

The Lion City roars

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Singapore's new LNG hub is poised to shake up Asia's gas trading dynamics, offering the energy-hungry region greater volumes, at a cheaper price- and will make the city state a key player in the global market writes Damon Evans

SINGAPORE has, for more than 200 years, prospered as a major trading hub for Asia. With significant regasification and liquefied natural gas (LNG) storage capacity added to its commercial arsenal, Singapore is now poised to take a major role in reshaping the market dynamics of Asia's gas trade.

The Lion City, as it is known locally, plans to capitalise on its geographic position to take advantage of LNG arbitrage opportunities, changing trade flow patterns and the new economic drivers that are shifting resources around world, Neil McGregor, chief executive of Singapore LNG (SLNG), told *Petroleum Economist*.

Asian buyers have paid a premium for the super-cooled gas because of limited domestic energy resources. This premium can be double, and sometimes quadruple, the price paid by consumers in other parts of the world. But with a trading hub and a number of regasification facilities soon becoming available, the prospect of a more fluid LNG market could provide more options across the Asia-Pacific basin.

Many industry proponents scoffed at Singapore's ambitious LNG trading plans when they were first mooted a couple of years back. Nevertheless, it is clear Singapore means business. Its maiden LNG terminal is due online in the second quarter of 2013, and the island nation is pushing ahead with aggressive expansion plans.

The terminal, operated by government-owned SLNG, primarily aims to secure gas resources to underpin the nation's economic development. This will make Singapore, with a population of around 5 million people, less susceptible to price as well as supply-side risk.

SLNG's plant will have an initial throughput capacity of 3.5 million tonnes per year (t/y) when it opens for business. This will increase to 6 million t/y by the end of 2013, far exceeding UK gas player BG Group's deal to supply Singapore with 3 million t/y for domestic use. Storage capacity will be around 540,000 cubic metres (cm).

So far, under its aggregator agreement with Singapore's Energy Market Authority (EMA), BG has contracted long-term supply of around 2.65 million t/y for up to 20 years out of its franchise 3 million t/y target. The EMA is currently studying options for the spare 3 million t/y capacity and is in talks with BG and other international gas players to assess business opportunities.

Further expansion is planned over the decade that will see throughput hit 9 million t/y with a storage capacity of more than 700,000 cm. Overall, SLNG's master plan envisages an eventual average throughput capacity of 15 million t/y and storage of some 1.5 million cm. It does not end there. The terminal includes two large Q-Max jetties – which will allow Qatar's jumbo 260,000 cm capacity tankers to dock – as well as a third jetty built to handle smaller regional tankers. And unlike other terminals that were not specifically designed with trading in mind, SLNG is considering adding tank segregation to avoid co-mingling gas, as well as blending cargoes to meet differing specification needs of customers in the region, during the next development phase.

SLNG will also absorb any boil-off. LNG is stored at its boiling point and inevitably small quantities evaporate over time, despite well-insulated storage tanks, meaning the energy value of the stored LNG diminishes over time. But, SLNG will commercialise this boiled off gas by siphoning it into the domestic market. From a trading perspective, it's important to have this net-off concept so that traders always get the full energy component of their cargo back when it's exported. Arbitrageurs storing cargoes in holding tanks are therefore not susceptible to diminishing value caused by any boil-off.

The project will not only support a future gas market framework under design by the EMA, but, more importantly, it will allow Asian consumer nations access to competitively priced and diversely sourced LNG.

SLNG's trading model is predicated on the pricing arbitrage between Asia, Europe and the US. Currently there is a disconnect between the three continents, with LNG fetching near \$20 per million British thermal units (Btu) in Asia, while the NBP price in Europe is roughly half that.

Platts June LNG Japan Korea Marker (JKM) was up 40% year-on-year to an average \$17.423/million Btu due to high North Asian demand. It marked the highest monthly average since assessments began in February 2009. And the spread between the JKM and the NBP widened to a record average \$8.281/million Btu, from an average \$6.454/million Btu a month earlier. The JKM premium over US Henry Hub gas futures was \$15.188/million Btu, compared with \$13.753/million Btu a month earlier.

Demand is largely driven by Japanese utilities as they prepare to face a summer without nuclear power generation and are using LNG as a base-load fuel.

On current pricing, Singapore-based consultancy Tri Zen estimates that US LNG could be landed in Asia at around \$10/million Btu compared with long-term Asia oil-linked prices of around \$15/million Btu, a



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saving of about \$15 million per 60,000 tonne cargo. However, Tri Zen cautions that although US gas prices are depressed today, once exports start in 2015 and US demand recovers, they will almost certainly rise.

McGregor believes the market will realign itself to the norms seen in Europe or the US over the longer term and expects to see prices in Asia return to around \$10/million Btu. Until early last year, spot cargoes were trading into Asia around the NBP price range, before Japan's need for extra LNG following the Fukushima Daiichi disaster dried up the market.

This realignment will not happen anytime soon. But SLNG believes the market is heading that way, with more contracted LNG increasingly available for diversions as Europe's economic health remains shaky, which is in turn stifling gas demand. This resulting oversupply will need to be displaced and, given the gas glut in the US, it's logical the gas will find its way to Asia, McGregor says.

And it seems he could be right. European LNG consumption shifted downward by 14.6 million tonnes in the first quarter, continuing a trend that started last summer. Imports into the world's third largest importer UK fell by nearly half while shipments to fourth largest buyer Spain fell by over a third. Investment bank Barclays Capital says the weakness in demand is rooted in the economic slowdown seen in the past three quarters, the drop in carbon prices that had reduced the competitiveness of gas as a fuel into Europe, and the increasing competition of pipeline gas.

But the Asian premium will continue until liquidity improves, says, Tony Regan, principal consultant at Tri Zen. And he does not see this happening before 2015, when additional US and Australian production starts up. Even then, there is unlikely to be an immediate effect on pricing, as supplies will initially only trickle into the market.

Elsewhere, SLNG's analysis suggests Qatar, which is the world's largest producer of LNG, has some spare capacity, and that, coupled with future US and Australian production, means there will be a potential oversupply, says McGregor. Several traders *Petroleum Economist* spoke to said they would not be surprised if a Qatari cargo is landed and aggregated through Singapore by portfolio players.

Peter Coleman, chief executive of Australian LNG producer Woodside Petroleum, highlighted the changing market dynamics, when he said the biggest issues facing Asia-Pacific LNG demand for Australian gas were whether Qatar would divert Atlantic-bound LNG to Asia and how quickly the US would export shale gas.

He told the annual Australian Petroleum Production & Exploration Association (APPEA) conference in mid-May that Qatar is showing a clear desire to direct more LNG into the region. Qatar is currently getting a netback of about \$15.65/million Btu based on the latest spot sales into Japan and \$14.35/million Btu into India, according to data from Tri Zen.

But it is changing trade flow patterns that will be crucial for Singapore's emergence as a trading hub. LNG volumes into Asia are predicted to surge 86% from 127 million tpy in 2011 to 236 million tpy in 2020 and more than double to 270 million tpy by 2025, according to consultancy Facts Global Energy (FGE).

Today, the three legacy markets of Japan, South Korea and Taiwan make up about 83% of regional demand. The newer markets of China, India and Thailand make up the balance. However, by 2020, it's likely that the number of markets in Asia will double from six to at least 12, with the addition of Singapore, as well as traditional producers Malaysia and Indonesia, with possibly Pakistan, Bangladesh, Vietnam and the Philippines, Alexis Aik, head of global gas at FGE says.

The bulk of the expansion in LNG trade will be focused around these new and emerging markets. By 2025, it's expected that collectively, the new demand centres will be roughly the same size as the established markets. But they are unlikely to be homogenous and SLNG is betting the expanding number of buyers will have different needs and approaches towards procuring LNG.

Over the next five years, regasification projects in countries such as Thailand, Malaysia, Singapore, Indonesia and Vietnam are expected to deliver 37 million tpy of regasification capacity, according to Abdul Rahim Hashim, president of the International Gas Union. More receiving terminals equal more delivery points, providing the basis for the formation of a regional market. But Hashim warns that Southeast Asian economies must restructure and liberalise their electricity and gas markets to reflect the true cost, as well as value, of gas. Otherwise there will be little incentive for third-party players to enter the business.

The increasing availability of divertible LNG will play its role too. Over the past five years, Asia's short-term demand has ballooned due to seasonal shortfalls and nuclear outages. So much so, it's now running at slightly more than 20% of imported volumes, says Aik, adding that Singapore's proximity to all the Asian buyers stands the nation in good stead to benefit from its position.

The Lion City is ideally placed to balance expanding supply and demand, and, as new flows emerge bi-directionally between East and West, as the Americas and East Africa develop supply infrastructure, more trade will flow through Asia – and some of that will be via Singapore.

McGregor believes that when short-term market volumes hit a threshold of around 30% there will be a good chance that a regional spot market will start functioning. Indeed, divertible LNG from the Atlantic basin has become a regular means of balancing demand and formed a large part of the volumes sold to Japan in the past year. The next logical extension would be to see it established as a regular short-term trading activity.

Even if trading volumes are negligible, the opportunity for independent price discovery becomes a real possibility, says Tilak K Doshi, head of energy economics at Singapore's Energy Studies Institute, adding that this would shake up existing long-term oil-linked LNG contracts.

Doshi says Singapore's LNG hub concept will be a key driver in the emergence of the regional trade. But whether the hub becomes a major indicator for a regional gas spot market depends how liquid the market becomes. Eventually, an Asian pricing point could emerge in Singapore, but new markers can take 10 years to be accepted, warns Regan.

Positively, liquidity has been increasing on the back of rising supplies. Over the past five years, the number of long-term LNG sources East of Suez has increased from seven to 11. By 2015, it will increase to close to 20, with the addition of Pluto, Gorgon and the Gladstone projects in Australia, as well as Papua New Guinea and Donggi, in Indonesia.

Indirectly, the advent of Singapore's trading hub and the resulting connectivity to the global gas markets poses a direct threat to the profit margins of the traditional LNG producers. Historically, the market has been controlled by a handful of big players. And until a more fluid and transparent market unfolds, these big producers will attempt to maintain high oil-linked Asian prices.

As one Asian-based trader noted, the major producers tend to tighten up supply as they don't want to be

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Gas Oil	Jun12	911.5	908.25	4475
Heating Oil	Jun12	-	2.8288	-
Gasoline	Jun12	2.9009	2.8929	2
UK Nat Gas	Jun12	53.25	52.75	1100
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forced to cut prices. Effectively, they strive to keep the market tight to counter balance what buyers in Asia want to pay. But as the spot market expands and as smaller international firms play a role in the LNG export business, there will be room for adjustment.

And once Singapore meets its domestic demand, spare regasification capacity will be used to offer new services in Asia, such as storage, reloads and redistribution of LNG to other markets. This sets the scene for inter-month arbitrage trading, as well as some break bulk sales within Asia.

Traditional point-to-point business models have already started to evolve as the sector matures, but this transition has been temporarily halted by the steep rise in LNG prices after last year's Japanese earthquake and tsunami.

But shifting macro-economic trends and a global rebalancing begs the question: how long can Asia tolerate high LNG prices? As Asia's economies power ahead, it might not simply be a question of the desire for Asian LNG to be priced at or near-parity to volumes traded in the west, but a real necessity to avoid taking the steam out of these expanding nations, thereby cutting their projected appetite for LNG.

In terms of LNG prices, most studies have suggested that the only way for LNG to thrive is for it to be priced between \$6/million Btu and \$8/million Btu, says the International Gas Union.

Asia-based analysts predict the surge in Asian LNG demand, led by China and India, will be strongly correlated to price and the need for it to be competitive against other fuels. These countries they say will almost certainly strive to achieve more flexibility in their deals than is generally offered today, opening the door to short-term trades, that fit with sudden changes in demand and price.

In Asia, market segmentation – a precursor to the commoditisation of LNG – is already happening. The market is starting to segment on price, as well as on the quality and specification of cargoes.

The bulk of Asia's LNG demand is driven by Japan, South Korea and Taiwan, which pay a premium for security of supply. Then there are the emerging markets of China and India, which are price sensitive and could absorb more volumes if the price is lower. And finally, the swing markets, such as Singapore, Malaysia, Thailand, and later Vietnam. These countries plan to meet their needs through a mix of term, spot and intermediate contracts depending on price, as well as seasonal market demand.

Aside from price segmentation, the market is diverging on the quality and specification of cargoes. Rich cargoes have traditionally supported North Asian markets, but lean stems – high in methane but lacking gas liquids – are more likely to support the newer markets.

In the past, gas was essentially a by-product of oil production at the now ageing fields across Asia and the Middle East, which gave it a higher octane and richer quality. In the future, much of the spot availability will be leaner as it's sourced from coal-bed methane (CBM) and shale gas.

Unfortunately, Japan and South Korea have strict specification requirements, typically demanding rich gas with a high calorific value. And, until recently, potential buyers of LNG had some flexibility in the range of natural gas properties they were able to accept. In many cases, the LNG buyer sold electric power and not natural gas, and therefore did not need to meet the needs of natural-gas consumers.

But in the newer markets, the end-user specifications lie outside the range of LNG produced at many sites. For instance, an industrial user's specification is sensitive to the end product it makes, whereas a power producer could be sensitive to the amount of carbon or nitrogen in the mix, due to local emissions controls.

SLNG aims to address these rising gas interchangeability challenges as LNG moves towards commoditisation. The firm's blending services will tailor specific specifications to individual markets by co-mingling rich and lean gas stems.

Understandably, a number of Asian countries, including economic powerhouse China, want to facilitate the regional growth of LNG trade. There are plans for smaller satellite LNG facilities, forming a web of infrastructure over the wider region, as well as for fast-track LNG import projects with liquefied natural gas regasification vessels as well as floating storage and regasification units to meet rapidly expanding local gas demand.

The blueprint favours a hub-and-spoke model, whereby large shipments can be physically stored at an intermediate point such as Singapore. With bulk cargoes that can be broken down and redistributed to regional destinations that either cannot afford to build large LNG storage terminals, or do not have adequate port facilities to handle giant LNG tankers, such as Taiwan.

These markets will reap savings on long-haul transport if an 180,000 cu tanker or even a Q-Max LNG cargo is transhipped by an arbitrageur through a trading hub such as Singapore and redistributed by smaller shuttle tankers throughout the region.

To this end, Singapore has the essential financial infrastructure in place for LNG trading. And a critical mass is developing around the island nation with more than 15 LNG trading houses setting up shop in the last four years. Singapore already has the paper, financial and market side of the business in place. Now SLNG is adding the physical capability to enable the formation of a regional supply-chain model.

Certainly, producers have a vested interest in selling at the highest price possible, but if nuclear power comes back online in Japan, as many believe it has to, coupled with the flood of LNG exports foreseen from Australia and the US, it will be a whole new ball game in Asia. Once it starts rolling it's not going to stop.

And Singapore aims to be the balancing point as well as the catalyst to facilitate Asia's regional LNG trade. Without such a hub, a regional trade and local price discovery have no chance of materialising. This change will not happen overnight, but the writing is on the wall. And it's now a matter of when, not if, a vibrant LNG trade emerges in Asia.

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