Japan's LNG Demand: Where is the Consumer?

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Executive Summary

- Japan is the world's largest, most important LNG importer and consumer, accounting for over half of global imports in 1998. The regional LNG industry is fully dependent on Japan. Although LNG demand in Japan is not seen to have potential for fast growth, the large base of demand in Japan makes it the key factor underlying LNG supply and demand in the region for some time to come.
- In terms of consumption patterns, roughly 70% of LNG imports are used for power generation and 30% by town gas consumers. Thus, the most important consumer of gas in Japan is the electric utility system. As such, plans and strategies of the electric power companies are the real key to the future of LNG demand in Japan.
- Japanese utilities expect to consume less than 2 million tonnes of additional gas/LPG between 1998 and 2008. Oil consumption is also expected to grow only slightly. The most remarkable growth is that of coal use which is expected to almost double between 1998 and 2008.
- The Japanese utilities face two serious problems. First, uncertain economic outlook with potential weak or even declining gas demand. Second, the IPPs will take away from the gas seller around 10% of the market. As such, the traditional utility faces a double barrel: weak economy and loss of clients due to IPPs!
- Many gas projects planning on exporting to Japan are unlikely to happen for the next 10-20 years. Just a pipeline alone from Sakhalin would deliver the equivalent of 6 to 10 million tonnes of LNG. New LNG export projects, gas export from Russia, etc., will all have to wait for the 2010 to 2020 period before finding the right level of demand.

Introduction

Japan is the world's largest, most important LNG importer and consumer, accounting for over half of global imports in 1998. Within the Asia-Pacific region, the role of Japan is critical. The regional LNG industry is fully dependent on Japan. Although LNG demand in Japan is not seen to have potential for fast growth, the large base of demand makes Japan's LNG demand the key factor underlying LNG supply and demand in the region for some time to come.

Structure of Japan's LNG Demand

In Japan, LNG is imported via three different groups. The trading houses (led by Mitsubishi Corporation, Mitsui, and Itochu), city gas companies led by Tokyo Gas and Osaka Gas, and electric power companies led by Tokyo Electric, Kansai, and Chubu Electric among others. In terms of consumption patterns, roughly 70% of LNG imports are used for power generation and 30% by town gas consumers. Because LNG is used predominantly for power generation, Japanese consumption is not subject to the same seasonal fluctuation that occurs in Korea, where a significant portion of imports are used for winter home heating. In short, the most important consumer of gas in Japan is the electric utility system. As such, plans and strategies of the electric power companies is the real key to the future of LNG demand in Japan.

Outlook for Gas Imports into Japan

Japan is every exporter's favorite gas export target. Almost every LNG project has a close eye on Japan and every long distance pipeline from Russia (and even sometimes Central Asia) counts on imports into Japan. Indeed, there is so much euphoria about the ability of Japan to import gas, that there are prospects for serious miscalculations by gas exporters. Adding to the euphoria are statements by the Japanese government about the commitment to CO_2 reductions under the Kyoto accord. If, indeed, the Japanese government is to be believed, then the volume of gas consumption should rise dramatically. If that is the case, then Japan will need to import a great deal of additional LNG and pipeline gas. Or so the story goes!

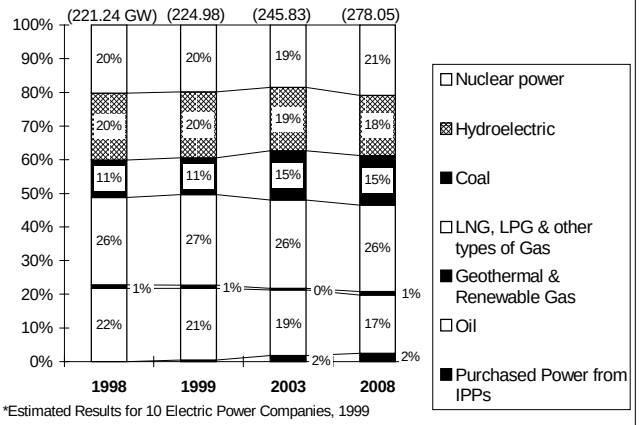
The Big Divide Between Euphoria and Reality

There is a huge gap between what the exporters expect Japan to import and how much actual gas is going to be needed. Indeed, while the government assertions regarding more gas use heighten expectations, the reality is different. There is likely to be far smaller amounts of new gas to be consumed in Japan than expected by the market.

Where Are the Consumers?

Rather than listening to the grand plans of the government and energy planners, it is particularly useful to focus on the plans for fuel use of Japan's 10 electric power companies, which generate nearly 90% of the country's total electricity supply. After all, these companies are the final determinants of gas demand in Japan. Figure 1 shows capacity composition ratios in the 10-year period, 1998-2008. Figure 2 indicates generated power composition ratios of the 10 power companies. Both charts show remarkably steady ratios of almost all fuels. While the gas (including LPG) capacity and generation are to rise from 1999 to 2003, there are almost no expectations of any growth between 2003 and 2008. The ratio of nuclear power actually declines from 1998 to 2008 in terms of power composition, though the capacity actually increases a little. The share of oil remains remarkably stable.

Figure 1. Electric Power Supply Plan: Capacity Composition Ratios, 1998-2008*



*Estimated Results for 10 Electric Power Companies, 1999

power companies in Japan. It shows that Japanese utilities

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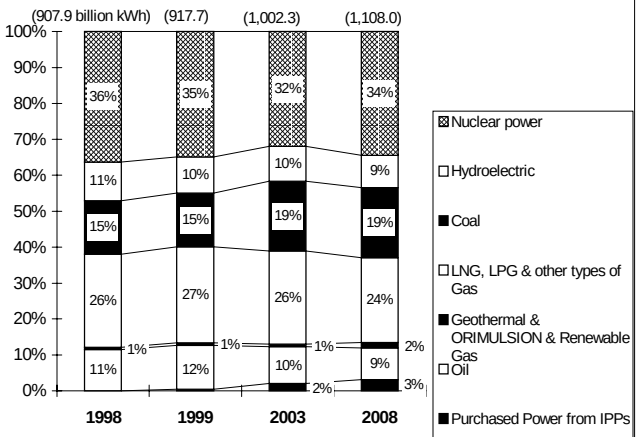
Figure 2. Electric Power Supply Plan: Generated Power Composition Ratios, 1998-2008*



*Estimated Results for 10 Electric Power Companies, 1999

expect to consume less than 2 million tonnes of additional gas/LPG between 1998 and 2008. Oil consumption is also expected to grow only slightly. The most remarkable growth is that of coal consumption which is expected to almost double between 1998 and 2008. TEPCO (Tokyo Electric), the world's largest LNG importer and Japan's largest utility, has its own plans which are even more drastic. TEPCO will add barely one million tonne of LNG use, but will increase oil consumption by 50% between 1998 and 2008. Coal consumption is forecast to rise by nearly 400% in the same period!

Even if we assume that the city gas companies add 1 or 2 million tonnes to demand, we will only witness 3 to 4 million tonnes of new gas demand between 1998 and 2008. Indeed, these forecasts, rooted in reality and away from government's wishful thinking, indicate Japan faces an extremely difficult if not impossible task in meeting its Kyoto commitment.

Then what about all the planned projects exporting gas to Japan? These projects are somewhat unrealistic and are unlikely to happen for the next 10-20 years. Just a pipeline alone from Sakhalin would deliver the equivalent of 10 million tonnes of LNG. There certainly is no demand for these imports in the short to medium term. New LNG export projects, gas export from Russia, etc., will all have to wait for the 2010 to 2020 period before finding the right level of demand. Gas

Table 1. Requirements for Main Fuels (10 Electric Power Companies)

	1998	1999	2003	2008
Oil (gigaliters)	24.63	27.06	26.04	25.47
LNG (mmt)	35.74	36.96	38.55	37.67
Coal (mmt)	47.28	48.64	71.83	82.36

Note: LNG includes domestic natural gas and city gas

pipeline projects specially must be viewed in the long term, providing the means to build long-term economical political links with Russia via gas pipelines.

Why Such Low Utility Demand?

The Japanese economic downturn period is the most serious threat to the gas markets. Japan's weak economic performance meant that in 1998, Japan could not meet its contracted gas purchasing obligations. The same is true for 1999. The Japanese utilities face two serious problems. First, uncertain economic outlook with potential weak or even declining gas demand. Second, the IPPs will take away from the gas seller around 10% of the market. As such, the traditional utility faces a double barrel: weak economy and loss of clients due to IPPs! In the uncertain market, it makes good sense to use fuels which can be cut back if needed without too much penalty. Oil and coal offer such flexibility (and they have been the fuels of choice for IPPs in Japan). Gas requires long-term commitments and project financing, putting serious pressure on the utilities. It is, therefore, not surprising that the utilities have focused on coal and even oil more than gas, since the former do not require large investments and can limit potential financial losses for the utilities. Indeed, the Japanese utilities' fuel choice policies make ample economic sense from the point of view of the private sector which has to protect their shareholder's interest.