. Further investigation revealed, based on the AIM software, that at one of the LNG sample points, the extraction sample probe was not installed at the shipyard.

Being aware of this flaw, a new extraction probe was manufactured and installed on time. If the sample extraction probe installation had not happened, the next opportunity would have been five years later during a maintenance shutdown.

During the five years' gap the analysis and sampling results would not have been correct. Due to the standard feature of the online phase diagram determination, this measurement error with a huge financial impact was

prevented.

BioLNG added value

In Europe, the use of sustainable BioLNG is becoming more and more common, as fuel for trucks and ships. These small installations also have to measure the quality and quantity delivered.

For small-scale LNG installations, the initial cost for measurement and sampling equipment has a significant impact on the overall plant construction costs. Therefore, a creative approach was required to fulfill all measurement requirements.

Finally, all the requirements were met and the first installations are in operation successfully. Some installations have both a truck weighing scale and an LNG end-product flow meter installed for automated custody transfer.

Soon a programme will start where the correlation between the absolute LNG mass delivered and LNG flow delivered will be determined. The results of this programme may add a significant contribution to large-scale LNG custody transfer measurement systems.

Conclusion

Fully automated custody transfer measurement systems are available but are limited by the LNG flow meter sizes, due to their calibration. Meanwhile, various correlations tests are planned to obtain the uncertainty and traceability data of large LNG flow meters.

By being now part of the large Addtech group, ASaP is capable of offering complete analytical LNG solutions, from the feed-gas analysis to the CTMS with all of the analytical systems in between. ■

**This article was taken from a paper written by Amsterdam-based Analytical Solutions and Products (ASaP) - for further information contact Hans-Peter Visser at hvisser@asap.nl or go to www.asap.nl*



BioLNG truck loading facilities

Mobile LNG solutions target emerging transport markets

As the transport sector grapples with the need to balance efficiency, sustainability, and energy security, LNG is slowly emerging as a leading fuel choice thanks to a range of novel solutions. Fuelling Editor Malcolm Ramsay has more.

Although mobile LNG technology was once viewed as too bulky to be practical, recent design improvements have made it possible to enable quick refuelling and reduce reliance on traditional fuel sources.

An example of this is Nasetten's innovative approach which utilises micro-bulk technology to offer a compact and lightweight design that can fit in a standard commercial delivery van.

"With a storage capacity of 500 liters and an impressive boil-off rate of only 1.2%, Nasetten's systems ensure efficient and reliable operation," Pawel Warszycki, CEO at Nasetten and Executive Director at the Hanseatic Institute for Entrepreneurship and Regional Development at the Rostock University, tells LNG Journal. "This technology enables rapid refuelling in remote or off-grid locations, making LNG more accessible than ever."

Design Innovation

Nasetten's flagship innovation, the micro- and nanoscale vacuum-less and steel-less bulk technology, exemplifies this shift in the market, pushing the boundaries of what is possible in LNG distribution design. The world's first mobile LNG refuelling station is one application of this, eliminating the need for traditional heavy steel tanks and vacuum insulation, dramatically reducing weight and complexity by fitting the entire system within a total vehicle weight of just 3.5 tons. This makes it highly flexible,

allowing operators to deploy it in various applications and challenging locations that traditional trucks cannot access.

The station accommodates refuelling skids and bulks with a compressed-air-operated pump to enable precise measurement of the LNG volume being loaded. Special sensors further enhance the system by monitoring and controlling the refuelling operation, ensuring accuracy and efficiency throughout the process.

"Our mobile LNG refuelling stations are designed to operate efficiently within a wide temperature range, with an internal temperature capacity of up to -163°C and external temperatures from -20°C to +70°C," Warszycki comments. "With a maximum allowable working pressure (MAWP) of 4 bar, our plug-and-play design offers flexibility for users. One version can hold up to 1,500 litres, or approximately 750 kg, and can be equipped with refuelling skids and two 500 litre LNG bulks, while the other version is capable of carrying up to three 500 litre bulks without the pump skid. This adaptability makes our solution ideal for various operational scenarios."

The need to make LNG solutions more user-friendly is a driving factor in the current market shift, as companies seek alternatives that are more sustainable, but which can be easily scaled across fleets and countries without complication.

To tackle this, Nasetten's solution allows operators to easily manage refuelling using standard dispensing



EDUX refuelling station in La Spezia

nozzles, with no specialized training required beyond a standard category B driving license. Additionally, the vehicle can operate as a semi-stationary system, directly refuelling LNG-powered vehicles or facilities, allowing a single operator to manage LNG bulk without a forklift.

Mobile infrastructure

Taking a similar approach, Spanish LNG developer HAM Group inaugurated its first mobile LNG station in Italy earlier this year, introducing its EDUX LNG-CNG refuelling station at the Port of La Spezia.

Strategically located at Via del Camposanto, the facility offers LNG refuelling using two dedicated hoses for trucks and heavy vehicles, as well as CNG for cars and light vehicles, also with two hoses available.

The EDUX service station allows you to store and refuel LNG to all types of trucks and heavy vehicles, keeping the liquid subcooled and adapting to the optimal temperature of the different brands: Volvo, Scania or Iveco, offering a fast and safe refuelling, with performance and functionalities equal to that of fixed stations. At the same time, it allows to refuel CNG to cars, light vehicles and trucks.

Hailing the station as "a significant step towards advancing LNG infrastructure in Italy", a spokesperson for HAM commented that "EDUX Porto di La Spezia is characterized by its innovative mobile and transportable design, allowing for rapid installation and

start-up in less than 24 hours. This agile approach to refuelling infrastructure is complemented by a remote management system, ensuring optimal operation at all times."

The mobile unit boasts a capacity of 60,000 litres of LNG and operates at low pressures of 2-3 bar. Featuring a submerged pump, it can deliver up to 12,000 kg/h of LNG and 300 kg/h of CNG, with a storage capacity of 7,000 kg for CNG. The gas station is also equipped with two "on-the-fly" conditioning systems and has two dispensers each for Compressed Natural Gas and Liquefied Natural Gas. Through an innovative nozzle, designed by HAM, it also enables a "nofrost" system along with a dual anchoring and sealing mechanism to prevent leaks and liquid losses.

"The group's commitment to natural gas vehicles underscores its role in providing ecological alternatives to traditional fuels, contributing to the decarbonization of transport and mobility while significantly reducing the greenhouse effect on the environment," HAM notes.

As logistics trends increasingly favour greater flexibility, the popularity of mobile and micro refuelling stations is only likely to rise. As for future scalability, Warszycki emphasizes, "Nasetten plans to optimize our micro-LNG systems by developing a family of vessels in various sizes, including potential 1000L vessels, ensuring we meet diverse energy needs and adapt to the growing demand for LNG across markets."



Nasetten nanoscale bulk technology



JUBILEE

40TH

INTERNATIONAL SCIENTIFIC & EXPERT MEETING OF GAS PROFESSIONALS OPATIJA, CROATIA, 7 – 9 MAY, 2025

**THE LARGEST CONGRESS IN SOUTHEAST
EUROPE 100% DEDICATED TO NATURAL
GAS, LNG, HYDROGEN AND LOW-CARBON
SOLUTIONS!**

**60+speakers/ 600+ hundred high ranking gas and
energy experts, managers and decision makers
/20+ partners / 35+ exhibitors**



CONFERENCE TOPICS:

Key agenda topics include:

1. INVITED LECTURES AND PANEL DISCUSSION:
The role of natural gas in global energy transition
2. Development and maintenance of gas infrastructure
3. INTRODUCTORY PRESENTATIONS AND PANEL DISCUSSION: The strategic role of hydrogen in the decarbonization of the energy sector
4. Biogas and synthetic methane as key factors in the development of green industries
5. Growing trend in the use of LNG in Europe
6. INTRODUCTORY PRESENTATIONS AND PANEL DISCUSSION: Issues relating to the transport, distribution and storage of gas
7. Smart technologies and digital transformation in the modernization of the gas and energy sector
8. INTRODUCTORY PRESENTATIONS AND PANEL DISCUSSION: Use of CNG, LNG, and LPG and the potential of fuels from renewable sources for the decarbonization of transport
9. POSTER SESSION: Issues surrounding the gas and energy industries
10. Legal regulations, technical rules, rules of the profession and consumer rights in the gas and energy sectors

SUBMIT YOUR ABSTRACT:



Speaker's contact: Zoran Dojčinović, Tel: +385 (0)91 2232-313, E-mail: zoran.dojcinovic@hsup.hr

For the Record

ALTAMIRA: The LNGC, 'Energos Princess', began discharging at Rotterdam's Gate terminal on 15th October, marking the first LNG import from Mexico to Europe, according to data from S&P Global Commodities at Sea.

The vessel loaded about 59,000 tonnes of LNG at New Fortress Energy's (NFE) Altamira LNG project in Mexico.

This cargo was likely a short-term or spot-based transaction, sources said.

The LNGC arriving Europe was also claimed to be significant, as on 31st August, the US Department of Energy (DoE) issued an LNG export permit for the Altamira project authorising NFE to export LNG to countries that lack free trade agreements (FTAs) with the US.

The approval marked the first non-FTA permit issued by the DOE since the Biden administration announced a 'pause' on the approvals in January.

This first export cargo followed by a series of delays in the company's schedule to start up the project, which has a production capacity of about 1.4 mill tonnes per year.

The over \$2 bill Altamira project is the first of what NFE calls its Fast LNG or FLNG, units. It sources feedgas from the US by using some of the Mexican government-owned utility CFE's underutilised firm pipeline capacity on the 2.6 bill cu ft per day Sur de Texas-Tuxpan marine pipeline, operated by TC Energy.

'Energos Princess' also delivered the first partial cargo from Altamira to the La Paz import terminal on Mexico's Pacific Coast before heading for Rotterdam.

Mexico has long been an LNG importer. In 2024, the country imported 670,000 tonnes of LNG in 12 cargoes. Most of the LNG came from Indonesia, while the US and Trinidad supplied two cargoes each.

In September, the country was the fourth largest LNG importer in Latin America, with 6.95 bill cu ft, a rise from 6.22 bill cu ft in August.

However, Mexican imports remained have remained muted thus far in October.

"We expect new power generation and LNG export capacity to raise the share of Mexico's total gas demand coming from its northwestern and western areas through 2050.

"Given that domestic production is not likely to keep up with demand growth, we expect this demand growth to raise Mexico's pipeline gas imports from the US market, supported by the recent and future completion of gas pipeline projects on both sides of the border," Commodity Insight analysts said in a recent report.

CHINA GAS HONGDA ENERGY: China Gas Hongda Energy Trading (China Gas) and Vitol have signed into a long-term LNG swap arrangement.

As part of the agreement, Vitol will purchase 500,000 tonnes of LNG from China Gas' contracted US volumes on a free on board (FOB) basis and sell the same amount to China Gas on a delivered ex-ship (DES) basis from 2029.

Liu Ming Hui, China Gas Holdings Chairman, said: "As a major participant in the China energy market, China Gas is dedicated to providing reliable, efficient, and low-carbon LNG to our clients.

"The swap deal with Vitol, a renowned global energy trading tycoon, diversifies our LNG portfolio, strengthens downstream supply, and enhances efficiency across the value chain.

"We are confident that with Vitol's sustainable support, our two companies will explore even more comprehensive collaborations in the future, and from this moment, China Gas's clean energy business will develop and expand steadily," he said.

Pablo Galante Escobar, Vitol's Head of LNG, EMEA Gas & Power, added: "We are delighted to enter into this swap arrangement with China Gas, a highly respected company and an important participant in China's gas market.

"Vitol's LNG trading and freight management capability, combined with our global footprint, will help China Gas optimise their LNG portfolio.

"We look forward to strengthening our relationship with China Gas as we work to identify further opportunities. Vitol is committed to offering reliable and flexible LNG solutions to customers worldwide," he said.

China Gas is one of the top five city gas operators in the country, while Vitol has traded LNG for over 20 years and is

expanding its presence globally.

Last year, the company delivered over 17 mill tonnes of LNG worldwide.

DIVERSIFIED ENERGIES:

London-listed, Diversified Energies is to supply natural gas to an undisclosed US Gulf LNG developer.

The deal, which will start in November, will see Diversified supply around 40 bill cu ft of natural gas for three years.

The gas price will be fixed, indexed to Gulf Coast levels, which will provide the company with greater predictability and help to mitigate commodity price risk, it said.

Diversified also said that this contract was aligned with its goal of supplying "clean American energy" to global markets, addressing energy security concerns in the face of geopolitical tensions, supply disruptions, and shifting consumption patterns.

In addition to the contract, Diversified revealed it had been able to capitalise on recent strength in natural gas prices to enhance its hedge portfolio.

The company had added to its hedges for 2025 - 2027 at an average NYMEX price of \$3.45 per MMBtu.

It claimed that the hedges were expected to protect its margins in the coming years.

"This supply agreement to a Gulf Coast LNG export facility is a great example of the market's recognition of Diversified's reliable natural gas production and operational efficiency, while providing another lever for the company to enhance margins and deliver consistent cash flows," said CEO Rusty Hutson.

"In line with the company's strategy to reduce commodity price risk, we believe this agreement, along with tactically adding to our 2025-2027 hedge position during the recent natural gas price strength, will help us to provide consistent, robust cash margins," he said.

Hutson also said that the agreement reflected the critical need and strong global demand for natural gas, as well as the importance natural gas played in powering global economies.

"We look forward to advancing our relationships with Gulf Coast LNG export facilities that share our commitment to building a future of energy abundance, affordability, and security," he said.

ENAGAS: Spanish energy utility, Enagás' net profit for the first nine months of this year, excluding the effect of asset rotation, amounted to €233.5 mill, a 7.8% rise on the same period of 2023.

Including the effects of asset rotation, net profit for this period was €130.2 mill.

These results, which reflect the high degree of compliance with the company's 2022/2030 Strategic Plan and its positive performance, are ahead of schedule, despite the impact of the 2021/2026 regulatory framework, and are on track to exceed the upper end of the 2024 recurring net profit target range, Enagás said.

As of 30th September, Enagás' EBITDA totalled €572.8 mill, 0.1% higher than in the same period last year.

The company said that it continued to make progress, with a high level of execution, in fulfilling the Strategic Plan in its three key areas of action: the asset rotation plan to contribute to the decarbonisation and security of energy supply in Spain and Europe; the efficiency plan and control of operating and financial costs, and the renewable hydrogen calendar.

Enagás most important milestone in the asset rotation plan was the closing of the sale of its stake in Tallgrass Energy for \$1.1 bill on 29th July, which followed the 27th June sale of the company's 50% stake in the Soto La Marina Compressor Station (Mexico) for €15 mill.

In June, construction of Germany's first onshore LNG terminal (Stade LNG) began after the Hanseatic Energy Hub (HEH) consortium took the final investment decision (FID) and completed the financing. Enagás will be the terminal's operator with a 15% shareholding.

The total investment in the terminal, which is expected to start commercial operations in 2027, is estimated at €1.6 bill.

During the period, Enagás reduced its operating expenses by 4%, compared to the same period last year. The company's net debt was reduced by €1 bill following the sale of Tallgrass.

As a result, as of 30th September, 2024, the company's gross debt cost fell to 2.7%. The forecast is for it to drop to 2.6% by the end of the year and to 2.4% in 2026.

In addition, 95% of Enagás' gross debt is on fixed rate terms with an average maturity of five years, which mitigates the impact of interest rate volatility.

The sale of Tallgrass strengthened Enagás' balance sheet to face the new hydrogen investment cycle and consolidates the company's dividend policy and its long-term sustainability, the company said

The Spanish gas system continued to operate with 100% availability in a year marked by international conflicts in the Middle East and the Ukraine.

During the period, Spain received natural gas from 12 different countries. Following the instructions of the Spanish Ministry of Ecological Transition and Demographic Challenge, on 12th August Enagás activated - five months before the deadline set by the European Union - a procedure for defining the methodology for monitoring, controlling and authorising LNG cargoes for the Spanish gas system, in compliance with the European Union's sanctions package.

Following the recent regasification plant capacity auctions, 2,189 LNG unloading slots and 950 loading slots were contracted until 2039.

ENERGY TRANSFER: US pipeline operator, Energy Transfer has signed a preliminary contract with a consortium to build its planned Lake Charles LNG plant.

Involving engineering companies, Technip Energies and KBR, any firm contract will be subject to a final investment decision (FID) taken for the project, Energy Transfer said in a filing to the US Federal Energy Regulatory Commission (FERC) last week.

No terms were disclosed.

Energy Transfer had been trying to develop the project since 2015 but had not signed enough customers for the proposed 16.5 mill tonnes per annum facility to move it forward. It had already missed two targets to reach FID.

The project also requires a US permit to export LNG to countries that do not have a free trade agreement (FTA) with the US, dubbed non-FTA countries.

Last year, the US Department of Energy (DoE) turned down Energy Transfer's request for a second extension to export to non-FTA countries, leading to the company subsequently filing a request for a new permit.

HINDUSTAN PETROLEUM: India's Hindustan Petroleum Corp (HPCL) is seeking an LNG cargo to commission a new import terminal in December or January.

The company was believed to be in discussions with eight or nine companies for long-term supply, three sources told Reuters.

HPCL has developed a 5 mill tonnes LNG import terminal at Chhara in western India, the country's sixth terminal.

The company's previous attempts to commission the plant in April failed, due to bad weather.

HPCL wants to use the three-month fair weather window that begins next month to commission the LNG terminal, two sources said.

The terminal and related infrastructure, including pipeline connectivity, are completed, the sources said, adding that the plan was to commission the terminal in December or January.

State-run HPCL had received "a good response" to its expression of interest for LNG supplies for 15 years, one of the sources said. It is seeking one LNG cargo per month beginning late 2026 or early 2027, priced on a Brent-linked basis.

Based on the response, the company short listed more than 20 potential suppliers and floated a limited tender. These included Shell, TotalEnergies and Vitol, one source said.

In July, HPCL said it was seeking LNG deals, as it expected to bring its Chhara terminal online by year-end. The LNG will meet the requirements of its two existing refineries and a new 180,000 barrels per day refinery and petrochemical project in Rajasthan.

In addition, two of the sources added that Indian utility, Torrent Power and state-owned Gujarat State Petroleum Corp (GSPC) were trying to source long-term LNG supplies from 2026 or 2027.

Torrent Power is seeking a 10-year supply deal for about 1 mill tonnes per annum, while GSPC is seeking a 10-15 year supply deal for 0.5 mill tonnes.

INDIA: India's LNG imports accounted for 43.4% of the country's natural gas consumption of 5.25 bill cu m last month, according to preliminary oil ministry data, compared with 46% a year earlier.

Imports during the January/September period totalled 15.11 bill cu m, some 11% higher than in the same period of the previous year.

India's coal and gas-based power utilities were said to be running at optimum capacity following the end of the monsoon period, local media reported.

It was reported that the country's power ministry had extended the validity of its earlier directives to utilities to raise coal imports and had also asked gas based utilities to operate at full capacity to meet an anticipated rise in power demand in the coming months.

Gas makes up 6% of India's installed power generation capacity, while coal accounts for 50%. Natural gas is mostly used in India's gas distribution network via pipeline to households and as compressed natural gas (CNG) for road vehicles.

India's net natural gas production rose by 6% on the year to 2.97 bill cu m in September. Gross output from state-controlled companies, ONGC and OIL were running at 1.58 bill cu m and 256 mill cu m, respectively, while private-sector companies produced 1.19 bill cu m, the ministry's figures showed.

Meanwhile, India's oil ministry has set the October domestic natural gas price at \$9.20 per MMBtu, in line with a new mechanism that sets prices at 10% of the monthly average of the Indian crude basket.

IRAN-ISRAEL: If tensions between Iran and Israel escalate into a regional war scenario, it could severely impact regional oil and gas exports as well as global shipping routes.

Attacks on key facilities could wipe out nearly 1.4 million bpd of Iranian production and a full-blown war would choke the Strait of Hormuz, risking up to 12 million bpd of oil, analysts warn.

Upstream activity in Iran, so far, has stayed steadfast despite fighting following Hamas' assault on Israel in October, 2023. Iran's production rose by 227,000 bpd to 3.27 million bpd in August year-on-year, while Israel's gas output grew 15% in 2023 and is expected to rise by 5% this year, supported by the Karish field.

Some \$2 billion in greenfield investment had been planned for various upstream projects in the coming years. But production at the Karish and Katlan fields could be severely reduced if regional tensions escalate, hence future production and exports are at risk.

Anticipating the future is challenging, Rystad's Middle East research director, Aditya Saraswat noted. So far – with no direct attacks between Iran and Israel, the conflict is largely a 'proxy war'. As of today, there have not occurred major assaults on critical oil and gas

infrastructure such as pipelines, storage facilities, or refineries.

If things get worse, the maritime border agreement between Israel and Lebanon, signed in October, 2022, could be torn to pieces. The agreement defines each country's rights over the Karish and Qana fields, with Israel retaining full rights to Karish and Lebanon to Qana.

"Escalating tensions could lead to the nullification of this agreement, affecting Israel's production from the Karish field, which is currently used for domestic supply," Saraswat reckons, suggesting: "This disruption may also impact Israel's gas exports to Egypt and Jordan, which saw significant growth in 2023.

"Any decline in production and exports from Karish could be offset by increased output from other major fields like Tamar and Leviathan," he noted.

The fields hold about 88 billion cubic meters (Bcm) of cumulative proven and probable (2P) reserves. Together, they form the independent's core area of operation – following the divestment of its Croatian, Italian, and Egyptian assets. Production from the Katlan fields (Athena and Zeus) is expected to start by 2027.

All these fields are located near the Karish field near Lebanon's maritime border, so analyst warn that any significant unrest could delay start-up.

KUMUL PETROLEUM: Papua New Guinea (PNG)-based Kumul Petroleum Holdings (KPHL) has signed a pre-front-end engineering & development (FEED) contract for an FLNG, earmarked for the Gulf of Papua.

Kumul Managing Director, Wapu Sonk, revealed that this contract had been awarded to Shanghai Wison Offshore & Marine Co.

Damien Nguyen, Wison's CTO, who signed the deal, said that the company was delighted to work closely with Kumul Petroleum in its ambitious plan to commercialise PNG gas fields.

Sonk said: "Kumul Petroleum Holdings Limited has for some time been investigating how to commercialise stranded gas resources, particularly those in our petroleum retention licenses (PRLs 47 & 50) over the Pandora and Uramu gas fields, offshore of Gulf Province.

"This is a critical step and in the right direction, one we are extremely excited about as the national petroleum company.

LNG OneWorld.com



"KPHL has evaluated these gas discoveries and completed reserve certification, which has given us confidence to move to this stage of the commercialisation plan."

"KPHL is 100% license holder of the two PRL offshore licenses at the moment and intends to farm down post this study to interested partners who see value in the 1.5 mill tonnes per annum FLNG project in PNG.

"This pre-FEED study is a necessary step to ensure that we understand the full scope, cost, schedule, risk and the full economic value before making a decision on moving to FEED and final investment decision (FID).

"The pre-FEED study is expected to take eight to 12 months, leading to entry of FEED thereafter, and FID sometime in 2026 or 2027," he confirmed.

LNG SUPPLY: The next LNG supply tranche will come online from 2027, later than the earlier forecast of 2025, due to project delays, TotalEnergies' Senior Vice President for LNG, Gregory Joffroy said yesterday.

"On the mid-term (outlook), we see some LNG projects that were due to come onstream in the coming months have been delayed. The exact start date will impact the gas balances and supplies," Joffroy said at the Asia Gas Markets conference in Singapore.

"In the long-term, it is clear that we will have a new supply wave by 2027 (through to) 2030," he said.

In the US, a shortage of skilled labour, inflation from strong wage growth and equipment shortages, have put pressure on LNG developers and delayed some projects, while the Biden's administration January 'pause' on approvals for new LNG export projects also created uncertainty.

Joffroy said he expects LNG demand to be higher in 2035 from current consumption levels, as utilities that are still consuming coal will switch to gas-fired power generation and with the development of renewables.

LNGC FREIGHT RATES: LNGC freight rates plummeted during the week ending 18th October.

The absence of arbitrage opportunities and contango left rates unsupported, while unusually high temperatures, compared to previous years, further exacerbated the situation.

High European and Asian gas storage levels and subdued cargo requirements,

coupled with too many ships, contributed to the low rate environment.

Market participants, talking with S&P Global, were pessimistic for the next two years, indicating that rates were unlikely to recover to the highs seen in 2022 in the near future.

As of 18th October, the Atlantic Basin, saw day rates for TFDE ships falling to \$18,500 per day, down from \$130,000 per day a year earlier, while Pacific Basin rates for TFDE types dropped to \$29,000 per day from \$130,000 per day recorded in October, 2023, which was the lowest seen since 2019.

In the Atlantic Basin, rates for 2-stroke ships were \$28,500 per day, compared to \$155,000 per day in October, 2023, while in the Pacific Basin, 2-stroke LNGC rates fell to \$40,000 per day from \$170,000 per day a year earlier. These rates were the lowest since November, 2022.

Recent fixtures were concluded at rates of between \$20,000 - \$30,000 per day, with activity particularly subdued in the East, sources said.

A market participant mentioned to S&P Global that the lack of free on board (FOB) cargo tenders indicated a challenging month ahead, and the weakness was expected to continue into next year.

An excessive number of ships, together with LNG project delays, put additional pressure on rates. One market participant remarked, "I didn't expect such low rates – I thought we were already at the bottom – but apparently not."

LNG PRICE SPREADS: LNG price spreads between the Japan Korea Market (JKM) and the Dutch Title Transfer Facility (TTF) for balance of winter 2024/25 contracts have fallen, but analysts find this drop is "overdone". London-based Energy Aspects forecasts the JKM-TTF spread will rise above US shipping differentials via the Panama Canal, opening the arbitrage for US spot cargoes to head to Asia.

Spreads narrowed to \$0.53/MMBtu in recent days, down from around \$1.13/MMBtu in mid-September – with little fundamental change. Though freight rates have fallen, key US shipping differentials via the Panama Canal have delinked only by an average \$0.18/MMBtu month-on-month.

Energy Aspects hence upholds its bullish view on bal-winter outturn JKM prices, mainly due to their bullish views

on TTF winter 2024–25 prices due to rising geopolitical tensions in the Middle East and systematic buying at the TTF near-curve.

The likely end of Russian gas transits through Ukraine starting from January 2025 and Europe's rising gas demand in an average winter may lead to supply constraints in the EU, which in turn propel up fuel prices. "Our base case outturn JKM price forecasts average \$14.55/MMBtu, \$0.85/MMBtu above the latest CME settlements," they explain.

LNG buyers worldwide have launched tenders for 22 cargoes so far this month, with eight of these confirmed, against 10 cargoes tendered and confirmed last October. Of the 80 cargoes tendered in September, 53 were confirmed and 40 were bought by Asian companies.

"Japan has bought three spot cargoes via tender issued month-to-date, with two December deliveries and one January delivery," analysts disclosed. LNG stocks held by major Japanese power utilities, a subset of aggregate LNG stocks, reached 2.02 million tons, up from a multi-month low of 1.63 Mt two weeks ago.

Indian buyers continue to issue buy tenders, which analysts believe is "likely to stock up pre-emptively before power demand increases in late October due to Diwali." Indian LNG inventories are understood to be quite high currently.

China's Sinopec, meanwhile, secured a December delivery via tender, after about a year of not purchasing any cargoes through tenders. Chinese LNG stocks at ten selected LNG terminals have reached 1.93 Mt, up by 0.33 Mt year-on-year.

NAKILAT: Qatar Gas Transport Co (Nakilat) has recorded a net profit of QAR1.28 bill, an increase of 7.2% compared to the same period in 2023.

This showcased Nakilat's ability to achieve sustained growth amidst dynamic global market conditions, the company said.

Nakilat continued to strengthen its position as one of the world's largest LNG fleet owners through strategic partnerships, fleet modernisation, and achieving operational excellence.

Its growth strategy is developed on the back of a strong commitment to safety, sustainability, and delivering reliable energy transportation solutions, the company claimed.

Eng Abdullah Al-Sulaiti, Nakilat's CEO, said: "Nakilat's strong

performance this quarter reflects our ongoing efforts to enhance operational efficiency.

"As the global demand for clean energy transportation continues to grow, we remain committed to driving innovation and pursuing long-term growth. Our expansion projects, coupled with our dedication to sustainability, safety, customer centricity and the highest industry standards, have enabled us to maintain our leadership in the maritime industry.

"I would like to extend my appreciation to the team at Nakilat for their tremendous efforts in preparing for the implementation of the new fleet construction, which is considered the world's largest programme for building LNG vessels for a single owner," he said.

The company continues to progress with its construction of LNG and LPG/ammonia carriers, scheduled for delivery in the coming years.

These new vessels, along with Nakilat's strategic long-term contracts, position the company to meet the growing global energy demands, while increasing fleet efficiency, the company added.

Upon the delivery of the vessels, Nakilat's fleet will expand to 114, further reinforcing its leadership in the global clean energy transportation market.

RUSSIAN LNG STS: Russia is planning to set up LNG and gas condensate ship-to-ship (STS) transfer areas in the Barents and Bering Seas.

The aim is to free up more Ice Class LNGCs to be utilised by NOVATEK, the country's biggest LNG producer.

This was revealed in a draft project document seen by Reuters this week.

NOVATEK is pressing ahead with the Arctic LNG 2 production project, despite Western sanctions restricting access to LNGCs sailing along the Northern Sea Route (NSR) to Asia.

One of the major problems is that Russian LNG transshipments will be banned in EU ports from March next year.

To address the shortage of LNGCs able to navigate Arctic waters, Russia plans to have those available tranship their cargoes to conventional vessels at sea, near the production sites, thus freeing up the Ice Class vessels for new shipments.

According to the draft document, the first area for STS transfers will be

located near Chosha Bay in the Barents Sea for Obsky Ammiak, a NOVATEK subsidiary.

A second area is earmarked for Kresta Bay in the Bering Sea.

STS operations - which will only be undertaken when ship movements are not impacted by ice - will allow for the loading of 4.1 mill cu m of LNG and 1.4 mill cu m of gas condensate per year in each area.

NOVATEK already performs STS LNG transfers near Murmansk in Kola Bay.

SEFE: SEFE (Securing Energy for Europe) recently signed a long-term natural gas supply agreement with ConocoPhillips, under which the first gas has already been delivered.

Over the next 10 years, ConocoPhillips will deliver up to 9 bill cu m of natural gas from its European portfolio to SEFE at various trading hubs across the region.

ConocoPhillips has a large and growing European supply portfolio, including Norwegian natural gas production and LNG imports, while SEFE's European customer portfolio requires around 20 bill cu m of natural gas per year.

"The long-term partnership between SEFE and ConocoPhillips is an important milestone in pursuing our ambition to diversify our natural gas portfolio," SEFE's CCO Frederic Barnaud, said. "It demonstrates our commitment to securing energy supply for Europe."

SINGAPORE LNG: Singapore's second LNG terminal will be an offshore 5 mill tonnes per annum FSRU to be located at Jurong Port, Minister for Trade and Industry, Gan Kim Yong, revealed at the Singapore International Energy Week yesterday.

An FSRU-based LNG terminal would provide the flexibility to move the unit, as required and it would take up a smaller land area than a conventional onshore LNG import facility.

Land-based terminals are also usually more expensive and take longer to build.

Singapore LNG Corp's (SLNG) plan to develop a second LNG terminal to meet growing demand for natural gas was announced a year ago, but no details were revealed.

"The new terminal will have 5 mill tonnes per year of throughput capacity, a 50% increase of our existing LNG capacity," the Minister said.

Separately, a senior SLNG executive said that the FSRU contract had been awarded to Japan's Mitsui OSK Lines (MOL), but did not specify its size or its contract duration.

Other industry sources said that the new FSRU was likely to require a long-term LNG contract, as the government was leaning towards locking in a baseload supply for the majority of the volume and leaving only a smaller portion for the spot market.

The exact duration a long-term contract could vary, due to broader industry developments. The FSRU would also allow Singapore to be flexible in its long-term energy transition and selection of LNG sources, they added.

Minister Gan also provided details about Singapore's plans to set up a central gas entity (Gasco), to control the procurement and supply of gas to the power sector.

"We will set up Gasco as a fully Government-owned company by the end of this financial year," Minister Gan confirmed. "This approach will enable us to negotiate more favourable gas contracting terms, enter into longer-term gas contracts for more stable prices and supply, and procure gas from diverse sources to reduce concentration risk."

UK GOVERNMENT: Yesterday, the UK has announced its largest package of sanctions to date against Russia's 'shadow fleet'.

New sanctions were applied to 18 Russian oil tankers and four LNGCs by the UK's Foreign, Commonwealth & Development Office (FO).

This brought the number of tankers sanctioned to 43.

Alongside action against the 'shadow fleet' and the LNGCs, the UK also sanctioned Russian gas company, Rusgazdobycha JSC.

An example of the economic damage sanctions bring, Russian gas producer Gazprom posted a significant net loss of \$6.9 bill for 2023 - its first annual loss in more than 20 years, the FO said.

The LNGCs sanctioned were the FSRU/LNGC 'Marshal Vasilevskiy' (IMO 9778313), 'Velikiy Novgorod' (IMO 9630004), 'Mulan' (IMO 9864837) and 'Everest Energy' (IMO 9243148).

By being sanctioned, these ships will be barred from UK ports and unable to access British maritime services.

Both the US and Canada signed up to the 'shadow fleet' - Call to Action - launched by UK Prime Minister, Keir

Starmer in July, bringing the total number of signatories to 47.

The FO alleged that the 'shadow fleet' sought to undermine sanctions and posed a clear and present danger. Environmental risks, such as oil spills, on UK coastlines, as a result of a violation of basic safety standards, were claimed, plus the risks to the security of global trade – the lifeblood of economic growth.

The FO added that Sovcomflot, Russia's largest shipping company, has been left desperately scrambling to rename and offload its vessels to dodge UK sanctions.

UK Foreign Secretary, David Lammy said: "We must combat malign Russian activity at every turn, whether illicit tactics to bolster Putin's war chest, their use of cyber-attacks or barbarism on the front line in Ukraine.

"The UK is leading the charge against Putin's desperate and dangerous attempts to cling on to his energy revenues, with his 'shadow fleet' placing coastlines across Europe and the world in jeopardy.

"I have made it my personal mission to constrain the Kremlin, closing the net around Putin and his mafia state, using every tool at my disposal," he said.

US ELECTIONS: Bickering between US Vice President Kamila Harris and former President Donald Trump in the run-up to the US election is not hampering the steady growth of the shale gas industry and LNG majors. Focus on profitability and shareholder returns – rather than production growth – means the industry is unlikely to be influenced by promises of support or potential regulations from either candidate.

This shift in strategy, dubbed "Shale 4.0" by Rystad Energy, is emerging for some time, our Markets Editor Anja Karl was told. It's a departure from the industry's earlier growth-at-all-costs approach, which had been fuelled by easy access to capital and rapid production expansion. These days, production is impacted by rising oil prices, improving operator efficiency and increasing long-term investment from acquisitions.

Despite Trump's vocal support for the oil and gas industry, analysts doubt that a second term in office for the Republican candidate could actually increase US shale production above its current trajectory.

"The US onshore industry has learned to live with a high degree of uncertainty, and the presidential election is just one of many factors on operators' radars. Shale production has proven to be incredibly resilient, and we expect it to continue to play a major role in the global energy landscape for years to come. At the end of the day, the industry is driven by market fundamentals, not by politics," said Matthew Bernstein, senior research analyst, Upstream.

In fact, the industry's shift towards prioritizing shareholder returns and long-term growth through acquisitions has led to a more disciplined approach to investment: Even if prices rise, companies do not significantly increase spending, as production has somewhat decoupled from oil and gas prices.

"The traditional link between high prices and increased drilling activity has been weakened. Companies now focus on maintaining capital discipline and maximizing returns, instead," he commented.

A Democratic administration, on the other hand could pose potential risks but, according to Rystad analysis, these seem highly unlikely for political and economic reasons: "Past administrations may have imposed stricter regulations, drilling restrictions and heightened scrutiny of mergers and acquisitions, but Harris has not communicated a desire to pursue these options.

"The industry is also concerned about accelerated investment in alternative energy projects, which could accelerate the transition away from fossil fuels," he explained. A ban on new permitting on federal land, while unlikely, would have a significant impact on production in key basins such as the Permian Delaware.

Following a string of high-profile mergers and acquisitions (M&A), the actual growth of US shale oil and gas output is now concentrated in the hands of a few large players.

Research shows that the top six companies in the Permian Basin, the largest shale play in the US, now control over 60% of the remaining commercial net oil resources in the region. And this consolidation is expected to continue, as smaller players struggle to compete with the scale and efficiency of their larger rivals.

"The industry is rapidly becoming a game of scale, and only the largest and most efficient players will be able to compete in the long term," Bernstein concluded. ■

LNG Journal Subscription Package

Your LNG Journal subscription includes broad coverage of LNG across the globe – from trade and shipments through to LNG prices, plus in-depth technical coverage. With over 20 years of LNG reporting experience, we remain the market leading source of information for decision makers in the LNG industry.

LNG Daily News

Delivered to your inbox and online



LNG Journal

The flagship LNG monthly



LNG Unlimited

Your fortnightly summary of LNG news



LNG Market Tracker

Weekly empirical insight into the LNG market



LNG North America

Bi-monthly report on LNG in the US, Canada



LNG Transition

In-depth look at LNG as a transition fuel



LNG Shipping News

Fortnightly coverage of LNG shipping



LNG China

Bi-monthly review of LNG in China



LNG Monthly Markets

Key developments in LNG markets



Gas to Power Journal

Peakload power and energy storage



Subscription Contacts

For new subscriptions or general subscription queries please contact:

Stephan Venter

venter@lngjournal.com

+44 207 017 3407

To renew an existing subscription or to upgrade your package, please contact:

Gabi Weck

gabi@lngjournal.com

Sign up now for an Online Subscription at only US\$1190; €920 or £830

Discount options are available for multi-users

Contact us for more information or to arrange a free trial

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	Storage 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)	Storage Tanks	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
	Ahlong 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 m ³
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
	Obssky 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 Energyy	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



WGC2025
BEIJING 19-23 MAY

PRESENTED BY



HOST PARTNER



Energising a **Sustainable** Future

Global Energy Leaders Await **Register for WGC2025 Today**

Join 30,000+ energy professionals in Beijing, China for five days of cutting-edge insights and unmatched networking. Hear from top industry leaders driving the future of gas and energy.

Focused on innovation and sustainability, WGC2025 is the premier gas and energy event exploring the next chapter of the energy transition. Don't miss it!

REGISTER YOUR DELEGATE PASS

wgc2025.com

SECURE YOUR ENERGY



safety, sustainability, flexibility



oltoffshore.it

