

What is exciting about LNG infrastructure? A lot.

Research & Insights

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The expansion of the global natural gas market has led to the growing importance of liquefied natural gas, or LNG, which has become an increasingly crucial element of the global energy mix. LNG is used in numerous countries worldwide as a cleaner and more efficient substitute for conventional fossil fuels and is expected to play an instrumental role as the world transitions toward net-zero emissions. The Russian invasion of Ukraine has only underscored the importance of energy security, and the place of LNG in the energy complex.

Natasha Thomas, Portfolio Manager, Energy & Communications in Ausbil's Global Essential Infrastructure team, discusses the key opportunity in LNG, supply and demand, and how to invest in LNG through listed infrastructure.

5-minute read

Key points

- LNG is cleaner than other conventional fossil fuels such as coal and oil.
- LNG is seen as a critical bridge to both energy security and achieving net zero targets.
- Many investors would prefer not to be exposed to commodity risk that comes with investing in LNG directly. Listed energy infrastructure provides a relatively low-risk avenue for gaining exposure to the growth in the global LNG market.

Q: What is LNG and how does it work?

Liquefied Natural Gas (LNG) refers to natural gas that has been cooled to a liquid state (around -162°C or -260°F) to enable its transportation and storage. It is a transparent, colourless, and harmless liquid that occupies around 600 times less space than it does in its gaseous form. To put that in perspective, it's like having 600 one-litre bottles of natural gas that turns into a single one-litre bottle of LNG. This feature makes it a lot more convenient to transport to locations beyond the reach of pipelines, store, and utilise as a transportation fuel.

The liquefaction process usually takes place at LNG export facilities, where natural gas is received via pipelines. The source of the natural gas can vary and may include natural gas fields, associated gas from oil production, biogas, and synthetic natural gas.

The resultant LNG is typically transported using specialised ocean-going tankers or ships. Upon arrival at import terminals, the LNG is offloaded from the ships and stored in cryogenic storage tanks until it is converted back into a gaseous form. The natural gas is then transported via pipelines to distribution companies or end-users for various applications, such as power generation, heating, and transportation fuel.



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The Corpus Christi LNG Export Terminal in Texas, United States, owned by energy infrastructure company, Cheniere Energy Inc.

Q: Is the LNG market regulated?

Regulation of the LNG market varies across different countries and regions. In some countries, the LNG market is heavily regulated, while in others there are fewer government controls over the industry. The regulation of LNG is largely in the form of environmental, safety and trade regulations, rather than the regulation of returns and prices.

Two of the largest LNG exporting countries are the United States and Australia, who have government bodies that oversee regulatory aspects such as:

- the licensing and approval of LNG projects including their impact on the environment and local communities,
- safety regulations that cover the production, transportation, storage, and utilisation of LNG to prevent accidents and ensure public safety,
- trade regulations aimed at promoting the development of safe, secure, and efficient LNG trade, and
- security requirements including physical security measures such as security systems and perimeter fencing, as well as measures to protect against cyber threats.

In the United States, the Department of Energy (DOE) has regulatory responsibilities regarding LNG. Companies seeking to export natural gas must obtain authorisation, and the Natural Gas Act mandates that the DOE determine the public interest in approving applications to export LNG to countries without existing free trade agreements. Additionally, the Federal Energy Regulatory Commission (FERC) has jurisdiction over the siting, construction, and operation of LNG export facilities.

In Australia, the government is currently seeking feedback on reforms that would enable them to oversee the export of LNG to ensure security of domestic supply. The potential impact of these measures on investment treaties is currently under evaluation.

Elsewhere, in 2022 the European Union took several exceptional actions to minimise the potential consequences of a complete halt in Russian gas supply, including announcing the REPowerEU plan. The REPowerEU plan sets out a series of measures to rapidly reduce dependence on Russian fossil fuels and fast forward the green transition, while increasing the resilience of the EU-wide energy system. Among the coordinated measures were expedited regulatory efforts to immediately increase LNG import infrastructure, diversified supply sources and demand reduction efforts. These initiatives emphasised the crucial role of LNG in ensuring energy security and stressed the significance of dependable long-term LNG supply in the global energy portfolio.

Q: What does the global LNG supply and demand landscape look like?

The world imported more LNG in 2022 than ever before. Total global LNG imports rose to 409 million tonnes in 2022 from 386.5 million tonnes in 2021, according to data from Refinitiv. The record volume level came from new supply trains as well as increased demand fuelled by European countries' rejection of Russian piped natural gas as a result of Russia's incursion into the Ukraine.

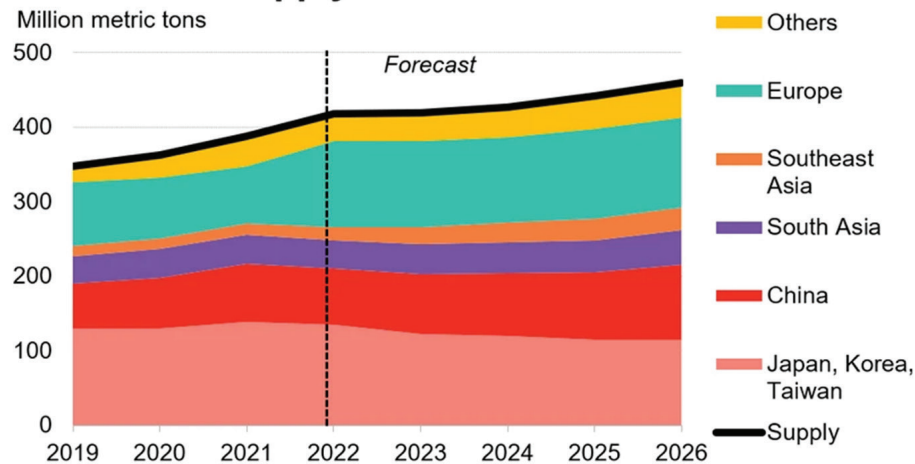
Europe's imports surged 59% to 124.93 million tonnes in 2022, up from 78.55 million tonnes the year prior. Europe's push to replace Russian piped gas with LNG caused prices to hit record levels in 2022. In response, demand for LNG in Asia fell to 250 million tonnes in 2022, down from 270 million tons in 2021 as unaffordable prices stifled Asian demand. The largest drop was in China due to persistent COVID-related lockdowns, resulting in Japan reclaiming its spot as the world's largest LNG importer in 2022.

In 2022, the United States and Qatar tied as the world's top exporters of LNG, exporting 81.2 million tons according to ship-tracking data compiled by Bloomberg. The United States will need to continue building more LNG export capacity if it wants to hold onto the top spot through the end of this decade, which is supported by ample low-cost supplies of natural gas. Qatar is in the midst of an enormous expansion to its production facility, which could solidify its position as the LNG leader from 2026, while Australia is poised to remain as the world's third-largest supplier.

Looking forward, there is support for the development of new liquefaction infrastructure from both the supply and demand sides. The demand for LNG is predicted to continue its upward trend. Investment in downstream LNG infrastructure is increasing globally, with more than 370 million tonnes of regasification capacity currently being developed. Moreover, it is expected that nine new markets will enter the LNG trade in the next two years, including Vietnam, the Philippines, and Ghana.

Chart 1: Global LNG supply and demand

Global LNG supply and demand



Source: BloombergNEF. Note: 'Others' includes Middle East, Americas, Africa, other markets, bunkering and operational/voyage LNG losses (such as boil-off). Demand is based on normal weather (10-year average) and current futures prices.

Q: How does LNG fit in with the global goal to decarbonise?

Clean energy investment has picked up in recent years, but is still well short of the levels required to meet global targets. LNG can play a role in the global goal to decarbonize by serving as a transitional fuel to help reduce greenhouse gas emissions in certain sectors, such as electricity generation and transportation.

Compared to coal, LNG produces 40% less carbon dioxide (CO₂) when burned in power plants and 30% less than oil, making it a cleaner-burning fuel. Additionally, LNG facilities can use carbon capture and storage (CCS) technology to capture and store carbon emissions, further reducing their carbon footprint.

However, it is important to note that while LNG is a cleaner alternative to coal and oil, it is still a fossil fuel and emits greenhouse gases. To achieve the global goal of decarbonisation, there needs to be a transition towards renewable energy sources, such as wind and solar.

Q: What are the best infrastructure investment opportunities to gain access to the global LNG thematic?

From an Essential Infrastructure perspective, investors can access to the global LNG market through owning energy infrastructure companies like Cheniere Energy (NYSE: LNG), Semptra Energy (NYSE: SRE) and Williams Companies (NYSE: WMB) in the United States. Cheniere and Semptra both own and operate LNG export facilities in the United States, with capacity mostly secured under long-term contracts in which customers are generally required to pay a fixed fee with respect to the contracted volumes irrespective of whether the customer elects to take delivery of the cargoes or not. Similarly, Williams owns and operates Transco, which is the backbone of the US natural gas pipeline network spanning 25 states, handling a third of the country's natural gas production with take-or-pay agreements serving numerous LNG export facilities.

In Australia, gas producers like Woodside (ASX: WDS) and Santos (ASX: STO), whilst they do not qualify as Essential Infrastructure and are not held in our portfolio, they do own and operate LNG export facilities, which follow a different commercial model compared to their US counterparts. Typically, Australian producers own the entire value chain from the resource to midstream activities, pipelines, and export facilities. This structure results in more direct exposure to commodity prices and demand and supply volatility, with Australian LNG pricing largely linked to the USD oil price with a corresponding slope, while US LNG exporters have fixed fee contracts. Consequently, Australia's current commercial model for LNG export facilities does not align with our strict Essential Infrastructure criteria, particularly their commodity exposure which is volatile compared to the regulated and contracted exposure offered through energy infrastructure which is relatively hedged from commodity price risk. The primary way to gain exposure to the LNG export thematic in Australia from an Essential Infrastructure perspective is through companies like APA Group (ASX: APA). APA owns the Wallumbilla Gladstone pipeline, which connects Shell Energy's natural gas fields in Queensland's Surat Basin to the Queensland Curtis LNG export facility.

Looking at Europe, the Grain LNG import terminal operated by utility National Grid (LSE: NG) in the United Kingdom connects global supply of LNG to the European energy market and can also serve up to 20% of the UK's gas demand. Although it constitutes a minor portion of National Grid's total operations, it is nevertheless a good example of how to gain exposure to the LNG thematic.

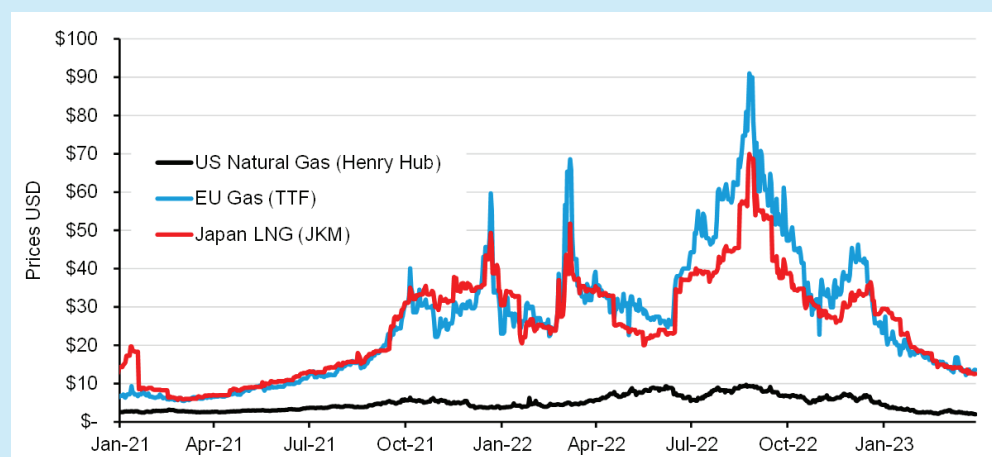
Of course, there are risks associated with LNG that can adversely impact infrastructure companies. While Ausbil's definition of Essential Infrastructure focuses on regulated and contracted volumes to generate earnings and cashflows as a way to mitigate price and demand volatility, market sentiment can still have an impact. This means that even if the income streams remain relatively stable, listed infrastructure companies may still experience a decrease in trading due to perceptions about the direction of gas prices or the strength of demand. Ausbil invests on a combination of quality, value and ESG considerations. Short-term volatility can impact share prices but over the longer term, where we believe the fundamentals of a business remain unchanged, this can create a disconnect between the share price and fundamental value.

Investing in LNG is an exciting and growing area of opportunity in the listed infrastructure space. Demand is growing, there are significant barriers to entry and companies enjoy long-term contracts that secure cashflows for many years. By selecting the companies with the best assets, superior market position and with the most secure long-term contracts, it can allow investors to tap into this long-term secular growth theme without taking on short-term commodity price risk.

United States infrastructure is benefitting from the need for global energy security

In 2022, there was a significant shift in the LNG trade because of the increased demand for LNG from Europe, which sought to replace its reliance on Russian pipeline imports. This surge in demand drove prices higher in Europe and led to the redirection of global LNG cargoes as the prospect of higher profits encouraged US suppliers with contract flexibility to deliver more fuel to Europe at the expense of other destinations. US LNG has remained competitive despite adding the cost of shipping due to the low cost of US natural gas supply. The shale revolution in the United States produced a massive increase in gas output from 2008 onwards through the use of horizontal drilling and hydraulic fracturing, or 'fracking', to extract fuel trapped in shale rocks, resulting in sustained low natural gas prices in the United States.

Chart 2: Key global gas prices



Source: US Capital Advisors, LLC. TTF is Title Transfer Facility. JKM stands for Japan Korea Marker.

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