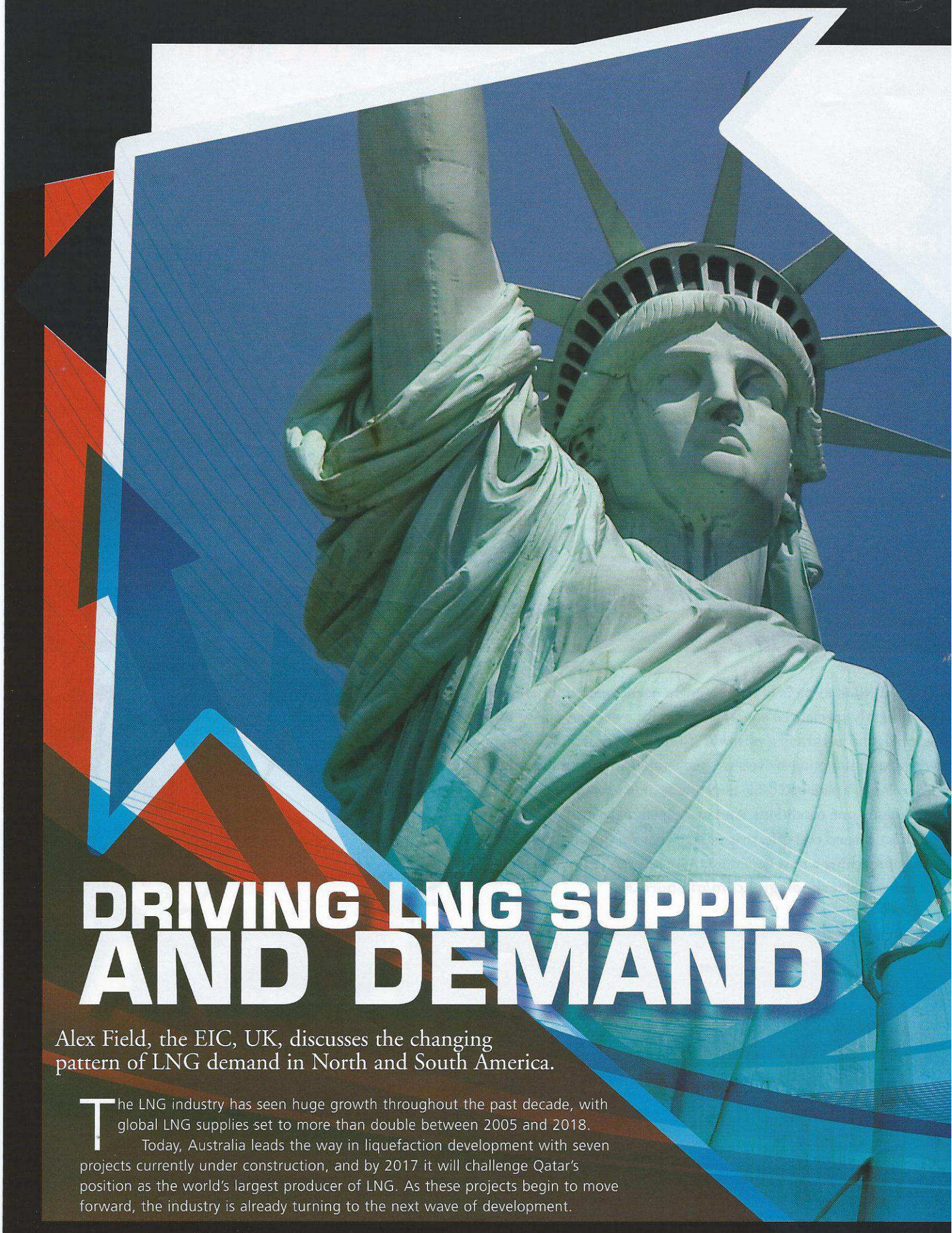

DRIVING LNG SUPPLY AND DEMAND

Alex Field, the EIC, UK, discusses the changing pattern of LNG demand in North and South America.

The LNG industry has seen huge growth throughout the past decade, with global LNG supplies set to more than double between 2005 and 2018.

Today, Australia leads the way in liquefaction development with seven projects currently under construction, and by 2017 it will challenge Qatar's position as the world's largest producer of LNG. As these projects begin to move forward, the industry is already turning to the next wave of development.

Over the next five years demand for LNG is expected to remain strong as demonstrated by several countries advancing plans to import and export LNG, with North and South America expected to become key drivers of both supply and demand.

With the race now on between Canada and the US to grab a slice of the lucrative Asian natural gas market, South American nations are working intensely to secure sufficient energy supplies to sustain their growing economies. All figures throughout this article, unless otherwise attributed, are from EICDataStream, the EIC's database of global energy projects.

The tides are turning

It is no secret that the US shale gas boom has led to a flurry of LNG export project proposals. During the early 2000s, the US was gearing up to be one of the world's largest LNG importers, with 47 certified regasification terminals capable of importing up to 133.4 million tpy (17.4 billion ft^3/d).

The rapid growth in shale gas production has silenced such expectations and rendered many of those investments obsolete. Today the US has 14.5 million tpy (19 billion ft^3/d) of import capacity, much of which remains idle with contracted volumes often re-exported to more lucrative markets. In 2011, the US utilised only 8% of its import capacity and this is expected to decline by a further 26% in 2012.

Today we see a very different outlook for US LNG, with 13 major export project proposals (Table 1), totalling 162.5 million tpy (21.2 billion ft^3/d) worth of capacity (US DOE). The first of these proposals, Sabine Pass in Louisiana, received approval from the Federal Energy Regulatory Commission (FERC) in April 2012 for the first two of four planned liquefaction trains, and is the first facility to receive approval since 1969 (Kenai LNG plant, Alaska).

At least nine proposed projects are planned along the Gulf Coast, set to take advantage of the Panama Canal expansion. Construction work on the expanded canal is scheduled for completion in 2014, at which point all but the largest LNG tankers will be able to move between the Atlantic and Pacific Oceans, taking up to 15 days less to reach markets on the Asian-Pacific Rim.

However, it could be some time before we see the next project approval. The US DOE is currently holding off on project approvals until it has completed a review on the impact that opening the US to the global gas market would have on natural gas prices.

The study has already run late, with the first portion still unfinished despite being scheduled for release earlier this year. Pressure on the US government is mounting with calls being made by Congress to accelerate the permitting process. Industry representatives have argued that the delays themselves could prove costly, since natural gas liquefaction facilities can take years to develop. The DOE is also unlikely to offer a quick permitting process even if the report proves favourable to exports.

This plays into the hands of neighbouring Canada, which is also vying to become a substantial LNG exporter over the next five years.

Canada gas exports

Canada has the potential to emerge as a global LNG supplier if four major projects proposed on British Columbia's west coast go ahead as planned.

Over the past two years the goal for producers in British Colombia has been to find a home for the vast

Table 1. Applications to DOE to export domestically produced LNG from the lower 48 States and project status
Source: DOE – EICDataStream

Company	Capacity (million tpy)	FTA application	Non-FTA applications	Status
Sabine Pass Liquefaction, LLC	16.9	Approved	Approved	Under construction
Freeport LNG Expansion, L.P. and FLNG Liquefaction, LLC	21.4	Approved	Under DOE review	FEED
Lake Charles Exports, LLC	15.3	Approved	Under DOE review	FEED
Dominion Cove Point LNG, LP	7.7	Approved	Under DOE review	Pre-FEED
Jordan Cove Energy Project, L.P.	9.2 & 6.1	Approved	Under DOE review	FEED
Cameron LNG, LLC	13	Approved	Under DOE review	FEED
Gulf Coast LNG Export, LLC	21.5	Under DOE review		FEED
Cambridge Energy	2.1	Approved	N/A	Pre-FEED
Gulf LNG Liquefaction Company, LLC	11.5	Approved	N/A	Pre-FEED
LNG Development Company, LLC	9.6	Approved	Under DOE review	FEED
Southern LNG Company, LLC	3.8	Approved	N/A	Pre-FEED
Excelerate Liquefaction Solutions I, LLC	10.6	Approved	N/A	FEED
Golden Pass Products, LLC	19.9	Pending approval	N/A	Pre-FEED

shale and tight gas resources found in areas such as the Horn River Basin and the Montney formation, estimated to hold up to 78 trillion ft^3 and 50 trillion ft^3, respectively. Dwindling domestic demand, low North American natural gas prices and oversupply in the US has forced producers in north-eastern British Columbia to look to the Asian-Pacific Rim as a potential market for their shale gas.

In response to the US LNG project proposals and to avoid losing out on opportunities in emerging markets, Canada has accelerated its infrastructure development, seeking new capital sources, and is looking to tie down long-term customers.

Total planned capacity currently stands at 31.2 million tpy among four separate projects: a 12 million tpy facility promoted by the LNG Canada consortium of Shell, Korea Gas Corp., Mitsubishi Corp. and PetroChina; a 10 million tpy facility by Kitimat LNG, which remains the most advanced of the proposed terminals and where site preparation work is being conducted; a 1.8 million tpy facility by BC LNG Co-operative; and a 7.4 million tpy project by Petronas and Progress Energy.

While both Kitimat LNG's and BC LNG Co-operative's projects have received regulatory approval from the National Energy Board (NEB), neither has secured financing or committed investment dollars for construction.

Although it is widely believed that these projects are likely to go ahead, they will only do so if offtake agreements are signed in the near-term.

Asian market

Asian demand for gas is widely perceived as one of the main drivers behind LNG development in North America. But is it as simple as 'build it and they will come'?

This certainly seems to be the case, particularly with Asian buyers eagerly eyeing US LNG development opportunities in the hope of obtaining cheap gas required to support their economic growth, with buyers from Japan, South Korea and India already signed up for US exports.

Although there does seem to be a compelling argument for large LNG exports to the region, concerns remain regarding target growth markets, particularly China, and its impact on future project credentials. Indeed, slowing economic growth, domestic gas production, alternative supply options and China's commitment to switch from coal to gas-fired power stations are all concerns.

Nevertheless, operators do not seem to be too worried by these issues and are developing both domestic and international supply chains.

South America

South America's most dynamic and open economies have embraced shipborne LNG as an important component

of their energy mix. Indeed, five regasification terminals have opened in the last three years with expectations for increased demand in the ever growing economies of Brazil, Argentina and Chile.

Argentina is in the process of drawing up plans for a third floating LNG (FLNG) receiving terminal offshore Buenos Aires province, whilst also expanding the Bahia Blanca facility, as the South American country continues to upgrade infrastructure to meet growing demand for natural gas imports. The two projects are expected to add approximately 6.7 million tpy (882 million ft³/d) of capacity.

However, in recent years the nation's energy import bills have spiked, while its oil and gas output has fallen, prompting the controversial state takeover of top energy company YPF earlier this year, which has impacted on project development.

Chilean energy supplier GasAtacama is also moving forward with its plans to invest around US$ 300 – 400 million in the 1.38 million tpy (180 million ft³/d) Mejillones FLNG regasification terminal, off the coastline of northern Chile. Unless the country is able to double its 2011 power generation capacity of 16 GW over the next decade and lower supply costs, it runs the risk of losing US$ 100 billion in long-term investment promised by the country's mining industry in the period to 2020.

Brazil remains one of the most closely watched South American nations, as it continues to explore and develop its substantial offshore hydrocarbon deposits. Indeed, Petrobras is building up to a decision on the infrastructure required to handle the subsalt gas, which is expected to become available from the Santos Basin from 2014.

In particular, FLNG plants are seen as an alternative to building a new deepwater pipeline that would stretch for 300 km from the coast to the offshore fields, bringing with it a cluster of technical challenges and environmental hazards. Although the consortium of Technip, JGC, Modec and Samsung were awarded the EPC contract in January 2012, the FLNG project was put on hold until a FEED study is completed, the scope of which covers a combined onshore liquefaction and regasification plant fed by the deepwater pipeline. The study is expected to reach its conclusion by October 2012, and will flesh out the options for a facility with a regasification capacity of 741 million ft³/d (5.7 million tpy) of gas or to produce LNG for export.

Whichever way Petrobras leans, Brazil will remain an active LNG purchaser, with its third and fourth import terminals planned to come online within the next three years. The US$ 706 million Bahia floating, storage and regasification unit (FSRU) will have a send-out capacity of 494 million ft³/d (3.73 million tpy) and is set to begin operation in August 2013. The similarly sized Aracruz FSRU is further off, and is set to come online in 2015.

New kids on the block

As some South American economies begin to thrive, bolstered by fresh gas supplies, others are now beginning to feel the pinch as domestic markets consume excess gas to fuel growing economies. Subsequently, a further two South American countries are now set to enter the LNG market before the end of 2014.

Colombia's recent focus on offshore exploration has enabled it to step into the LNG limelight with the development of the world's first bi-directional small scale floating liquefaction regasification and storage unit (FLRSU). Project operator Exmar awarded Wison Offshore & Marine the EPC contract for the production platform in June, while Black & Veatch Corp. is to provide the topside modules.

The facility will receive its feed gas from the La Creciente Block and will be capable of liquefying 70 million ft³/d (0.54 million tpy) for export. The project will also see the construction of an 88 km natural gas pipeline from the La Creciente gas field to the coastal town of Coveñas, which will supply the domestic market.

Uruguay is also set to enter the LNG importing market with its floating Del Plata terminal, located in Montevideo Port, set to import 353 million ft³/d (2.7 million tpy). The development has caught the eye of several big players, including BG, Total and Gazprom, who have all expressed an interest in building the project.

The terminal will allow Uruguay to shed its reliance on Argentina, which started reducing gas exports to Uruguay in 2004 because of shortages, forcing Uruguay to look for other suppliers.

Conclusion

LNG is set to play an ever growing role in global energy supply as the drive continues towards lower carbon emissions and economic growth, with both North and South America poised to play a key role in the future LNG market.

With the majority of US projects nearing the completion of their engineering stage, many investors are now holding their breath in anticipation of what regulators have to say. The question is: will the US become the third major supply centre after Qatar and Australia? Many believe it will, but not all projects will be given the go ahead.

Meanwhile in South America, where once an interdependent relationship existed between countries, now sits a series of independent nations all vying to secure enough energy to supply their growing economies. **LNG**

Sources

1. Department of Energy: http://fossil.energy.gov/programs/gasregulation/reports/Long_Term_LNG_Export_Table_08_17_12.pdf, 17 August 2012.
2. EIC Datastream: http://www.the-eic.com/becomeamember/exploreeicdatastream.aspx

Note

The EIC's global online energy database, EICDataStream, which is available to members, tracks over 9500 projects worldwide and provides up to date information regarding any LNG projects mentioned in this article or around the world.