

LNG still in transit

Change continues in the LNG industry, but the pace is evolution, not revolution



The LNG industry finds itself today in a very different situation than was expected 10 years ago. Several key disruptions have occurred: shale gas turned the US from an LNG importer into an LNG exporter, imports to Japan boomed to replace nuclear electricity production after Fukushima, and European gas demand collapsed due to the combined effects of the global recession and cheap coal. There are new types of players in the market, spot-trading volumes have increased, and global prices have converged. But much remains the same. In a business characterized by large, long-term capital investments, the pace of change has historically been slow. In our last LNG update two years ago, we highlighted that the industry was in a period of transformation towards liquid trading markets; here, we review the current picture and outlook, as well as implications for market participants.

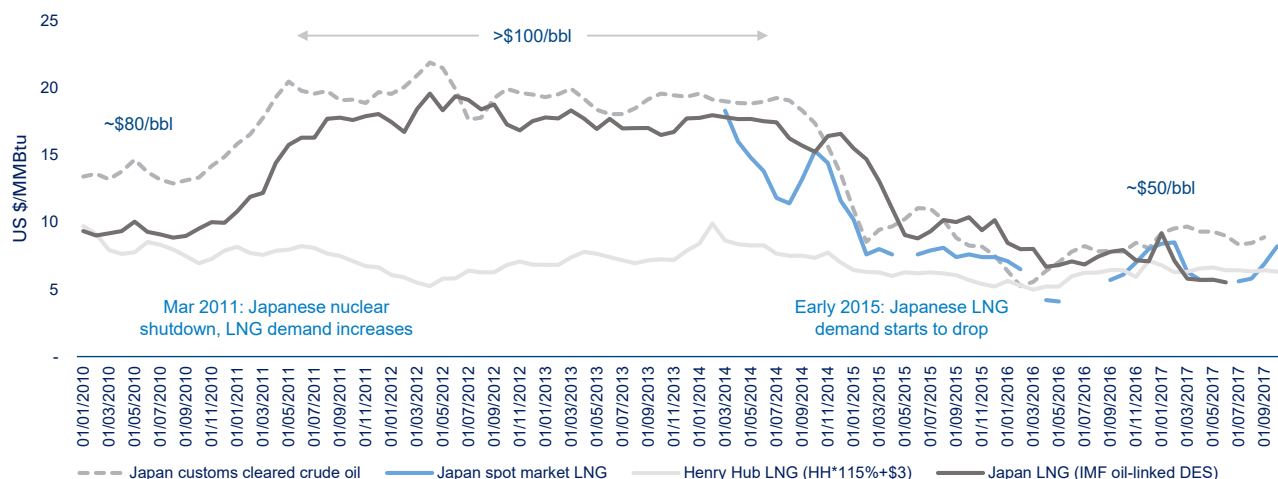
Overview of recent history

Global LNG price convergence has long been considered likely. In theory, trading should eliminate regional price differences (other than logistics costs) and make a more efficient market in which supply, demand and transport costs determine LNG prices and flows.

It would be easy to conclude that the disruptive events of recent years were the cause of global price convergence. Oil indexation is still dominant in LNG purchasing: over 75 percent of LNG volumes imported globally in 2016 were indexed to oil. And

lower oil prices explain a large proportion of the observed price convergence. The Asia-Pacific region is the global center of LNG demand, as well as for oil-indexed buying. Price convergence has been apparent since 2015, coinciding with the trend in oil prices. The Henry Hub LNG price (typically spot price plus variable fee at 115 percent Henry Hub price, plus fixed fee at around 3.00 \$/MMBtu) has become higher than both the Japanese import spot and long-term oil-indexed price. If we include transport and regasification at around 2.00 \$/MMBtu, US exports have not been attractive to Asia-Pacific buyers through 2017.

LNG & Crude oil prices, 2010-2017



Source: PAJ, METI, EIA, IMF

The high-price, high-demand period 2011–2014 led to a large amount of liquefaction capacity coming forward for development. This has led to global over-supply of LNG and a “buyers’ market,” with buyers wanting to take advantage by negotiating lower prices for LNG. A “lower for longer” oil price outlook has reduced this pressure, though Indian buyers in particular have publicized their recent successful renegotiations of indexation slopes in LNG contracts that had been signed only a few years ago. Slopes of around 14.5 percent have been typical in Asia, but have been reduced to around 12.5 percent; new contracts are reported with slopes below 12 percent.

Buyers have also used the arrival of US exports as a bargaining tool. Typically, US contracts are linked to Henry Hub prices, not oil. Buyers are thereby diversifying risk by concluding contracts based on different indices or combining them.

The increase in Asian LNG demand triggered a step-change in trading outside long-term deals, from less than 20 percent of global volumes in 2009 to around 30 percent. The “pure” spot part of this trade, for delivery within three months, has grown in recent years. This is largely through diversion of cargoes and reloading for sale in another location, and represents buyers dealing with surplus LNG within long-term contracts, rather than LNG producers actively seeking spot sales.

There is generally an abundance of LNG vessels, which were ordered during the period of high prices. Therefore, transport for spot cargoes should be readily available and cheap (\$20,000/d in 2016, compared to \$150,000/d in 2012), thus supporting growth in spot trading. But there is a lack of available vessels in the Atlantic Basin moving into winter 2017. Charter rates here have risen above \$50,000 per day as buyers seek to reload and send cargoes to Asia for LNG prices at a 3.00 \$/MMBtu premium to TTF. The lead time for vessel programming continues to be a barrier to the development of LNG trading.

Outlook

In summary, despite some price convergence driven by lower oil prices, there has been no dramatic shift to a single new pricing model. Several pricing and contracting methods co-exist. We are still in transition, with several key themes emerging:

Buyers’ market – for how long?

The supply overhang looks set to continue to at least 2020, based on liquefaction projects currently in construction. Beyond this point, there are many uncertainties. Future demand growth seems likely to be led by Asian markets, in particular China, Japan and South Korea; policy decisions will play a big role in influencing the scale. Regional LNG consumption forecasts feature a high/low range of 100 bcm/yr in the early 2020s. Government plans for environment and power sectors currently

appear to favor gas over coal and nuclear. For China, the future role of LNG in total gas demand is unclear: the mix will also include Russian pipeline gas and domestic production.

On the supply side, there are enough proposed and planned liquefaction projects globally almost to double existing capacity. But current prices do not justify investment in new projects, and the additional LNG is not needed. Several major projects have already been cancelled in the last two years, reflecting the change in project economics and suggesting that supply/demand are already realigning. Counter to this, the world’s largest exporter, Qatar, announced in July 2017 its intention to increase exports by 30 percent by 2024 (from 95 bcm/yr to 135 bcm/yr). Politics and the desire to protect market share can drive decisions, as with crude oil.

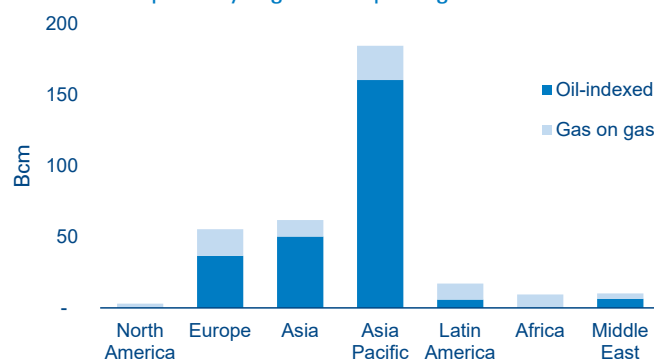
Buying, selling, pricing

Oil indexation

Security of supply remains the priority for many buyers, and tends to lead to a conservative approach to purchasing. While there is a clear trend towards developing portfolios of varying contract duration and indexation type, changes in the contracting mix will take time. JERA, the largest LNG buyer, plans to reduce long-term oil linkage from more than 80 percent to half of its portfolio over the next decade. It has also developed trading and risk management capability. Sellers still value long-term contracts as a means to secure financing, which seems unlikely to change.

It is likely we will see co-existence of historical contracts with new 5 to 15 year deals based on non-oil and hybrid indexation (hubs, LNG indices, oil, power), along with short-term trades, including buyer-driven tenders for up to five years of supply.

2016 LNG imports by region and pricing method



Source: IGU, ADL

Trading hubs

The creation of regional trading hubs in Asia has been discussed for many years. The aim is to provide a reliable physical price marker, which could serve as an index for financial trades.

Several potential locations and indices have been proposed by governments, stock exchanges and price reporters (Argus, Platts). Singapore is already the location of the energy trading offices of regional and international players, and has a facilitative regulatory and legislative environment. But low physical LNG demand and lack of infrastructure are barriers to development of physical trade. The SLInG price index is an FOB assessment of vessels on the water in the vicinity of Singapore. Japan, Korea and China are in contention as the physical DES hub. Levels of liquidity are hard to assess, as much of the trading takes place bilaterally. It is clear that no single hub has truly emerged as the regional marker – and that will not necessarily be the final outcome.

The current situation of over-supply should encourage further trading. But for buyers, the low-price environment means there is less incentive to push for gas-related pricing through establishing trading hubs. With around 10 hubs and markers, critical mass of trading may not occur at any single hub. Standardization of quality, infrastructure access and regulation are barriers that have not yet been overcome.

Liberalization of gas and electricity end-user markets in Japan could be a catalyst for change. Utilities will no longer have the right to pass through the cost of fuels, and there will be competition for consumers. This will mean that prices and volumes downstream are no longer secure, and therefore the need for risk management and trading should increase. Japan's Fair Trade Commission's decision to outlaw destination clauses on new contracts should also help stimulate trade.

Gas hubs elsewhere have formed at pipeline interconnections. The US Henry Hub is where multiple pipelines connect, the NBP in the UK connects upstream and downstream gas at no specific location within the national pipeline system. So far the Asian regional LNG price markers are located at points of import.

Sustainable LNG trading hubs could form at the production and export regions, i.e. for FOB rather than DES contracts. This would allow the standardization of gas quality and, by excluding transportation costs, make a regional standard product. The global coal market operates in this way, using, e.g. FOB Richards Bay as the South African coal-export price marker. LNG traders already think in these terms when calculating arbitrage opportunities. FOB West Africa and FOB Gulf of Mexico are potential LNG examples. In the coal market, price markers for imports also exist (e.g. CIF ARA), suggesting there might also be room for Asian DES hubs for LNG.

■ Contracting

Contract bargains are complex and incorporate many types of risk, including price, volume, counter-party credit and non-performance. Both buyers and sellers need to understand the

risks involved, their risk appetite and their risk management capabilities. As the LNG industry evolves, so will approaches to contracting. Signing a long-term contract is often perceived as low risk, but may actually be the opposite, because the market and counter-party conditions at signature may evolve adversely over the tenor of the contract. Back-to-back contracting can mitigate risk, signing downstream agreements (for sale of gas, heat or power) simultaneously with upstream deals to lock in a certain margin. But the margin and the match of the buy/sell may not be satisfactory. Identifying, monitoring and managing exposure is required.

Players

"Aggregators" and commodity traders have become key players in the last decade. Aggregators (e.g. Shell, BP, Total) exploit arbitrage between regions by holding many global-capacity positions and vessels. Pre-2014, they used these to derive consistently high margins. The trading houses (e.g. Trafigura, Gunvor, Glencore, Vitol) entered the market by taking short-term positions, picking up excess supply and reselling it on the spot market. They have started to engage in longer-term activities such as financing and off-taking from FSRUs to open up new markets.

If JERA, KOGAS and CNOOC form a buying consortium as reported in the press, one-third of global LNG purchases will be handled in the same group. The "buyer-aggregator" swap opportunities from this are clear. But will the level of market power be tolerated by regulators? For smaller buyers in the region, buying groups are also feasible. The development of trading and hub prices based on local supply and demand signals should bring opportunities for them. The use of third-party risk manager or optimizer services may be preferable for the small utility, rather than trading themselves. As more non-physical players enter the market, we can expect opportunities to collaborate or create joint-ventures, and transfer knowledge.

Infrastructure

In an LNG market with spot, oil and hub-index pricing, each of which may give different price signals, efficient and timely infrastructure development may be problematic. Spot prices should indicate the need for additional supply, but signals may be short lived and localized. The lead time and scale of investment required for typical new LNG projects add to the complexity. Large buyers have taken equity positions in liquefaction plants for several years, and this seems likely to continue, combined with portfolio diversification. Given the uncertainties described, lower-cost, smaller projects are more likely to progress in the short term. Floating liquefaction and small-scale LNG are more attractive to investment funds, private equity and the big trading merchants, and returns can be realized sooner.

Conclusion

Major changes are occurring in the LNG industry, but there has been no overnight transformation. In an LNG market in ongoing transition, Arthur D. Little helps players to:

- Anticipate change in the balance of power in the market through scenarios for LNG supply/demand and pricing, and to understand the signposts and pivot points for change.
- Innovate contracting methods and terms, purchasing portfolios and business models.
- Transform operations and capabilities better to understand and manage risk.

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Arthur D. Little

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