LNG demand in Asia bounced back in 2010 on the back of extreme cold and hot temperatures coupled with economic recovery across the region, after the global financial crisis at the end of 2008 curtailed LNG purchases in 2009. And as 2010 drew to a close, extreme winter temperatures in Europe drove LNG requirements up, providing support for Asia LNG spot values in the first quarter of 2011.

Then the March 11 earthquake and tsunami hit Japan, Asia’s top LNG buyer. The permanent or temporary loss of a large amount of nuclear and other generating capacity has dominated the Asian LNG market since then.

And all this in the region which is the dominant market for LNG. Growing shale gas production in the US has reduced its need for imports to virtually nil, while European demand has been limited only to occasional spot purchases during summer and winter.

Asia accounted for almost 61% of the 2.1 billion barrels of oil equivalent of world LNG imports in 2010, according to data from independent LNG consultant Andy Flower. Japan was Asia’s leading importer, purchasing 31.7% of total LNG imports, followed by South Korea (14.8%), Taiwan (5%), India (4.2%), China (4.2%) and Kuwait (0.8%).

Japanese LNG imports in 2010 increased by 8.6% on year to 70.01 million metric tons (mt), reaching their highest-ever level, according to customs data released by Japan’s Ministry of Finance. Similarly, South Korean LNG imports in 2010 were up 26.3% on year at 32.6 million mt, according to a Platts’ estimate derived from the country’s customs data.

Across the board, Asian buyers imported more LNG in 2010 than in the previous year. The trend has continued in 2011.

Traditional buyers such as Japan and South Korea, which currently have almost 180 million mt/year and 40 million mt/year of LNG import capacity, respectively will continue to be a dominant force. But more recent market entrants will play an increasingly important role.

According to the IMF World Economic Outlook, Chinese and Indian GDP is projected to grow by around 10% and 8%, respectively in both 2011 and
liquefied natural gas

2012, outperforming respective annual growth of 1% and 4% in Japan and South Korea over the same period. Coupled with state support for gas use on both jurisdictions, a marked increase in demand for LNG imports is expected in both countries.

This is already translating into new LNG import capacity. For instance, India is currently adding 10 million mt/year of regasification plant to its existing 13.6 million mt/year.

Meanwhile China had 12.3 million mt/year of regasification capacity at the end of 2010 but plans to add much more. Of the 20 million mt/year of capacity under construction at the start of 2011, some 6.5 million mt/year has already entered service, with the state-owned PetroChina having started up the 3.5 million mt/year Rudong facility in May and the 3 million mt/year Dalian terminal in September.

Changing Seasonal Patterns

Not only is the Asian LNG market growing fast, it is also evolving rapidly. The surge in Japanese LNG demand after the March 11 disaster has significantly altered the traditional pattern of shoulder month pricing in spot Asian LNG.

Platts' Japan Korea Marker (JKM) for spot cargoes delivered in April and May averaged close to $11/MMBtu, well above the previous winter levels. That price boost, which also came prior to the traditional summer buying season, was largely led by Japanese utilities maximizing output at their gas-fired plants.

With their generating capacity having been worst affected by the disaster, the Tokyo Electric Power Company (Tepco) and Tohoku Electric, in particular, ran their thermal plants at close to full capacity, and purchased LNG cargoes through the spot market. Tohoku Electric took 3-5 cargoes per month from April through June, while Tepco took more than 20 shipments across April and May.

The buying activity in Japan coincided with purchases by Taiwan's CPC, Kuwait Petroleum Corporation and Dubai Supply Authority in preparation for the summer, as well as demand from Indian and South Korean buyers. Meanwhile PetroChina and Thailand’s PTT were looking for cargoes to commission new LNG receiving terminals.

All this combined to boost spot LNG prices during the shoulder months of April and May. And a similarly atypical pattern occurred in September and October.

LNG demand and spot prices in Japan and North Asia have usually peaked between December and March, as heating requirements drive gas consumption, and again from July to September, when increased air-conditioning requirements boost electricity and thus gas demand. April to May and September to November have thus typically formed shoulder periods characterized by lower gas demand and spot LNG prices.

For example, from December 2009 to March 2010 the average Platts’ JKM price was $7.27/MMBtu, falling to an average of $5.86/MMBtu in April and May 2010. The price then rose to average $7.51/MMBtu from July through September, as Japan’s hottest summer on

1. Total Asian LNG imports.

Source: Platts
record boosted air-conditioner use and thus LNG demand, before falling again.

But for the reasons already noted, Platts’ JKM for April and May 2011 averaged $10.88/MMBtu compared with the average of $9.82/MMBtu from December 2010 to March 2011. And at the time of writing (mid September), the JKM for September and October 2011 deliveries was averaging $15.31/MMBtu, again atypically higher than the average of $13.33/MMBtu for the period from June to August.

The muted summer spot price reflected various factors. The summer was generally cooler in North Asia than in 2010, with temperatures in Japan being only one degree Celsius above the 20-year average, according to data from US’s NASA. And energy demand in Japan was further reduced by government-mandated conservation measures following the March 11 disaster, which was also still depressing the level of economic activity and thus energy demand.

The upshot was that “Tepco and other Japanese companies imported more cargoes than planned in May and June [because of] the earthquake but additional requirements will be stable in July and August,” according to a source close to Tepco. The source added that Japan’s largest LNG buyer had lost the seasonal aspect of its gas demand as a result of the March 11 disaster.

Tony Regan from Singapore-based energy consultancy Tri-Zen said “the austerity policy [of] switching off lights will have an impact on demand, plus there will be lower demand from areas affected by the quake.” The Japanese government asked companies to cut summer power use by around 15% through a host of initiatives with, for instance, one trader telling Platts that “Kansai [Electric Power Company] has shifted the lunch hour for its staff by an hour to 1-2 pm from 12-1 pm. The peak power and air-conditioning demand period is typically from 1-4 pm so Kansai should be able to save some power.”

Chris Holmes from Purvin & Gertz’s London office noted that infrastructural constraints would limit the impact of the disaster on overall Japanese gas demand for power generation. “Japan’s power market is very fragmented, with each of the 10 power companies having their own discrete service areas with poor connectivity between service areas so there is limited scope to move power into the Tepco service region,” Holmes said.

**Continuing Price Impact**

Japan’s ongoing electricity supply problems could have a continuing impact on both spot and term LNG prices, although the impact of growing LNG demand on prices could be mitigated by additional LNG supplies from newly-commissioned
liquefied natural gas

liquefaction projects. Australia’s Pluto LNG project, for example, is due to start production in March 2012.

Holmes has said that, while sufficient LNG production capacity may be available to meet likely demand over the next couple of years, spot LNG prices could still overtake term prices in Asia. In this context “it is no surprise that [upward quantity tolerance] clauses have been invoked, although this may be a pre-emptive move to send a signal to the market that [Tepco] can lift LNG at term prices, thereby making an attempt to prevent a significant rise in spot prices as was the case after the 2007 earthquake,” he said.

UQT clauses generally allow an LNG buyer to take an additional 5-15% on top of their contracted volume, according to a producer. Tepco last exercised its UQT clauses after the Kashiwazaki-Kariwa nuclear complex was hit by an earthquake in July 2007.

Spot LNG prices have usually been well below long-term prices in Asia, where term LNG contracts have traditionally been priced against oil. Many term contracts in the past few years have given a delivered LNG price in $/MMBtu equivalent to about 15% of the $ price per barrel for Japan custom-cleared crude oil.

In 2010 Asian term LNG contracts tended to produce a price of around $13/MMBtu, while spot prices ranged from $5.30/MMBtu to $10.10/MMBtu. But spot prices are rising fast, with Platts’ October JKM being assessed at a high of $16.85/MMBtu on September 15.

The Japan LNG Cocktail (JLC) price for Japan’s LNG imports has also been heading north due to higher oil prices. In January 2011, the JLC was $11.48/MMBtu, increasing to $13.10/MMBtu in April 2011, and rising further to $16.07/MMBtu in July. Back in July 2010, the JLC had been $11.23/MMBtu.

Commenting on the LNG price trends, John Harris from the Beijing office of the energy consultancy IHS Cera has said that “if you look at the impact of a few high priced cargoes on the overall weighted average cost of supply it is relatively small. Thus for major buyers like Japan and Korea it is not likely that demand will taper off,” and “the upper limit would tend to be where oil fired generation would be competitive for utilities.” But there could be some resistance from Chinese and Indian buyers to further price gains, he said.

Regan has said that “term prices are heading up to $18/MMBtu plus as the impact of $115-120/barrel crude filters through,” adding that buyers could try to reduce their term liftings and buy spot cargoes. “If there is a rush back to the spot market this will lead to a price surge,” Regan said.

The Arrival of Swaps

Meanwhile interest in LNG swaps and short-term contracts priced off spot LNG values has grown along with the evolution of the spot market. This

3. LNG, gas and oil price trends.

Source: Platts
liquefied natural gas

is seen as a natural progression as the LNG spot market is attracting more banks and trading houses, who would take positions for cargoes.

The first LNG swap deal based off Platts JKM for delivered spot LNG cargoes was executed in January 2011 by Citibank. The swap was the equivalent of a partial cargo and covered the first six months of 2011, according to a source close to the matter, who added that Citibank had concluded a further five swap deals based off the JKM by the middle of 2011.

LNG is currently hedged through the US and UK gas futures, and oil for Asia. Oil hedging works for long-term Asian LNG cargoes that are priced against the JCC but for spot Asian LNG, gas and oil hedging provides a poor correlation.

As the graph of US and UK gas futures and Platts’ JKM shows, over the past year the premium of the JKM to US gas futures increased from less than $2/MMBtu to about $12/MMBtu. Over the same period, the JKM was priced above UK gas futures most of the times but the premium could switch between the JKM and NBP, highlighting the independence of the Atlantic and Asian LNG markets.

As previously noted, long-term LNG contracts in Asia are currently linked to oil prices, resulting in a disconnect between spot and term LNG prices in the region. This meant that term LNG prices in Asia during 2010 averaged $13/MMBtu, whereas spot prices ranged from $5.30/MMBtu to $10.10/MMBtu.

A comparison of Platts JKM spot monthly average values against Japan’s average LNG import price from early 2009 through July 2011 shows that the country’s term cargoes are generally priced almost $4/MMBtu higher than spot shipments, although this halved after the March 11 disaster. But to date neither buyers nor sellers have voiced strong support for a shift away from oil-linked prices for term LNG contracts, as Asia’s spot LNG market is not as developed as Europe’s gas markets and there are no other LNG derivatives apart from the LNG swaps priced off Platts’ JKM.

Asian long-term LNG contracts are fairly restrictive, with contract volume flexibility normally limited to 5%. Cargo diversions are also restricted as they normally involve multiple parties and require all to reach a consensus before a shipment can be diverted from its original destination.

The region’s long-term LNG contracts specify source terminals, restricting producers to providing cargoes from a pre-determined liquefaction facility. This eliminates the flexibility of taking a shipment from a portfolio of production facilities, even if the supplier’s original LNG plant has production issues.

Price negotiations are also relatively infrequent, with buyers and sellers locked into price formulas over the 20- or 30-year duration of the contract.

However, Asia’s utilities appear to be shifting in favor of greater flexibility in their LNG portfolios, partly because of the unpredictable impact on

4. Term vs spot LNG prices.

Source: Platts
liquefied natural gas

gas demand of extreme temperatures in some recent summers and winters. For instance, very cold weather from late 2009 through the first quarter of 2010 forced South Korean and Chinese buyers to scramble to secure a combined 45 spot LNG cargoes.

There is some evidence that LNG buyers are accepting relatively high prices in long-term contracts in exchange for increased flexibility. Utilities across north Asia—Japan’s Kansai Electric, China National Offshore Oil Corporation, South Korea’s Kogas and Taiwan’s CPC Corporation among others—have also taken equity stakes in upstream LNG projects such as Australia’s Gorgon and Curtis to give them additional supplies and leverage.

In September 2010, Japan’s Chubu Electric Power Company agreed to buy 1 million mt/year of LNG from the 2 million mt/year Donggi Senoro LNG project in Indonesia. The contract terms agreed by Chubu Electric include the option of 100% destination flexibility.

And in an attempt to increase their supply flexibility, several Japanese utilities have said that, where economically justified, they would seek to purchase more spot cargoes while exercising the downward quantity tolerance clause in their long-term contracts. A DQT clause in a long-term LNG contract allows buyers to reduce the number of lifted cargoes by 5-10%.

Behind many of these developments is a simple fact—gas is seen by an increasing number of Asian governments and utilities as central to their plans to secure their energy future on a sustainable basis. Asian gas demand is thus rising fast, with much of the demand needing to be met by internationally-traded fuel.

At the same time supplying the fuel in the best way requires the adoption of increasingly complex strategies and mechanisms by both governments and companies. Asian LNG demand is growing fast and a once-rigid industry is having to evolve faster to meet that demand in an optimal manner.