Wood Mackenzie
A Verisk Analytics Business

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LNG: 2015 in review

01 Production growth

Global production hit 250 mmtpa

02 Mega mergers

Shell initiated BG takeover

TEPCO and Chubu Electric formed JERA

03 Demand weakness

South Korea: (↓11%, 3.9Mt)

Japan: (↓4%, 3.7Mt)

China: (↓1%, 0.2Mt) *First ever decline*

04 Emerging markets

FSRUs enabled Egypt, Jordan and Pakistan to import 5.8 Mt

05 Lowest 2015 prices

Brent: US$38/bbl

Japan LNG Spot: US$6.90/mmbtu

Shipping: < US$30k/day

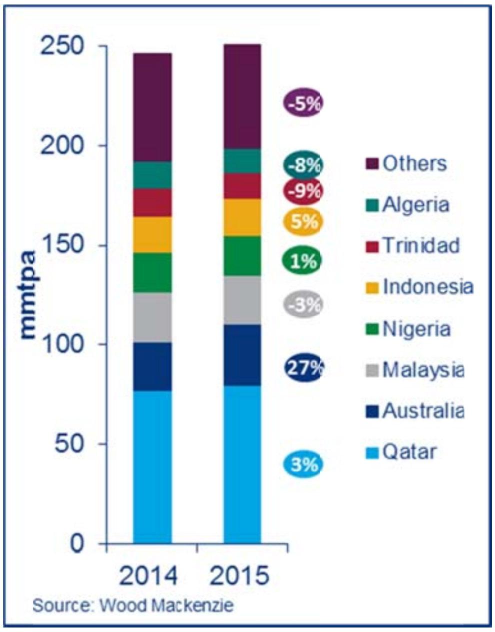
Executive summary

In 2015, the weak market environment and the impending LNG supply glut forced companies to adjust strategies and tactics. Buyers were increasingly uncertain of their demand requirements and exercised more caution in contracting. Sellers have thus started to look further afield to emerging markets in Middle East/Africa and new buyers in Asia. At the same time, the interest in Europe grew as both buyers and sellers looked towards a liquid market in anticipation of a wave of new supply. The impact of low oil prices was particularly acute on the LNG sector as the price of contracted LNG fell in line with oil, which capped the price of spot LNG delivered into Asia.

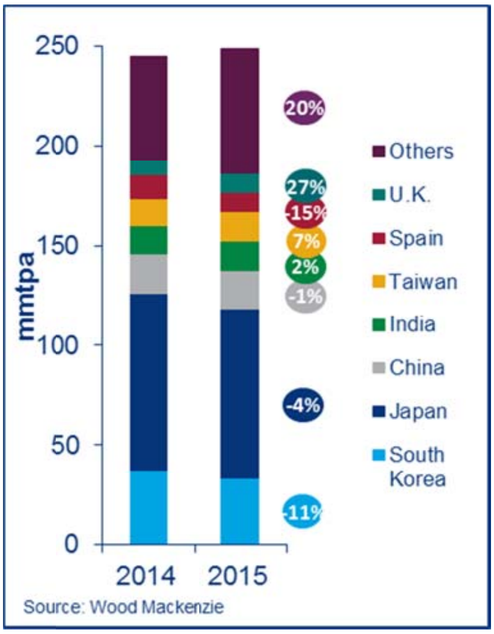
Supply has grown and production reached 250 mmtpa, a 4 Mt increase over 2014 despite the loss of Yemen production. The key driver was new Australian supply, with QCLNG and GLNG starting up and becoming the first in a new wave of LNG trains which would see the nation become the world's largest LNG supplier by 2019. The prospect of more supply from the US also increased as project sanctions of US LNG plants continued its blistering pace in H1 2015. However, the pace of global FIDs ground to a halt in H2 2015 as the low oil price and poor market conditions challenged project viability.

The uncertainty in Asia's LNG demand outlook gripped the industry. With a weakened economic outlook and competitive fuel choices, South Korea, Japan and China have all experienced a decline in LNG imports in 2015. Consequently, much of the focus was cast upon 2nd/3rd tier buyers using FSRUs such as Egypt, Jordan and Pakistan.

Global LNG exports 2014 vs 2015



Global LNG imports 2014 vs 2015



In 2015, Atlantic to Pacific LNG flows fell by 16%, from 96 mmtpa to 82 mmtpa. As the difference in Atlantic/Pacific spot prices depleted, companies with Atlantic supply were increasingly drawn to the European markets. Companies responded in a number of different ways to the supply demand outlook. For sellers, consolidation was a key theme. Shell's planned acquisition of BG will, when finalised, create the largest supplier of LNG, meeting 15% of global LNG demand in 2019. For buyers, the need to increase flexibility on existing contractual terms resulted in some sellers reluctantly offering concessions. Buyers also exercised greater caution and signed smaller deals on a shorter term basis.

Finally, weak demand affected all the commodity markets, translating into lower oil prices, LNG prices and shipping rates. Brent oil prices averaged US$38/bbl in December while average Japan LNG spot prices dropped below US$7.0/mmbtu in the shoulder months of February and October. Severely low prices impacted commercial decisions. This pushed suppliers to move towards a portfolio approach to sanction new projects and supplement supply. The marketing of Henry Hub LNG was also challenged as differentials against oil indexed LNG narrowed. Spot/short-term charter rates fell to below US$30,000/day, the lowest level since 2010. This resulted in new ship orders falling from 66 in 2014 to only 19 in 2015.

Supply: Global production hit 250 mmtpa, led by growth in Australia

Australia began its ascent to top of the global supply charts

In 2015, two CSG LNG projects on the east coast began operations. Australia's LNG export increased by 6.5 Mt from 24 mmtpa to 31 mmtpa with first cargoes for QC LNG and Santos' GLNG in January and August respectively. Future growth may be slower than expected. Chevron further delayed the start of the Gorgon LNG facility to Q1 2016 from its previous target of end-2015. INPEX also announced a delay of Ichthys LNG to late 2017 and an upward cost revision of 10%. However, at the same time, it sought to mitigate this by increasing nameplate production capacity from 8.4 mmtpa to 8.9 mmtpa.

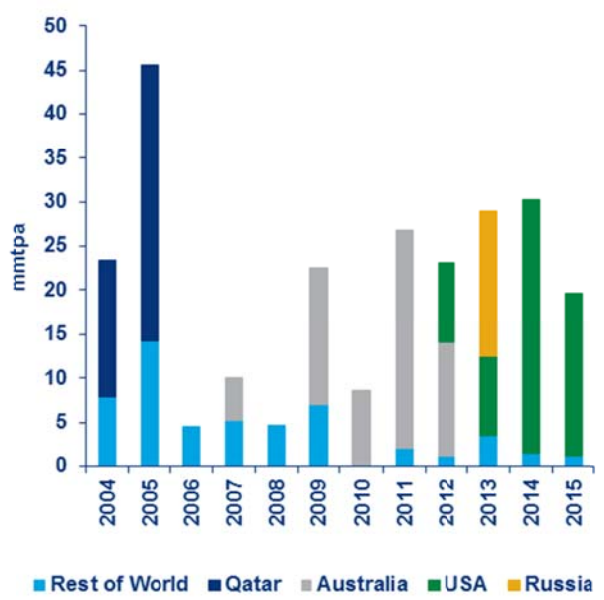
US FIDs on new supply heavily weighted to H1 2015

In North America, 18.5 mmtpa of capacity was sanctioned, most notably by Cheniere Energy, which took Final Investment Decision on two trains at Corpus Christi and a fifth train at Sabine Pass. Freeport LNG also took FID on a third train. In June 2015, Cheniere Energy agreed to partner Parallax Enterprises to develop 10 mmtpa of mid-scale LNG via Live Oak LNG and Louisiana LNG.

The momentum to move ahead with an LNG export project in Western Canada continued despite the weak market conditions, as operators were motivated to capture limited resources that could yield significant savings for the 1st large-scale export project. PETRONAS announced a "conditional FID" on Pacific NorthWest LNG in June 2015, pending a federal environmental approval. Woodfibre LNG and LNG Canada had also continued to pursue relationships with First Nations and sought regulatory approvals.

Other US projects also made progress in 2015. Magnolia LNG received its FERC draft approval and awarded an EPC contract to KBR and SK E&S for its mid-scale project in November 2015. Shell divested 49% of its equity interest in Elba Island LNG to Kinder Morgan, but committed to purchase the full capacity rights of 2.5 mmtpa and Lake Charles cleared its final regulatory hurdle when it received FERC approval in December.

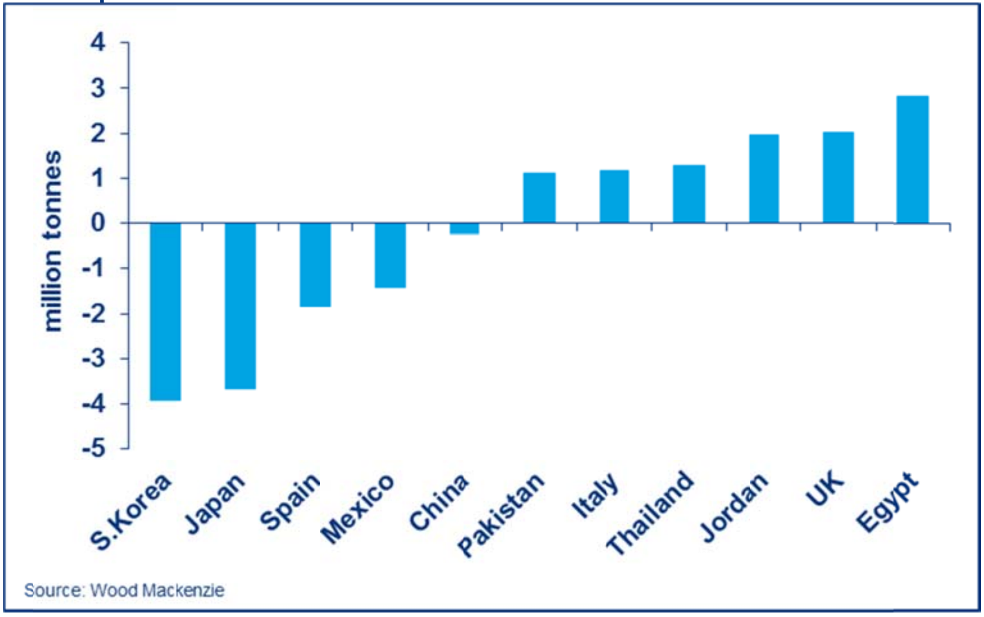
FID by region



Source: Wood Mackenzie

Demand and Trade: North East Asia LNG demand fell by 4%

LNG imports 2014 vs 2015



Lower demand in key Asian markets…

LNG demand in key Asian markets declined. In Japan, Kyushu Electric restarted two nuclear reactors at Sendai in August and November. Combined with economic malaise and growing solar capacity, this led to a 4% year on year decline in demand to 85 mmtpa. South Korean LNG demand also declined significantly falling 8% to 34 mmtpa, due to weaker power demand overall, but also because of stronger nuclear and coal power output.

In China, LNG demand growth declined by over 1% to 19.5 mmtpa, after years of double digit growth. While a lower GDP contribution from investment and over-capacity in the industrial and construction sectors contributed to the slowdown, the key driver was high city gate gas prices and low oil prices. As crude oil prices dropped by more than 50%, oil products were more competitive given the high regulated gas prices. In November, the NDRC reduced city gate gas prices by US$3.10/mcf across the country (equal to a reduction of approximately 30%) to stimulate demand growth. However, LNG demand is unlikely to rebound immediately due to the current margin between oil and gas prices.

…offset by demand from new emerging buyers

New importers were crucial to balancing the LNG market in 2015 and offset some of the decline in demand from major Asian importers. Three countries, Egypt, Jordan and Pakistan, started importing LNG in the first half of the year via fast-tracked FSRU developments. Overall, these new entrants added 5.8 Mt of LNG demand in 2015.

Tenders issued by these new importers received overwhelming interest. Most remarkably, over 2 Mt of LNG was sourced from Qatar. Qatar has adopted a practical approach to partner commodity trading companies rather than cede market share to other suppliers. In 2015, Egypt, Jordan and Pakistan awarded more than 350 cargoes in total (>20 Mt) for delivery through 2020.

The Americas experienced another year of high LNG imports

LNG imports in the Americas were estimated at 22 Mt in 2015. In particular, Brazil experienced a severe drought that saw reservoir levels, which caused hydroelectric output to decline and forced the system operator to call on gas-fuelled thermal generators to fill the shortage. Argentinean LNG imports followed a similar pattern to historical years, peaking in mid-2015 as power demand climbed due to cooler temperatures.

Flows from Atlantic to Pacific fell significantly

Atlantic volumes were squeezed out of Asia with the availability of more proximate supply from Australia and PNG. The drop in cross-basin trade was also exacerbated by weak Asian demand in 2015. Japan spot prices stayed flat throughout the year, within a narrow band of US$7-8/mmbtu on a monthly basis. This resulted in a depleted differential between Atlantic/Pacific spot prices . Consequently, the improved netback of shipping LNG into Europe as an alternative market was more attractive, especially to companies with Atlantic supply.

European imports for 2015 were estimated at 37 Mt (net), up 14% year on year. The increase on 2014 was driven by a strong start in Q1 2015, a 38% y-o-y rise. The growth was most marked in the liquid NW Europe and UK markets, but the decline of re-exports from Spain was also important.

Additional sales to North East Asia were relatively low, as buyers have generally been well supplied through long-term contracts. In the absence of demand from these traditional markets, suppliers looked towards marketing spot/short-term volumes into emerging markets like Egypt, Pakistan, India, Brazil, Argentina and Europe.

Regas infrastructure: Access to Europe gains in importance

Access to Europe is increasingly important for LNG suppliers

Driven partially by weaker Asian demand and by expectation of displaced new US supply, 2015 saw an increasing interest in European regas. Companies were busy securing put options, swaps or secondary capacity to access regasification terminals in Europe and a number of deals were announced in 2015.

- Shell secured secondary capacity from RWE at GATE;
- KOGAS completed a put option deal with EDF Trading for LNG into Europe including cooperation on supply optimisation; and
- Cheniere concluded 2 put option deals with EDF Trading at Dunkirk and one with Engie at Montoir.

Corporate activity: Consolidation among suppliers and fragmentation in markets

Consolidation of suppliers

The biggest corporate news of 2015 was Shell's planned acquisition of BG, announced in April 2015. The combined entity would be the largest supplier of LNG, meeting 15% of global LNG demand. With regulatory approval from China, Australia, USA, EU and Brazil secured, the deal is now only pending shareholder approval via a final meeting scheduled to take place in end-January 2016.

Other consolidation attempts were seen in both PNG and Australia. In February, Total's acquisition of Interoil's Elk/Antelope field was successfully approved following the favourable arbitration decision against Oil Search.

Consolidation of buyers

Consolidation amongst buyers took on the form of corporate alliances that was initiated in 2015. These agreements enhanced optionality, risk diversification and supply optimisation. Within Japan, the TEPCO-Chubu Electric merger was implemented to strengthened corporate balance sheet and this resulted in the formation of JERA, the world's largest LNG buyer.

Changing corporate behaviour in respond to oversupply and low oil prices

Managing over-contracted positions in face of low demand and weak commodity prices were a priority for buyers. Contract sanctity was threatened and we expect some sellers to reluctantly allow flexibility in long term contracts.

Another visible buyer trend was shorter-term contracts with smaller volumes. Some buyers were over-contracted and struggled to absorb supply. In such market conditions, a majority of deals signed in 2015 were between 1-7 years with volumes of less than 1 mmtpa as buyers were reluctant to contract more volumes.

Henry Hub indexed contracts also fell out of favour with Asian buyers with only two minute Henry Hub linked agreements signed by Toho Gas and Mitsubishi Gas Chemicals in 2015. The fall off in interest could be attributed to the decline in oil prices that saw cheaper oil indexed contracts compared to Henry Hub linked contracts.

Despite mega-mergers, markets were more fragmented

Fragmentation of the market, particularly in Asia has occurred as numerous new buyers emerged in China, Middle East, South Asia, South East Asia and the Americas.

With typically small packets of LNG demand, the prospects of securing large off-take on a long-term basis have become harder. This made financing of new projects more difficult as emerging buyers do not provide the same level of credit support. Consequently, traditional suppliers were pushed towards a portfolio approach to build up supply and sanction new projects.

Buyers also turned towards short-term tenders as a tool to deal supplement long term contracts. Regular tenders were held in South America, India, Thailand, Pakistan, Jordan and Egypt to procure short-term volumes.

Shipping: Charter rates continued to plunge

Spot/short-term charter rates fell to new lows in 2015…

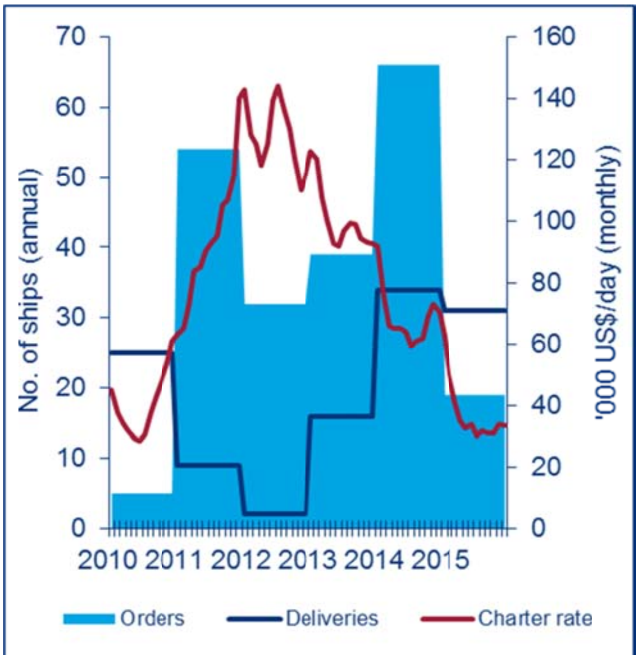
LNG shipping capacity expanded rapidly with 31 new deliveries in 2015 increasing fleet capacity by 8.2%. The larger fleet coupled with weak demand sent spot/short-term charter rates to their lowest levels since 2010. Rates fell from just below US$70,000/day at the start of 2015 to below $30,000/day in July. Rates recovered marginally ahead of the northern hemisphere winter but by the end of the year even this weak recovery was running out of steam. Three of the biggest independent LNG ship owners (Dynagas, GasLog and Golar) reacted to the market by placing their modern, non long-term contracted, vessels into a pool. The appropriately named "Cool Pool" however, could only provide little comfort for LNG ship owners as the market fundamentals were too strong to reverse the fall in freight rates.

… but orders for new ships continued to be placed

The state of the spot/short-term charter market should deter speculative orders, but perspective owners and charterers were looking beyond the current surplus shipping capacity to the advent of US exports to provide additional demand for LNG shipping. Larger, more fuel efficient ship designs were also tempting owners and charterers to look at new vessels rather than potentially available older ships. But with little sign of owners being willing to scrap older vessels, LNG shipping will go through a prolonged period of overcapacity.

In total, 19 new LNG vessels (above 100,000 m³ in capacity) were ordered in 2015; of which 12 were dedicated to US export projects and three were FSRUs**.** This is a sharp decline from the 66 vessels ordered in 2014.

LNG freight rates vs orders vs deliveries



Source: Wood Mackenzie