FUTURE LNG PRICE IN ASIAN MARKET

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ABSTRACT

This paper reviews current LNG pricing determination in the world, and will try to focus upon the confirmation of the points to be reviewed or clarified in Asian LNG market, considering market background.

The environment of LNG market in the Asian-Pacific region is changing at several points such as supply-demand balance change due to a slight timing lag between demand growth and new supply availability, diversification of the players' background and players entrance in their new part of LNG supply chain segment, change of contract terms and conditions reflecting market circumstances, competition among the energy market accompanying a strong request to search for better supply as often as possible, etc.

Traditionally, Japan, South Korea, and Taiwan have simply depended upon LNG for gas supply, since such major consuming countries do not have an international pipeline. The gas import price was relatively higher in such region, say, about one (1) dollar higher per million Btu in general, compared with European or North American markets, which has been an important issue in this region.

World LNG market is currently divided into three parts, such as Asia-Pacific, Continental Europe, and U.S./U.K markets in terms of pricing mechanism. While later two markets are approaching, Asia-Pacific market will be rather independent due to market background. The majority of the LNG trade will be based on long-term basis, with current LNG pricing mechanism/system there. However, some of new, non-traditional trade will bring the liquidity in some part. Such factors as neutrality and transparency, low volatility, competitiveness, and trade with liquidity, would be better to add on the future pricing mechanism/system.

In order to add the trade liquidity, current destination bindings shall be released. This will also contribute to expand the Asian gas market more, in sound manner. To consider the future gas market, we need to watch the following items such as Nuclear & coal for power generation, future development of global warming policy, new gas utilization technology, competition induced by deregulation/liberalization, emerging markets enhancement (India, China, West Coast of US/Mexico, and others), new infrastructure preparation. (new pipelines, terminals, etc.).
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1. PREAMBLE

The environment of LNG market in the Asian-Pacific region is changing at several points such as supply-demand balance change due to a slight timing lag between demand growth and new supply availability, diversification of the players’ background and players entrance in their new part of LNG supply chain segment, change of contract terms and conditions reflecting market circumstances, competition among the energy market accompanying a strong request to search for better supply as often as possible, etc.

Traditionally, Japan, South Korea, and Taiwan have simply depended upon LNG for gas supply, since such major consuming countries do not have an international pipeline. The gas import price was relatively higher in such region, say, about one (1) dollar higher per million Btu in general, compared with European or North American markets, which has been an important issue in this region.

Fig.1 LNG price

(Source) Energy Prices & Taxes 2005 Fourth Quarter, IEA

This paper reviews current LNG pricing in the world, and will try to focus upon the confirmation of the points to be reviewed or clarified in Asian LNG market, considering market background.
2. CURRENT PRICING MECHANISM/SYSTEM

The current world LNG market is regarded as divided into three parts, i.e., Asian-Pacific, Europe, and the U.S. In the case we talk about the LNG pricing mechanism/system, it is appropriate that we separate talks into three categories: Asia-Pacific, Continental Europe, and the U.S/U.K. The Asia-Pacific, Continental Europe, and the U.S/U.K markets follow their own pricing systems, which may approximate one another but are unlikely to be standardized globally.

2.1 Asia-Pacific market

When LNG was first introduced in Japan in 1969, its role was a substitute for fuel oil as a clean fuel then, mainly for power generation, in order to prevent from air pollution (SOx) and to increase the energy security by diversification later. So that, it seemed reasonable that LNG pricing formula was determined somehow in the connection with oil price.

- ’70s   Based on Fixed Price
- ’80s   Determined based on Official Government Selling Price of Crude Oil
- ’90s   Linked to Japan Crude Cocktail

In this region, the current LNG price is linked with the Japanese Crude Cocktail (JCC) and incorporates the “S curve” factor, which corrects the enhanced effect in the case that the crude price level is too high/low. In general, LNG price formula is linked with JCC, expressed as follows:

\[ P = A \times \text{JCC} + B \]

Where:  \( P \): US cents,  \( A \) (Slope),  \( B \) (Constant) are determined by project

The “S curve” is working for a buffer or a shock absorber in the case the oil price was ups and downs. I.e., a direct effect of oil price rapid movement on LNG price shall be mitigated, especially for higher/lower oil price level, for the sake of buyer/seller. (Fig. 2)

![Fig. 2 LNG price formula with S curve](image-url)
(Source) “Change of LNG Trade”, Gas Strategies
Above description is mainly applicable to Japan. Korea and Taiwan are understood basically similar. However, S curve consideration might not be incorporated, since the timing of both countries’ LNG introduction was made in 1986 and 1990, respectively, when oil price stayed low level then.

2.2 Continental Europe market

Such oil product as diesel and fuel oil, or Brent link formula is adopted as well as pipeline gas in the Continental Europe, where pipeline gas from Russia, the North Sea, North Africa etc. are available as well as LNG in the Mediterranean and Atlantic side. However, it is also observer that in Northern Continental Europe might have affected by U.K. market.

There are some examples to link with crude oil basket price traded at Rotterdam, coal for power generation link, etc.

2.3 U.S/U.K markets

In U.S., natural gas has been traded based on supply-demand relation at referencing points with much liquidity. Henry Hub is one of such the referencing points, as well as New York/Chicago City Gate, SoCal, Transco Zone 4/5, etc. (Fig. 3). In U.K., National Balancing Point (NBP) is used as referencing point.

Fig. 3 Price Determining point in North America

(Source) Natural Gas Market Centers and Hubs: A 2003 Update. EIA
3. FUTURE OF THE LNG PRICING SYSTEM IN THE ASIAN MARKET

2.1 Approach between European continental and U.S/U.K markets in the Atlantic

We notice that pipeline supply is dominant in European Continental and the U.S/U.K markets. Having enough endorsement of the gas supply, swap or arbitrage type trade has been activated, giving full play of the flexibility of LNG between East and West side of the Atlantic, which may tend to approximate U.S. and European markets to some extent, but they are unlikely to be standardized globally, soon. Consequently, pricing mechanism for both markets will become closer/similar. That means the liquidity is brought into short term, LNG pricing determination in Continental Europe, much more in Atlantic Basin as overall. Conventional determination described in 2.2 will still remain for long term LNG trade.

2.2 LNG’s firm position in Asian-Pacific

In contrast with U.S/U.K markets, there is no international trunk pipeline in the current Asia-Pacific market. In this market, responding to the demand growth or materialized new demand, the new LNG supply project was established one-by-one basis. Therefore, there is little room to exist excess supply, in nature, and spot trade, either. This point is quite different from gas market in Europe/USA.

While we assume that still traditional type of long-term, take-or-pay basis trade will be the majority in this market, however, such non-traditional type ones besides long-term, take-or-pay basis, as spot and swap might be more or less, appeared in future. It is preferable to include trade with liquidity in some portion, however, it is difficult to be a majority of the trades in this region.

2.3 LNG pricing mechanism/system in the Asian market

Some minor revisions are expected, such as changes in the reference oil (for example, not JCC, but Brent) and the sensitivity to oil prices (the degree of impact of oil price fluctuations) in the current Asian market. With oil prices hovering near record levels, the Western market is likely to take into account links to competitive fuel sources and adjustments associated with price fluctuations (S curve). The current Asia-Pacific pricing system, for that matter, deserves a certain amount of credit.

As described above, the majority of LNG trade will probably be based on long-term contracts in the Asian market, which, however, once the West Coast of the North American Continent, including Mexico, is open, the pricing mechanism/system will be influenced significantly by the ups and downs in the U.S. market. This will also result in an increase in flexible transactions such as spot trading.

2.4 Requirements for the future pricing mechanism/system

While JCC link formula has been accepted and seems to still continue in Asian market.
However, linkage with oil will be weakened, i.e., the slope will be lowered or a certain ceiling.

It is difficult to change one of the important terms and conditions, established after a long history and accumulated experiences. However, several points seem to be somehow considered/ incorporated for the future pricing mechanism/system as follows:

- Neutrality and Transparency
  A specific player in the market should not input his/her intention arbitrarily or non-sound manner in the playing market, and all stakeholders shall be able to monitor the trading process.

- Low volatility
  With natural gas prices remaining at record levels in the U.S. market for quite some time, buyers are beginning to call for stable prices, links to competitive fuel sources and adjustments associated with price fluctuations (S curve).

- Competitiveness
  Under the severe competition circumstance against other energy sources, or even among other gases, price competitiveness has been an important factor.

- Trade with liquidity
  For the coming variety of possible non-conventional trade, the mechanism/system should be applicable to the trade with liquidity, which is also anticipated in this region in some part.

4. CHANGE AND COOPERATION FOR ENLARGING GAS MARKET

4.1 Release of destination bindings

The stockpile system has been established for the supply and demand adjustment for oil. In the LNG trade, with Sellers cooperation, and accompanied with better communication among Buyers, accommodation has the similar role in the trade. However, it has a certain limitation.

In order to activate the trade with liquidity, current destination bindings need to be released. Furthermore, when new potential buyer is to introduce LNG, take-or-pay and destination bindings seem the major hurdle to hesitate the introduction. Once this obstacle is eliminated in Asia-Pacific region, the gas market will further expand more in sound manner.

4.2 Influential factors/uncertainties for LNG price in future

The pricing mechanism/system depends upon, or is affected by the market, i.e., what and how the trade/transaction is made. Therefore, we also need to consider the following influential factors/uncertainties, which affect LNG price:

- Nuclear & coal for power generation
- Future development of global warming policy
- New gas utilization technology
- Competition induced by Deregulation/Liberalization
- Emerging markets enhancement (India, China, West Coast of US/Mexico, and others)
We have to support and enhance the sound progress of the gas market, which will result in making a great contribution for human beings, so that gas penetrates much more into even undeveloped areas as the essential prerequisite. In order to attain this ultimate target, a low gas price is probably mandatory requirement.
CURRENT WORLD LNG MARKET

2.1 Asia-Pacific Basin

2.2 Atlantic Basin

3.

– Neutrality and Transparency
– Low volatility
– Competitiveness
– Trade with liquidity

Accommodation
Stockpile
Cooperation
Destination binding
Long term base

Accommodation
Stockpile
Cooperation
Destination binding

CURRENT WORLD LNG MARKET

2.1 Asia-Pacific Basin
First LNG delivery was made from Alaska, USA to Negishi (Yokohama), Japan in 1969. Since then,

2.2 Atlantic Basin

3.

In this region, the price is linked with the Japanese Crude Cocktail (JCC) and incorporates the “S curve” factor, which corrects the enhanced effect in the case that the crude price level is too high/low.

3.1 The Evolution of LNG Pricing System in the Asian Market

When LNG was firstly introduced in Japan in 1969, its role was a substitute for fuel oil as a clean fuel, mainly for power generation, in order to prevent from air pollution (SOx)) and to increase the energy security by diversification later. So that, it seemed reasonable that LNG pricing formula was determined somehow in the connection with oil price.

‘70s Based on Fixed Price
‘80s Determined by the link of Official Government Selling Price of Crude Oil
‘90s Linked to Japan Crude Cocktail
Technology, industry efficiency and customer focus sets out the need for both innovation and efficiency for economic and environmental reasons and also in the interests of our customers;

Gas as the fuel of choice preceding a sustainable energy system reflects the natural gas industry’s responsibility for ensuring that the transition goes smoothly;

The industry’s role as a responsible corporate citizen emphasises that the IGU community wishes to enjoy society’s approbation and will continuously strive to achieve it.

Confirmation:::

INDENT