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LNG in 2018: positive evolution

For years, LNG analysts have been near unanimous: a glut of LNG is imminent. The spectre of this supply onslaught has delayed producers' investment in liquefaction capacity and emboldened buyers to seek new contract terms. But the reality is more complex. Supply growth is indeed robust – and much new liquefaction capacity will be added in 2018 and after. But the market is not as lopsided as forecasters expected. New pockets of consumption are emerging. Demand growth is stronger than at any point in five years. Any near-term loosening of balances should be short-lived. Project deferrals mean demand will, sooner than expected, outmatch supply. The fundamentals of natural gas (its abundance; its key role alongside renewables in less carbon- and pollution-intensive power generation; and its increasingly fungible market) will promote uptake: any price softness in 2018 will only spur more consumption. In short, producers and consumers alike may start to realise that, if it appears at all, the much-feared LNG glut could be a brief phenomenon.

Looking back: what happened to the glut?

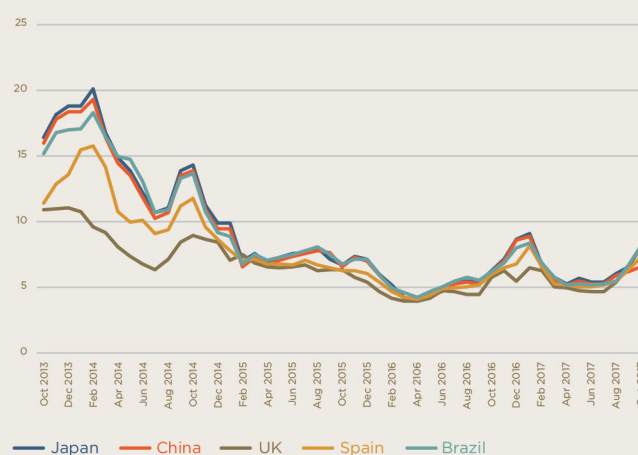
For more than three years, LNG market commentary has been consistent: a wave of new supply is coming that will overwhelm demand and depress the market. LNG prices have indeed suggested some looseness. In February 2014, landed cargoes in Japan fetched \$20 per million Btu. The prevailing Asian price in 2017 has been around \$6.40/mmBtu (see Figure 01).

The fall in crude oil prices since 2014 is partly to blame: Brent-indexed LNG followed oil's track lower. But supply has risen strongly too. If Qatar dominated LNG's supply-side story in the first decade of the century, reaching its world-topping 77m tonnes-a-year target in 2011, the years since have brought rivals to the fore. From just over 20m t/y in 2014, Australia's capacity is expected to reach around 63m t/y by end-2017. The start-up of Sabine Pass LNG in the US fired the starting gun on a wave of new capacity to be built in the Lower 48.

All told, between end-2014 and January 2017, global liquefaction capacity increased by more than 10%, from 300m t/y to 340m t/y. Total trade rose less steeply, from 241m to 258m t/y, in the same period. Nonetheless, for several reasons this growth in supply capacity did not shatter the market's equilibrium. First, on the supply side, several new projects were delayed, postponing the liquefaction onslaught. In Australia, Gorgon LNG was the most notable example, but schedules at Ichthys, Wheatstone (which shipped its inaugural cargo in recent weeks) and the floating LNG plant Prelude also slipped. Angola LNG,

on line since 2013, was shut for two years. Much-proclaimed LNG-expansion programmes, such as Gazprom's plan from 2011 to more than treble its output to about 30m t/y by 2020, were quietly shelved – Gazprom produces just 9.6m t/y today from its Sakhalin II plant. In western Canada, abundant reserves distant from any sizeable market brought scores of LNG proposals that, in capacity terms, could have rivalled those in the US. None moved beyond the drawing board. Supply growth was strong, but did not bring the volume expected.

FIGURE 01: LNG PRICES 2014-17 (\$/MMBTU)



Source: PPI



The demand side also deceived the forecasters, rising 6% last year and by almost 12% in the first half of 2017. The restart of Japan's nuclear reactors, which would have depressed the country's LNG imports, has been mooted for more than two years, but the timing remains difficult to predict given public opposition and lengthy court battles: just four of 42 reactors are currently online. South Korea's consumption is rising strongly again. More significant has been the revival of Chinese LNG buying — which has soared since some anomalies in its internal market were ironed out — and the arrival of new, smaller pockets of demand in other countries, from Pakistan to Egypt and Jordan and eastern Europe. This unexpected demand strength soaked up the new liquefaction capacity. Economic laws prevailed: cheaper LNG tempered supply growth and spurred more consumption. The market did its job.

That does not mean the past two years have been comfortable for producers. Lower prices, the availability of more spot cargoes, and perceptions of the coming supply surge galvanised importers. In Japan, big buyers have sought to create a monopsony to enhance their position in negotiations with exporters. In India, Petronet LNG has twice renegotiated long-term contracts it signed with established, blue-chip exporters: first in a 2015 deal with Qatar's RasGas, in which Petronet secured both a waiver on money it owed RasGas for not meeting its take-or-pay terms and a much-reduced price for future cargoes; and, second, in a recent renegotiation with ExxonMobil to cut the price of LNG sourced from Gorgon.

Buyers have also sought to scrap contractual clauses banning the re-export of spare cargoes. As importers have flexed their buying-muscle in pursuit of more flexible arrangements, the LNG industry's decades-old long-term, take-or-pay model has come under assault. In an increasingly fungible market, one in which smaller buyers with less credit-worthiness are also becoming important consumers, such changes appear inexorable.

Abundant supply in 2018

These developments have not reached their conclusion, and in 2018 each theme will continue: more supply, but more demand too, and growing trade happening in an evolving market. And for those who forecast a global glut, 2018 may be their last opportunity to see its appearance. As the 2020s near, sentiment will shift to reflect another turn of the cycle. Because of the heavy upfront costs and lengthy lead-times involved in building capital-intensive liquefaction plants, the impact of the project deferrals of 2014-17 will only be visible early in the next decade.

But that is still some way off and in 2018 another lump of liquefaction capacity will arrive. The final stages of Australia's expansion are underway. Towards the end of 2018, as Wheatstone, Ichthys and Prelude begin producing, the country's total exports should hit capacity of 70m t/y, according to the National Bank of Australia. Domestic concerns about the availability of gas may be a headwind and Australia's high-cost environment and labour market remains a drag on development. Nonetheless, these projects have pre-sold much of their gas and are advanced. The main uncertainties only surround their schedules.

So far, American developers have been more adept at delivering new capacity on schedule, and will take up the development baton from Australia. Sabine Pass LNG has

completed trains 3 and 4 and a fifth is under construction. Cove Point LNG is due online in Q4 2017. Elba Island, Cameron LNG, Freeport LNG and Corpus Christi LNG will all also add capacity next year. Of 86.2m t/y new capacity planned globally between now and 2020 — all projects under construction — US plants will account for about half (see Figure 02).

All told, global liquefaction is expected to rise in the next two years from around 368m t/y in October 2017 to more than 400m t/y, according to a study from Bloomberg New Energy Finance, and most of the new capacity will arrive in the earlier part of this time frame. Unquestionably, it is a huge lump of new supply for the market to absorb.

FIGURE 02: GLOBAL LIQUEFACTION CAPACITY UNDER DEVELOPMENT (M T/Y)

Country	Project	Start up	Capacity
Cameroon	Cameroon LNG	2017	2.4
Russia	Yamal LNG (T1)	2017	5.5
US	Cove Point LNG	2017	5.25
Australia	Ichthys LNG (T1-2)	2018	9
Australia	Wheatstone LNG (T2)	2018	4.45
US	Elba Island LNG (T1-6)	2018	1.5
Australia	Prelude LNG	2018	3.6
US	Cameron LNG (T1-2)	2018	8
Russia	Yamal LNG (T2-3)	2018	11
US	Freeport LNG (T1)	2018	5.1
US	Corpus Christi LNG (T1)	2019	9
US	Elba Island LNG (T6-10)	2019	1
US	Cameron LNG (T3)	2019	4
US	Sabine Pass LNG (T5)	2019	4.5
US	Freeport LNG (T3)	2019	5.1
Indonesia	Tangguh LNG (T3)	2020	3.8
Malaysia	PFLNG 2	2020	3
Total			86.2

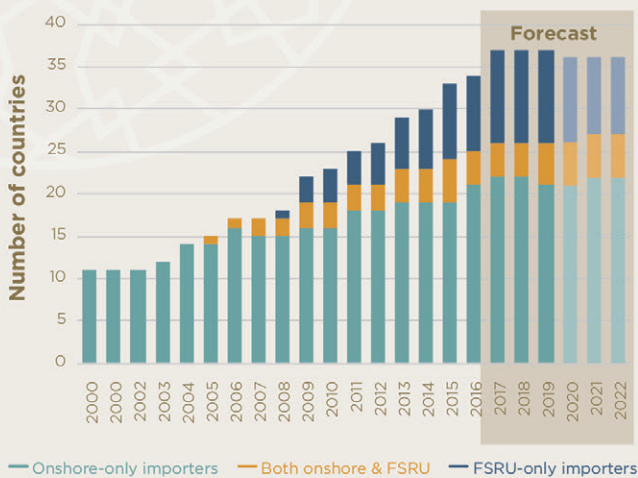
Source: IGU

Demand's response in 2018

The market will further evolve in response to these new capacity additions. Sellers will match stray cargoes or excess capacity with small buyers (often 2m t/y or less) signing short-term contracts (meaning everything from spot to five-year-term deals). Floating, storage and regasification units (FSRUs) will strengthen their role, opening up new demand centres, from Bangladesh to the Middle East, which will gain a greater slice of demand. India and China will increase their buying — and their buying power.

Europe, home to huge latent regasification capacity, may at last be the beneficiary of an arbitrage between continental and Henry Hub prices. This may, in turn, prompt a pricing response from Gazprom, which will not easily surrender its position in its most important export market. Finally, longer-term policy decisions in key consumer countries should reassure LNG exporters of their business's longevity.

FIGURE 03: RISE OF FSRUS AMONG IMPORT MARKETS, 2000–22



Source: IGU

Start with the FSRUs and their increasingly important role in the market. In January 2017, 21 FSRUs were in operation globally, according to the International Gas Union (IGU). They accounted for 83m t/y of import capacity, or about 11% of global regasification capacity (around 777m t/y). The uptake of FSRUs — which only entered the market in 2005 — has been brisk, including since about 2013 the rapid growth of countries importing only by FSRU (see Figure 03). This year, about 12 FSRUs have been chartered. A recent study from the UK's Energy Institute said that another 42 units could be added between now and 2020 (of 109 new regasification facilities).

Their role to date may have been small, but their influence on the market should not be underestimated. The Oxford Institute for Energy Studies estimates that the cost of a typical new-build FSRU is \$450m, or about 60% that of an onshore facility. Converting vessels is even cheaper. This allows the market entry of importers that have neither the capital to invest in larger onshore regasification facilities nor the credit-worthiness to secure the long-term take-or-pay contracts needed to support an onshore plant's capex needs.

Bangladesh is an example. It secured a loan from the World Bank for a \$179.5m FSRU to be deployed offshore Moheshkali Island in the Bay of Bengal. Over time, the country could import up to 17.5m t/y, say analysts (a deal with RasGas is in the works). Pakistan started importing LNG through an FSRU in 2016 and has contracted another two for installation. Onshore capacity is also under construction and should reach 20m t/y next year. This is well beneath the government's forecast of LNG imports reaching 31m t/y, implying more FSRU capacity will be needed.

But FSRUs will penetrate much more widely, including into established markets. Aside from India, China and a host of African countries, the Middle East is on its way to 22.5m t/y of regasification capacity. Egypt and the UAE both plan to add third FSRUs and Jordan has been importing through one since 2015. Of the countries seeking more LNG imports in the region, only Kuwait is pursuing an onshore option. Research firm Bernstein says both Jordan and Egypt recorded year-on-year demand growth of 6% earlier in 2017 — all through FSRUs.

These new market participants are price-sensitive (hence their willingness to charter import facilities on a short-term basis). Their rapid uptake now is a direct outcome of the drop in LNG prices and rise of shorter-term cargoes. So any sustained price rally could weaken their rationale. A case in point is the drop-off in South American LNG demand. That continent led the trend in FSRU deployment — but ample rainfall has boosted hydro facilities, dampening the need for importers to buy short-term cargoes in the LNG market.

The main driver for LNG demand will remain the big buyers (see Figure 04). The news is encouraging. Beyond Latin America, every market saw growth in 2017. Asian demand rose by 14% in the first five months of 2017, says Bernstein. In China, consumption was rising by 50% year-on-year by Q2.

China and India will hold the greatest influence over market balances in the coming few years. Beijing wants gas to account for 10% of the energy matrix by 2020, implying a 75% rise in consumption. New regasification capacity is coming online quickly — it should reach 88m t/y by 2020, according to Bernstein, more than ample for the 45m t/y of imports expected from China by then (compared with about 25m t/y now).

India's potential is more complex. The government has announced a host of energy initiatives that, in sum, should increase the use of gas in the country. Yet several measures are also designed specifically to encourage more domestic production and draw on a mandate to reduce oil and gas imports by 10% by 2022. The past year has also exemplified India's bumpy economic-growth trajectory, as some federal measures (such as the demonetisation of some banknotes) softened GDP. Total oil consumption, for example, has grown only modestly this year. Gas's and especially LNG's penetration of the energy matrix has also been hampered by the lack of pipeline connections between east-coast receiving terminals and big consuming centres elsewhere in the country.

Nonetheless, near-term projections are more optimistic. Four new regasification terminals are under construction and another two planned, which should take capacity to around 55m t/y by end-2019. The new HELP regime designed to stimulate upstream investment has not yet shown that it will make much of a dent in energy-import needs. The sheer size of the economy and expectations for fast growth mean India's LNG needs can only increase rapidly — this means new regasification capacity will be needed. By 2020, imports should rise from around 22m t/y to 35m t/y, predicts Bernstein.

New segments for LNG

The coming year should also bring more visibility about LNG's potential as a bunkering fuel in the shipping segment and even its use in land-freight transport. The fast-approaching change in the International Maritime Organisation's rules on maritime fuelling opens a new market to LNG producers. By 2020, all ships must use fuel with a maximum sulphur content of 0.5%.

Several projects are underway to create LNG-bunkering depots. South Korea, Australia, Japan and Singapore are already offering such options. The biggest potential project is a joint venture between Shell and Qatar to establish a global network of LNG-bunkering facilities.

FIGURE 04: HIGH AND LOW LNG IMPORTS TO 2030 (BN CM/Y)

Country	Low Case					High Case				
	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030
Japan	96.4	115.7	86.0	86.5	80.6	96.4	115.7	124.6	124.7	120.3
South Korea	44.4	45.5	44.8	45.8	47.5	44.4	45.5	46.9	49.6	52.7
Taiwan	15.2	19.7	20.3	21.6	22.9	15.2	19.7	22.4	26.8	32.1
China	13.1	27.2	54.0	46.0	75.0	13.1	27.2	79.0	66.0	105.0
India	12.2	19.9	30.0	50.0	66.0	12.2	19.9	36.0	60.0	79.2
Singapore	-	2.8	6.6	10.7	13.8	-	2.8	6.9	11.4	14.9
Thailand	-	3.7	11.0	20.4	22.5	-	3.7	13.9	26.8	31.2
Indonesia	-	-	-	-	9.3	-	-	-	4.9	20.8
Malaysia	-	2.1	3.7	5.0	6.2	-	2.1	3.7	5.0	10.7
Pakistan	-	1.4	10.0	14.0	14.0	-	1.4	12.0	16.0	26.0
Bangladesh	-	-	4.0	8.0	18.0	-	-	6.0	16.0	26.0
Vietnam	-	-	-	4.4	9.1	-	-	-	5.7	11.4
Total	181.3	237.9	270.4	312.3	384.9	181.3	237.9	351.6	412.9	530.1

Source: OIES

Conversion of tankers to handle LNG instead of gasoil is not yet a given. The costs of switching are high and LNG must remain competitive. But the market is growing. Energy Aspects says that from just five LNG-powered tankers in 2005 (excluding LNG carriers), the fleet numbered 77 last year and should reach 160 by end-2018 and more than 200 by 2020. (Still, demand for LNG from this segment will be just 1m t/y by then, it expects.) Significant growth will depend on LNG's cost versus that of low-sulphur marine gasoil. Similarly, the use of LNG in other transport, while small now, may also become significant.

In China, for example, demand for LNG-fuelled heavy-duty trucks reportedly grew by 540% this year. Some multinational firms, such as Unilever, have said they will deploy LNG in their trucking fleet. The high upfront cost for an LNG truck (about \$70,000-80,000 more than a diesel) is a barrier, but ExxonMobil says the fuel savings mean the outlay can be recouped within three years. Cedigaz, a forecaster, reckons that by 2035, LNG demand from road transport alone could reach 96m t/y. But much of this growth will be hidden in national statistics and the market will be slow to develop: 2018 will see developments only on the margins.

Conclusion: start of the next cyclical shift?

Taken together, the near-term outlook for LNG is of a maturing, increasingly fungible and well-supplied market, with a greater depth of both liquefaction and regasification capacity: a trading environment offering something for both suppliers and importers. Absent a geopolitical or macro-economic shock, prices should remain relatively stable or begin to firm — at around \$7-9/mmBtu in Asia and \$6-8/mmBtu in Europe. This is a level that will spur consumption, continue to fertilise new

markets and reward importers keen for strategic reasons to increase gas's share of their energy matrix. It is a price level that should also sustain low-cost established producers.

But 2018 may also mark the beginning of the next cyclical shift in global LNG. The project deferments of recent years mean that, at an annual growth rate of 6% (the average since 2000), LNG demand will overtake liquefaction capacity by 2022-23. At a utilisation rate that dips below 90%, market balance could be reached sooner. This is within the time-frame of a project's construction, yet few new projects are close to a final investment decision.

Capacity additions in the US and Qatar's plan to expand its LNG output following the lifting of the North Field moratorium mean these two countries are best-positioned to take advantage of the shifting fundamentals over the medium term. But other developers, not least those in East and West Africa, must also start to think counter-cyclically, committing to invest now, when prices are relatively weak and sentiment is overly bearish.

The rationale is straightforward. It is in no LNG producer's interest to see a dearth of investment today bring an eventual price rally that depresses the FSRU market, gives gas's rivals in power generation a competitive advantage, or snuffs out nascent markets in transportation. In a global economy destined for greater electrification, gas has many merits. But every signal from consumers in the past few years shows that price and flexibility matter. Low-cost LNG producers should position themselves now — investing in capacity that will be needed as the market's cycle starts to turn, embracing the evolving trading conditions, and accepting any supply-demand looseness in 2018 for what it is: an opportunity for LNG to cement its position in an efficient global economy.



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The Abdullah Bin Hamad Al-Attiyah
International Foundation for
Energy & Sustainable Development

Barzan Tower
4th Floor
West Bay
Doha
Qatar

Tel: +974 4042 8000
Fax: +974 4042 8099

Website: www.abhafoundation.org
E-mail: info@abhafoundation.org