

CURRENT ISSUES IN THE JAPANESE LNG MARKET* – Relation with Gas Producers and Consumers–

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1. INTRODUCTION

LNG introduction into Japan started in 1969 from Alaska. In the 1970's, Japan began importing from Brunei, Abu Dhabi, Indonesia, and then, Malaysia and Australia in 80's.

Based on the bitter experience of Oil Shocks, efforts to reduce oil dependency, i.e., regional dependence on the Middle East in primary energy was made, in order to secure supply security by diversification, resulting the shift to natural gas and nuclear. In 1979, natural gas occupied 5.2% of Japanese primary energy supply, the proportion increased to 13.3% in 2001. [1] From the viewpoint of Global-Warming gas reduction and energy security, Japan will continue to pursue the use of natural gas.

In the past, security issues such as maintaining the required energy supply for the demand was the most important goal of Japan. These days, however, the priority seems to be changing to more economical procurement, having affected the change of recent supply-demand situation, as well as the domestic economy prolonged depressed situation last 10 years.

In this paper, we will cover/examine the current issues facing the Japanese LNG market. Such issues can be shared with LNG consuming countries in Asia such as Korea and Taiwan.

2. FEATURES IN JAPANESE LNG MARKET

Japanese gas supply strongly relies upon LNG imports mostly from the Asia-Pacific region as well as the Middle East, where procurement contracts are based on long-term (20years or more), including Take-or-Pay clauses with some downwards quantity tolerance, and destination limitations.

The size of Japanese gas demand is the similar to the level of UK and Italy. However, 70% of the demand is for power use and the rest for town gas. In general, the average CIF price of LNG in Japan is \$1 higher than that of the US and Europe, and higher than fuel oil. [2]

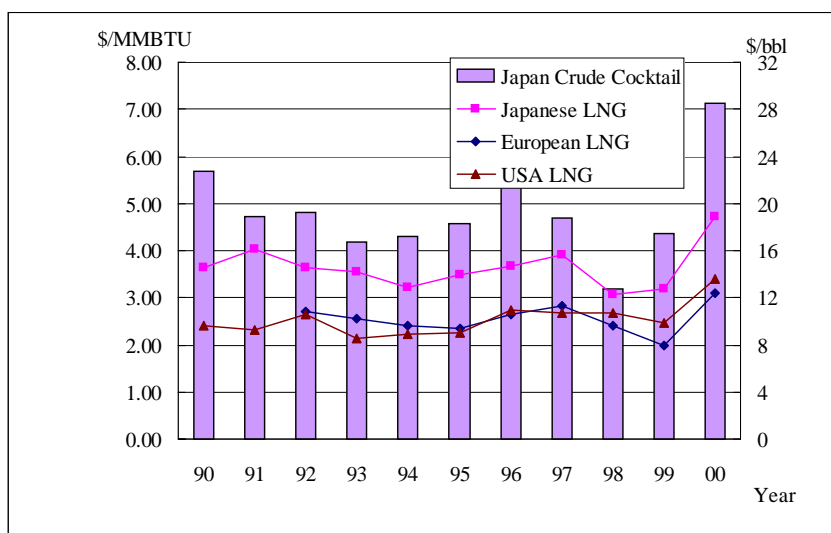


Figure 1: LNG Price in Japan, Europe, and US [3]

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3. RECENT TOPICS IN WORLD LNG MARKET

It has been said that LNG is a special good. Countries that import LNG are rather limited, and huge investment in one time is required to form of the so-called LNG-chain. Recently, the world LNG market is divided into two regions: Asia-Pacific and Atlantic market. The former one is consists of Japan, Korea, and Taiwan, which import LNG mainly for base-load, power generation purpose. On the other hand, latter one include Europe and US East coast/ Mexican Gulf, for the countries where pipeline gas is dominant source in the existing gas market and LNG is used as supplementary or back-up.

Before focusing on Japanese market, recent topics and trend of world LNG market is reviewed as follows:

3.1. Increase of Supply/Production Capacity

We anticipate new installation of liquefaction projects in Norway, Sakhalin, and Iran, etc. In addition, we expect an increase of trains for existing liquefaction plants in Trinidad & Tobago, Nigeria, Qatar, Malaysia, and Australia. The total supply/ production capacity is increasing as shown below.

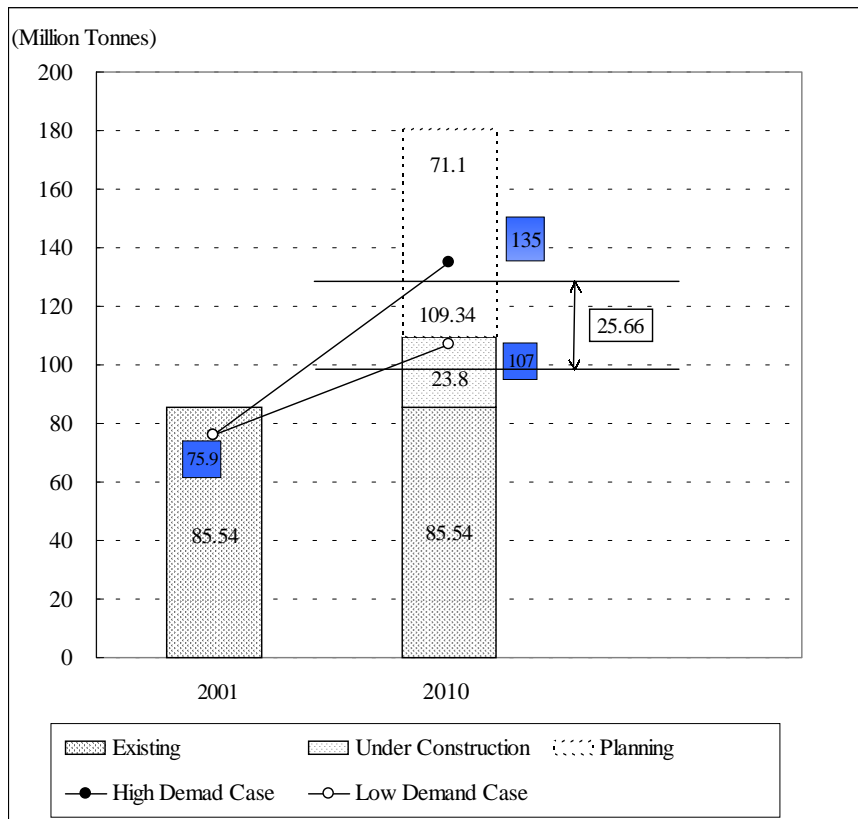


Figure 2: LNG Supply/Demand Forecast in Asia-Pacific Region [4]

3.2. Increase of LNG Transportation Capacity

A specific kind of carrier is required for LNG transportation. Therefore, the trade opportunities are somewhat limited. However, the number of such ships is increased specifically in these years, so that, flexible connection between supply/demand points is becoming easier, and we expect an increase of non-conventional trade.

In order to vitalize the LNG market, smooth/flexible transportation is a key issue. As shown in Figure 3, the numbers of LNG vessels has been increasing in these years. This fact indicates that more LNG transaction has been made and become popular in these years.

(Number of LNG vessels)

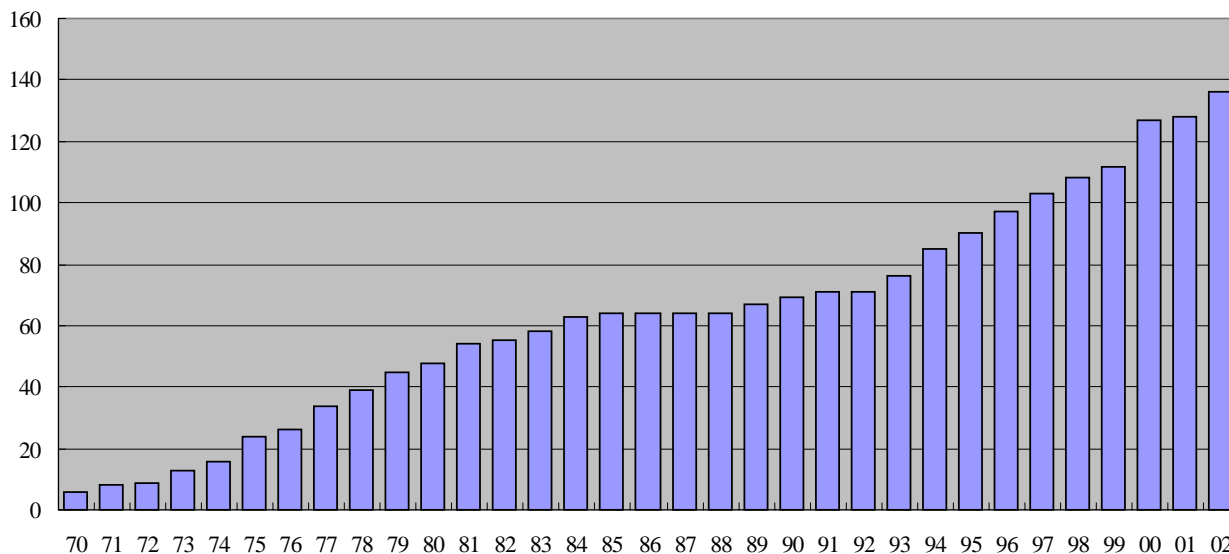


Figure 3: Number of LNG Vessels (1970-2001) [5]

3.3. Reduction of LNG Costs

As a result of technology developments, the cost of major LNG investments such as liquefaction plant and transportation ship is decreasing. Consequently, LNG costs on the demand side are expected lower than before. [2]

3.4. New Emerging Markets in China, etc.

Korea and Taiwan began importing LNG in 1986 and 1990, respectively. China is scheduled to begin importing LNG in 2006. Several plans to open new LNG receiving terminals in India and on West coast of US/Mexico are launched. As we mentioned above, the introduction of LNG to Europe is increasing, with the Middle East as its major supplier.

Suppliers for such projects in China and West coast of US/Mexico would be anticipated to be the same as those of Japan, Korea, and Taiwan in Asian-Pacific market. The status of these projects and potential suppliers should be observed carefully.

3.5. Potential Gas Demand Increase

The demand for natural gas, particularly in the power generation sector, has grown due to greater environmental awareness and energy security concerns. Among new gas-based technologies including fuel cell, GTL as diesel substitute might play a big role as a new application.

3.6. Participation of Non-conventional part of LNG chain

Conventional buyers and sellers are also participating in a portion of the LNG chain. For example, gas sellers become (partial) stockholders of regional utility companies, or Japanese power/gas companies invest in transportation and exploration. The business model is changing as a result of regulatory reform (liberalization) and by new participants into the market.

3.7. Materialization of Bilateral Pipelines

In South East Asia, pipelines between Malaysia/Indonesia, Indonesia/Singapore, Thailand /Myanmar are coming into operation. They will make up parts of the so-called Trans-AEAN pipeline network. While it will take some more time to complete the network, they can be regarded as the initiation of Asian important infrastructure. [6]

In Northeast Asia, pipelines from Sakhalin to Japan, or Russia to China/Korea are also being planned. It will take some time for these plans to take shape, however, from the viewpoint of diversification, they are a welcome development.

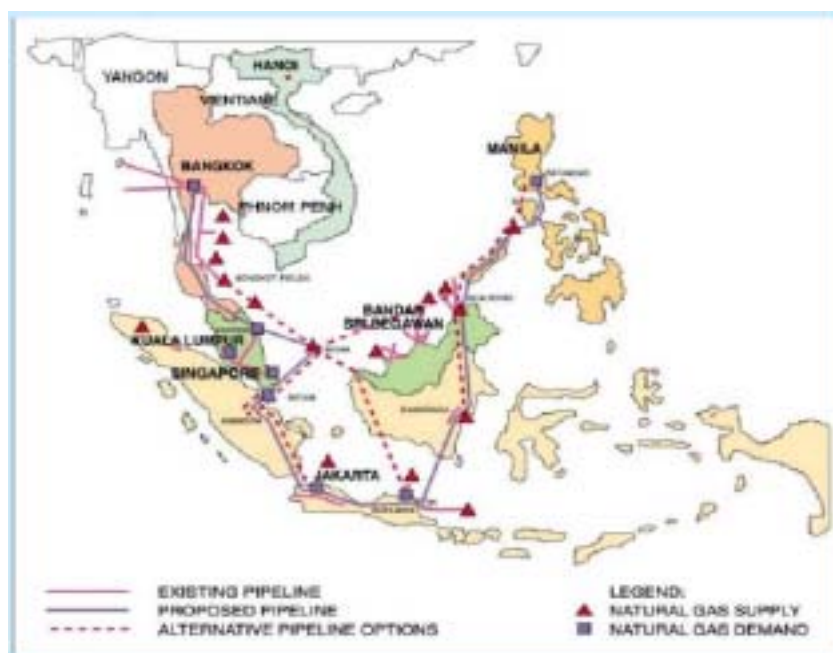


Figure 4: Trans ASEAN Pipeline Network [6]

4. ISSUES IN THE JAPANESE LNG MARKET

Taking into account the above-mentioned trends in the LNG world market, the following points come up as issues in the Japanese LNG market.

4.1. LNG Price Determination

Due to the prolonged economic recession in Japan, price reduction is a fundamental desire of industry. Since LNG price in Japan is determined by its link to imported oil, the so-called "Asian premium" in oil price is brought into the LNG price mechanism as shown in Figure 2. In the two other major LNG markets of Europe and USA, there are substantial pipeline gas networks, where the majority of the gas trade is made by pipeline one.

From this viewpoint, expensive LNG prices in Japan should be improved. Alternative options have been considered. [2] For example, prices of LNG imported to China from Australia could be a new benchmark for new concept. This issue has been raised recently. [7]

4.2. Terms and Conditions of LNG Trade

The Take-or-Pay clause played an important role in the early period of LNG introduction when supply was limited, because this ensured stable returns on heavy investment and helped to mitigate the risks. It would be worth re-considering this clause, since this binding might work non-desirable manner in these days. For Buyer, apparently, for the time that demand is not tight, this is a burden. Also, it should be noted that Buyer's requirements for stable supply might be one reason for the increase in LNG plant costs, as a result of ensuring the plant reliability in its operation. As market situation and variety of supply is different from early days of LNG history, the traditional clause could be reviewed to suit for the current situation.

It would be beneficial to consider relaxing existing destination limitation in order to provide greater flexibility. Once the relaxing condition is allowed, such existing gas-consuming countries as Japan, Korea, and Taiwan, can jointly consider the optimum operation of LNG terminals for each demand and other specific conditions by accommodating their LNG each other.

4.3 Development of Potential Gas Demand

There is an increasing potential demand for gas in the power generation sector as the industry may move away from coal and other fuel sources. At the same time, nuclear power installation is an

important issue in Japan. However, looking at Japan's portfolio of power sources, you can see that we have achieved good balance of so-called best-mix, among gas, coal, oil, nuclear, and others including hydro or others etc.

Therefore, when we talk about further development of gas demand, we should focus on city gas use. For example, in the case of industrial demand currently oil is adopted. Installing substantial supply infrastructure is an essential pre-requisite to developing potential demand, and sufficient preparation in Japan is necessary.

It should be noted that LNG trade is dealt in "batches", which requires a substantial volume of demand aggregation, however pipeline trade is different. Therefore it is important that the window remains open, so that even small consumers with limited demand are able to participate in the market and increase the existing gas market as much as possible.

5. BREAK-THROUGH TO THE PROMINENT GAS MARKET

As pointed out in the previous chapter, high prices, un-flexible terms and conditions in trade have created hesitation to commit further introduction of LNG into the Japanese market. Consequently, demand growth in the Asian LNG market is depressed due to the sense of frustration over the prolonged recession.

In this chapter, we will suggest measures to break away from the current situation, recognizing that the ultimate purpose of the gas industry is to expand demand, and contribute to the rise in the standard of living, and to materialize further convenient life for human being.

5.1. Dialogue between Producers and Consumers (Business to Business: B to B)

In the earlier stages of LNG introduction into the primary energy market in the 70's and 80's, players, or participants in the market were limited to a relatively small and closed society. During this time, in addition to the gas producer, transporter, and consumer who directly handled gas, people having a specific role or function such as lender or off-taker needed to participate the projects. These stakeholders also took on an important role to diversify the risk, and develop LNG projects in those days.

Since the characteristics of LNG along with the increase of the market has changed during last 30 years, the conventional role or function of the participants are also changing. Therefore, it is possible to simplify the participants' role, which could create more direct and frank communication between sellers and buyers.

For Asian consumers, they have born the qualitative risk (price) to a certain extent, however, quantitative risk (amount of take-off) cannot be looked after for them. The so-called Take-or-Pay clause is an obstacle for such the flexibility. If this clause is loosened, the situation is much more relaxed in the following situation, which would be a possible subject of dialogue between producers and consumers.

For Sellers:

- Un-scheduled liquefaction plant shut down,
- Shipping trouble
- Extension of annual turn-around

For Buyers:

- Sudden increase in demand such as cold weather, etc.

5.2. Communication among Parties on the same position (B⁺ to B⁺)

It is rather limited to find out/ ensure the substantial flexibility by one on one relation (mentioned as B to B in above 5.1). Therefore, combining several participants into a unit (group of companies, for example, buyer's group and seller's one) makes easier to do so.

One of the challenges we can observe as mutual and substantial communication between two parties is the EU case, although confronting manner is rather emphasized in connection with regulatory reform in European Gas Market. In autumn last year, there was another report in which three LNG exporting firms in South-East Asian area as Petronas-Malaysia, Pertamina-Indonesia, and Brunei got together and agreed to form a collaboration and alliance for LNG export. Taking into account the bitter experience of Indonesia's Arun plants supply disruption a couple of years ago, this unity will work to guarantee LNG supply security.

From the consumer side, we can find an example in a recent news report in which Japan's Chubu Electric, Taiwanese CPC, and Korean Kogas reached an agreement to mutually accommodate LNG. This kind of cooperation will serve to hedge against short-term demand fluctuations in similar partnership among user companies.

To consider introducing “flexibility” into LNG market, to enlarge the subject scope is advantage to obtain the better solution in wider selection range or combination opportunities. Such collaboration will help to accelerate flexibility and activate trade in LNG market. Such teaming-up/network will also contribute greatly from the viewpoint of safety.

5.3. Involvement of Governments or International Organizations (Country to Country: C to C)

The provision of infrastructure is often difficult for private business entities, even if there is some incentive for investment. Regarding LNG related infrastructure including receiving terminal, storage facility (-ies), pipeline, etc., pipeline installation and reinforcement is an urgent task that government should be directly involved in order to expand the gas market. In terms of regional pipeline network installation, complex coordination among multi-stakeholders such as gas supply, pipeline pass-through, and consuming countries is required. For such coordination, government commitment is necessary. Positive commitment of international organizations such as the Asian Development Bank, World Bank, United Nations development Programme should also be included.

When LNG storage comes up in the discussion, as in the case of oil, storage shall be considered and handled in the region, and initiative should be taken by related governments. The above-mentioned accommodation might be looked after governments in connection with the regional storage concept.

The International Energy Forum is an important opportunity for dialogue between producing and consuming countries. There is a statement in the discussion of oil supply security that gas consuming nations in Asia are concerned about “supply” security, on the other hand, “demand” security is also a strong concern for oil producing countries in the Middle East. [8] This implied statement is totally applicable to the gas case. Every possible opportunity should be utilized to exchange views and opinions, in order to search for mutually beneficial solutions and areas of compromise.

5.4. Cooperation with Gas Producing Countries

For the gas producing countries, gas-utilization technology, as a tool for effective gas utilization, is important to help monetization of resources. Consuming countries can contribute to offer technical matters in monetization. There is a room for gas-consuming countries to participate in the development of GTL (Gas-to-Liquid) or DME (Dimethyl Ether) technology. To adopt such technology (-ies) at gas-producing sites, to create a kind of GTL/DME chain to ensure the demand is an interesting option.

It should be noted that when we talk about energy security, we tend to focus only upon access to resources. However, we should focus not only on access to resources but also suitable technology to utilize/convert resources into the appropriate energy. In this sense, participating in the GTL/DME chain has an important meaning, avoiding a monopolized situation of specific technology.

6. Conclusion

More than 30 years has passed since LNG was introduced to Japan. The Japanese market has experienced changes, similar to other LNG importing countries in North-East Asia, where Japan still plays a significant role.

Growth rate of LNG demand in Asia has slowed the past few years, and we have observed a rapid introduction of LNG from the Atlantic market. However, there appears to be more room to develop potential demand in Asia. In order to develop this “hidden demand”, traditional and conventional methods of trade should be re-considered and modified, to meet actual demand.

The dialogue between gas-producing and consuming parties/countries is important and becoming more common place in the same way that oil-producing and consuming countries are increasing dialogue, in order to establish an amicable and win-win situation for both sides. Collaboration, as opposed to confrontation, with frank and substantial communication as colleagues, can be expected to enlarge the market in a sound direction.

This will enable the gas industry to achieve its ultimate goal to expand demand, and to contribute to the rise in the standard of living, and to materialize further convenient life for human being.

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