

## LNG Supply and Demand After the Great East Japan Earthquake

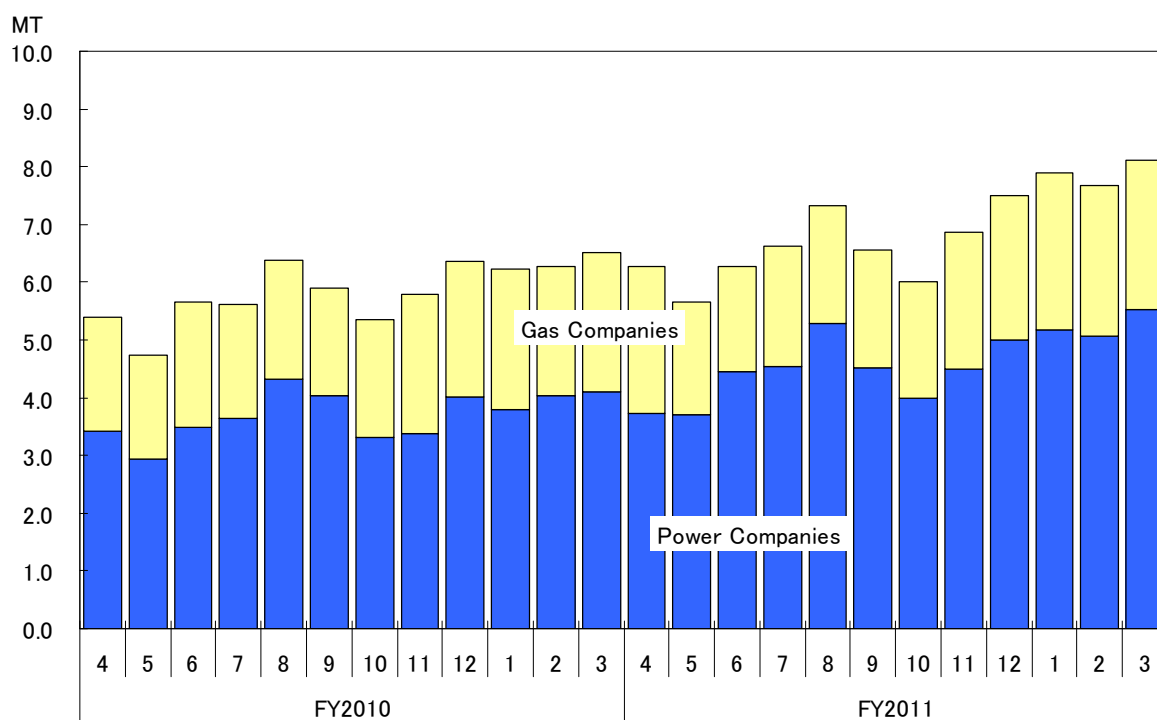
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### 1. LNG Demand

Import of liquefied natural gas (LNG) in FY2011 increased by 12.62 million tonnes (MT) from FY2010 to 83.18 MT. This of course reflects the sudden increase in demand for LNG for thermal power generation due to the increased operation rate of LNG thermal power following the Fukushima Nuclear Power Plant accident. Import by power companies increased by 11 MT year on year and reached 55.48 MT in FY2011, and for gas companies rose 1.55 MT to 25.84 MT.

Fig. 1. LNG imports by power and gas companies (FY2010, FY2011)



Source: Agency for Natural Resources and Energy

According to the outlook published by the Institute of Energy Economics, Japan in December 2011<sup>1</sup>, the demand for natural gas for FY2012 is 104.4-121.5 Mtoe (equivalent to about 80-93 LNG MT). Assuming supply of domestically produced gas is 3.3 billion cubic meters (approximately 2.4 LNG MT), the amount equivalent to the supply in FY2011, the demand for LNG for FY2012 is assumed to be 77.60-90.60 MT.

<sup>1</sup> Short-Term Energy Supply and Demand Outlook, The Institute of Energy Economics, Japan, December 22, 2011, <http://eneken.ieej.or.jp/data/4172.pdf>

## 2. LNG Procurement

Importers of LNG in Japan – mainly power and gas companies – import LNG by a number of long-term contracts with LNG projects of eight countries. As of FY2011, the quantity of such contracts totaled about 59 MT<sup>2</sup>. This indicates that the difference between the imported quantities (approximately 26 MT) is either procured under UQT<sup>3</sup> of existing long-term contracts or on a spot basis or under short-term contracts. Importers also increasingly conclude new term contracts.

To accommodate the sudden increase in demand for LNG, in FY2011, 10 additional countries<sup>4</sup> supplies LNG on spot/short-term contract basis, apart from the eight countries that had concluded long-term contracts. There are 18 countries that export LNG, and Japan has now imported from 17 of them; all except Libya<sup>5</sup>.

Fig. 2. Quantity of Japan's LNG long-term contracts and actual imports (FY2011)

Exporter	Long-term Contract	Actual Imports	Difference
UAE	4.30	5.64	1.34
Brunei	6.01	6.18	0.17
Malaysia	15.41	15.13	-0.28
Indonesia	5.83	7.91	2.08
Qatar	6.00	14.30	8.30
Oman	3.03	4.23	1.20
Australia	13.26	13.59	0.33
Russia	4.94	7.77	2.83
USA		0.24	
Trinidad Tobago		0.26	
Peru		0.75	
Algeria		0.11	
Egypt		0.85	
Nigeria		3.34	
Equatorial Guinea		2.12	
Norway		0.34	
Yemen		0.36	
Belgium		0.06	
Total	58.78	83.18	

Source: Compiled by IEE Japan from GIIGNL, Customs Statistics, etc.

The largest source of additional supply was Qatar, which provided 8.3 MT in FY2011 in addition to the long-term contract quantity of 6 MT, for a total of 14.3 MT. Russia and Indonesia respectively supplied an additional 2.83 MT and 2.08 MT over the long-term contract quantity<sup>6</sup>. Of countries without long-term

<sup>2</sup> GIIGNL, The LNG Industry in 2011, [http://www.giignl.org/fileadmin/user\\_upload/pdf/A\\_PUBLIC\\_INFORMATION/LNG\\_Industry/GIIGNL\\_The\\_LNG\\_Industry\\_2011.pdf](http://www.giignl.org/fileadmin/user_upload/pdf/A_PUBLIC_INFORMATION/LNG_Industry/GIIGNL_The_LNG_Industry_2011.pdf)

<sup>3</sup> Upward quantity tolerance: Normally, in long-term LNG contracts, an allowance of +/- 5% to 10% of the contract quantity is permitted.

<sup>4</sup> Customs statistics indicate import of LNG from Belgium, which does not have production facilities of LNG for export. This is re-export to Japan of LNG once imported into Belgium. Similarly, export from the US contains 60,000 tons of re-exports.

<sup>5</sup> For reasons mentioned in the footnote above, Belgium has not been counted as an exporting country in this paper.

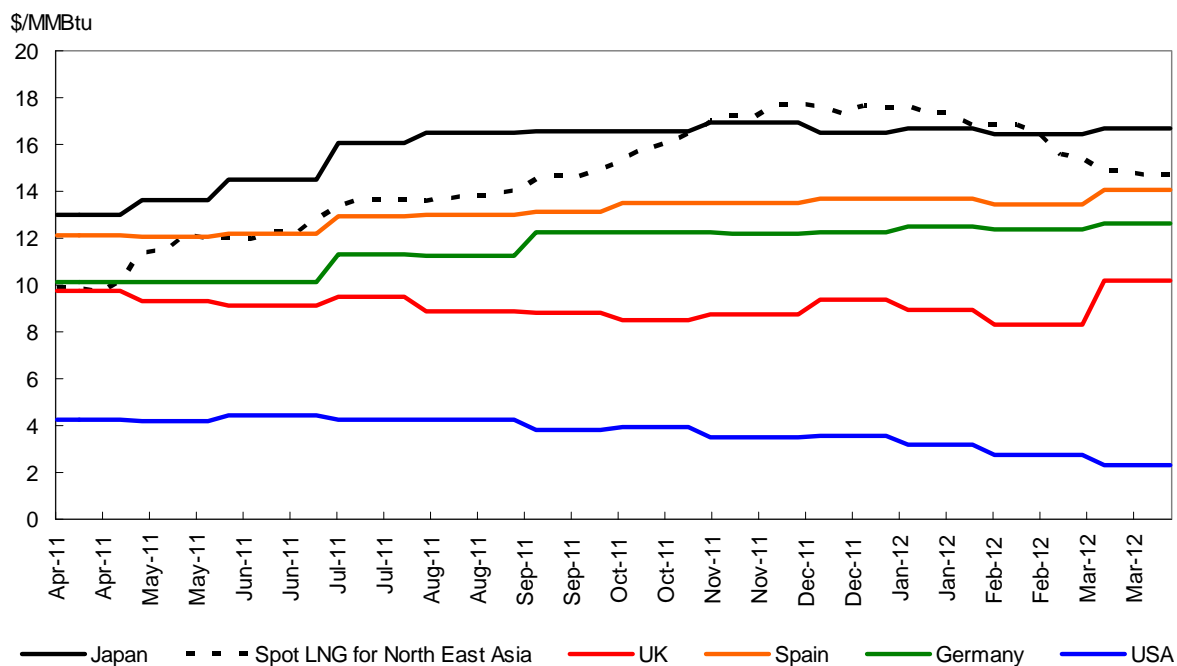
<sup>6</sup> However, for Indonesia, there was a review of the contracted quantity in both 2010 and 2011, and a new contract was made with a significant reduction in the contracted quantity; therefore its nature is different from

contracts (either spot-based or short-term contracts), Nigeria supplied 3.34 MT and Equatorial Guinea 2.12 MT, representing 17% and 53% of those countries' respective LNG exports in 2011. LNG was procured from around the world, even from countries with long transportation distances like Norway and Trinidad and Tobago. Broad procurement of LNG from countries other than those with long-term contracts is likely to continue unless nuclear power plants are brought back in operation.

### 3. International Natural Gas Prices

Looking at international gas (pipeline and LNG) prices for FY2011, the US market, with a price of \$4/MMBtu in April 2011, fell to a \$2/MMBtu level by the end of the fiscal year, backed by steady production and relatively mild winter. In Europe, the import price for the UK market, where the import price is pegged to the domestic spot price, moved around \$9 to \$10/MMBtu. On the other hand, import gas prices for Germany and Spain, which are in most cases pegged to oil prices, rose with the hike in oil prices to \$13 to \$14/MMBtu.

Fig. 3. International Gas Prices for FY2011



Source: Energy Intelligence, EIA

The LNG price for Japan, mostly linked with crude oil prices, similar to in continental Europe, rose between April and August, and the import price as of March 2012 reached \$17/MMBtu. Spot prices for North East Asia exceeded the average import price for Japan in November, but fell below it around the end of the fiscal year<sup>7</sup>. Considering the scale of additional procurement, the market has been relatively calm.

<sup>7</sup> the pure additional supply from Qatar and Russia. However, since May 2012 it seems that spot prices have remained at a level that they exceed the average import price again.

#### 4. Measures to Reduce LNG Prices

As of the end of FY2011, the price differential of Japan's imported LNG with those of Europe and the US was \$3 to \$14/MMBTU. Japan's LNG import price has not always been higher, but the differential with the US has never been this large. For Japan's LNG prices, in addition to bringing down price levels, there is a need to diversify the pricing schemes to reflect the changes in the market environment on a timely manner.

Easing of supply and demand is a prerequisite to lower LNG prices for Japan. To accomplish this, it is necessary not only to increase, but diversify supply sources, suppress demand, and expand transportation capacity. On the supply side, many LNG projects are being planned in Australia, US, Canada, Mozambique, and other countries to benefit from the current high prices in Asia. It is important to see that these projects are commercialized smoothly, and to consider pipeline gas import. On the demand side, it is critical to improve power generation efficiency by replacing old gas-fired plants, and to promote the use of gas co-generation. On the transportation side, it is desirable to developing nationwide pipeline network as well as secure LNG shipping capacity.

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