



# FEEDING THE FLAMES OF OPPORTUNITY

**Javid Talib, Black & Veatch, USA,**  
discusses how the growing global supply  
of LNG is stoking new infrastructure  
opportunities in the industry.

**E**ven amid a perceived oversupplied global LNG market, production that is showing no sign of easing has countries with abundant reserves poised to raise their output, hoping to satisfy an increasing worldwide appetite for cleaner energy. One after the other, but ever so slowly, countries are building out their onshore LNG infrastructures or floating terminals, at times helped financially by producers and traders eager to bring natural gas to global markets where funding for such projects may be lacking.

Yet as that development presses on, only time will fully answer the vexing questions: 'Can emerging markets effectively absorb an expected supply surge of LNG, given their lack of terminals, pipelines, and other infrastructure?', and, 'to what extent will stakeholders join together in creating that necessary network to make use of the abundant natural resource that, in this age of worries about climate change, burns cleaner and pollutes less than coal?'

Some of the answers are already taking shape, as emerging countries are securing a bigger foothold of in the LNG market (in some cases with help).

In this reconfiguring, evolving market, dominant producers, such as Qatar, are stoking production as the US flexes its energy-producing muscle; becoming a net exporter of natural gas last year for the first time in six decades. On the import side, as the world's second-biggest LNG importer, trailing only Japan, China is expected to maintain an increasing appetite for natural gas as an alternative to coal in power generation, following its LNG demand spike of 46% last year. Furthermore, opportunities are blooming in Latin America as Mexico and other countries continue investing in infrastructure and working to unlock natural gas' full potential as a greener fuel.

## US emerging on global LNG scene

Many in the industry believe few countries stand to benefit more than the US, which is broadly viewed as perhaps having reshaped the global market for LNG. After decades as a net importer of gas, the US is now the world's largest producer of natural gas, with much of that output consumed domestically. As the US Department of Energy's statistical and research arm – the Energy Information Administration (EIA) – reported earlier this year, the nation's production of natural gas is expected to rise by 5% annually throughout 2021 before slowing to a yearly growth rate of 1% through 2050. By then, US production could reach 43.0 trillion ft<sup>3</sup> per year, a far cry from the 27 trillion ft<sup>3</sup> from last year.

All the while, continued advances in production technology are allowing US producers to set the table toward supplying more of the world. According to the EIA, American exports of natural gas quadrupled last year, reaching a total of 1.94 billion ft<sup>3</sup>/d from 0.5 billion ft<sup>3</sup>/d in 2016. Of this, more than half of the shipments went to Mexico, South Korea, and China (with Mexico taking in 20% of the total US exports that cumulatively found their way to 25 countries). The agency added that the transition to net exporter status happened as domestic natural gas production continued to grow, cutting pipeline imports from Canada and increasing exports by pipeline and as LNG. And the EIA expects that trend to continue, among other things thanks to growing demand from Mexico and the rising ranks of LNG shipments to the rest of the world as more export terminals come online.

As a nod to potential US global influence in the sector, roughly 80% of survey respondents to Black & Veatch's most-recent *Strategic Directions: Natural Gas Industry Report* noted that the US' emergence as a major LNG supplier is either extremely or somewhat likely to shape the global LNG market over the next half decade. More than 75% cited the emergence of new LNG markets in developing countries as extremely or somewhat likely to shape the world LNG market during that stretch.

Optimism about the US' stature in the LNG space is being driven by the fuel's low production costs and a profound shift in contracting practices – the latter amounting to a price restructuring that now challenges LNG's long-standing overseas suppliers. For example, India – which previously signed a 20-year deal in 2009 for LNG from ExxonMobil – in recent years has renegotiated the terms after its rate for LNG far exceeded spot market pricing. India has also reworked its contract with Qatar, the world's dominant LNG exporter.

## New LNG markets surfacing

Higher expectations of US relevance in the LNG sector come at a time of global oversupply. Qatar removed its decade-long moratorium on the North Field development in July of last year, setting the stage to potentially boost LNG output to 100 million tpy, up from 77 million tpy at that time. However, Black & Veatch report respondents believe that the glut will be short-lived and dwindle, making the case for new, bigger exporters such as the US. When asked when the current LNG oversupply will abate and foster a need for a restocking in that sector, more than 60% of the respondents estimated that would come by 2025.

Within the next five years, the survey showed, increased appetite for LNG is expected to come from south of the US border. 36% of respondents expected Mexico to up its demand for LNG over that span – an expectation underscored by the EIA, which last year said Mexico's national energy ministry expects to increase its natural gas use for electrical power generation by nearly 50% between 2016 and 2020.

The survey also showed that increased Latin American demand for LNG over the next half decade would come from Brazil, Central America, Argentina, Colombia, and the Caribbean. Additionally, other overseas markets continue to surface; Lithuania, for instance, received its first US natural gas shipment in 2017, marking a potential geopolitical shift in a European market predominantly supplied by Russia. Poland received its first LNG delivery from the US just two months earlier, and Israel has welcomed its first US cargo of LNG since exports began in 2016.

Asia's appetite for LNG has been undeniable – and growing, as traders target that region's Asia's booming gas markets to advance sales. Aside from a slight decline in 2015, Imports of LNG by China – the world's most-populated country – have steadily grown over the past decade, including a 33% surge between 2015 and 2016. It would appear this trend is expected to continue as the EIA has projected that in 2018 China will overtake South Korea as the world's second biggest LNG importer. This news has prompted new players, intent on serving China, to get themselves into the game.

In May, Cameroon in west Africa became the world's 20<sup>th</sup> LNG exporter after its first cargo of the super-chilled fuel, produced by Black & Veatch's patented PRICO® floating liquefaction technology, was loaded and shipped off to China from a Golar LNG production vessel moored off Cameroon's coast. The shipment was a key milestone confirming global market confidence in FLNG solutions.

Similarly robust demand for LNG has come from India, the world's fifth-largest importer. While seeking to stoke its own gas exploration, India knows that requires an infrastructure buildout, for now focusing on LNG-receiving terminals like one that is expected to begin accepting imports there as by the end of the year. Another such floating storage and regasification unit (FSRU), designed and built by Black & Veatch, is also in the works.

Bangladesh also is getting in on the action, taking it its first LNG payload earlier this year – from Qatar – to become the world's 41<sup>st</sup> LNG-importing country. In May, Reuters reported that the country ended talks with Swiss-based commodity trader Trafigura to install a floating LNG import terminal, instead advancing a separate project

with rival trader Gunvor. That barge is expected to arrive before the end of this year.

## Commercial viability drives FLNG decisions

Floating LNG (FLNG) solutions are a cost-effective, rapid-delivery alternative to traditional onshore facilities, which is particularly crucial in natural gas' current low-price environment. Commercial viability was named by survey respondents as the top driver for making FLNG investment decisions, followed by implementation costs, according to Black & Veatch's most-recent *Strategic Directions: Natural Gas Industry Report*. Cost and speed of delivery are top priorities for investors.

Although Cheniere Energy's Sabine Pass terminal in Louisiana and Dominion Energy's newly christened Cove Point plant in Maryland are the only continental US facilities for LNG exports in operation, four more domestic projects are scheduled to come online in the next two years, according to the EIA. These liquefaction capacity expanding efforts will drive total export capacity from 1.4 billion ft<sup>3</sup>/d to 9.6 billion ft<sup>3</sup>/d by 2020. At that point, based on construction plans, the EIA forecasts that the US is set to become the world's third-biggest LNG exporter by 2020; eclipsing Malaysia while remaining behind only Australia and Qatar.

Such investment expectation is reflected in the industry, where 42% of respondents to the survey rated natural gas

liquefaction as one of the most critical infrastructure investments for growth in the natural gas domain. That is second only to pipeline capacity, at 72%.

The adequacy of terminals, pipelines, power generation, and other infrastructure to not only receive but then distribute and use gas remains a challenge in many developing countries. Given the scale of the buildout of such projects, it spawns financing questions about the extent public, private, or a combination of these investments will pay for such upgrades. Lower-cost alternatives have surfaced, including ships able to receive LNG and convert it back into conventional natural gas, as well as economical configuration of gas-fired generation infrastructure.

Capitalising on the proliferation and popularity of natural gas will require innovative and more aggressive approaches to capital investment and committed project development, including comprehensive collaboration with end users in emerging markets over the entire LNG value chain. Those approaches by stakeholders must come sooner rather than later, given that it often takes years after the decision to make the investment to actually move cargo. Sophisticated, diverse entities with deep engineering, commercial, and political experience across multiple continents, are vital for the ideal integration of natural gas and electric projects needed to optimise abundant natural gas resources, diversify energy portfolios, and maximise return on investments. [LNG](#)