Asia’s Position in the Expanding Global LNG and Gas Markets

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Presentation Disclaimer: This presentation is given for general informational purposes only and is not intended to influence any specific actions.
Outline

- World LNG demand grows along with China’s LNG demand
- Prices and investment activities
- India and ASEAN are also expected to increase LNG demand
- Flexibility in commercial and operational aspects
The great expansion continues
- Australia, the United States, and Russia provide incremental volumes
- Supply availability drives greater appetite from consumers
- New LNG production projects start up and ramp up activities

China becomes the largest importer of natural gas (LNG and pipeline gas combined)

LNG prices are higher under term contracts and spot transactions

FIDs are coming from the next wave of LNG production projects

Potential incremental LNG production proposals are emerging

LNG flexibility is improving
- Flexible supply is increasing from the United States and portfolio players
- Japan and EC lead efforts to remove restrictions

LNG trading frameworks develop
- including Platts MOC and GLX, etc.

Politics pose uncertainty in the LNG market

More companies shake hands

Some LNG importers are resuming gas exports
World LNG demand and supply have nearly tripled in this century.

Japan has been the largest LNG importer for many years but China is rapidly expanding its imports.

The number of importing countries also increased from 11 in 2000 to 39 in 2017, while the number of exporting countries grew 12 to 20 in the same period.

Source: GIIGNL
China Becomes the Largest Importer of Gas

China's monthly gas imports (LNG and pipeline gas combined) were larger in September and November 2017 and have been larger since April 2018 than those of Japan.

Source: Compiled by the author based on customs statistics
Demand in traditional LNG importers (Japan, Korea, and Chinese Taipei; JKT) will remain almost flat.
- Yet the restart of nuclear power plants (Japan) and the progress of nuclear phase-out program (Korea and Chinese Taipei) may affect LNG demand.

China and India will lead the world LNG demand growth.

South and Southeast Asian will also follow the two demand giants.

Europe will also show the sustained growth in its LNG demand although its demand in power sector is becoming uncertain.

Source: IEEJ
LNG and Oil Prices Have Been Higher in 2018

Source: Compiled by the author based on data from exchange places
Projects Vying for Next Pole Positions

- Arctic LNG 2
- PNG Expansion
- Arctic LNG 2
- PNG Expansion
- Mozambique Area 4
- Mozambique Area 1
- Corpus Christi T3
- Golden Pass
- LNG Canada
- Energía Costa Azul
- Calcasieu Pass LNG
- Papua LNG/ PNG Expansion
- Tortue FLNG
- Mauritania / Senegal
- Qatar Mega Train Expansion
- Woodfibre
A History of LNG FIDs

Source: Compiled by the author based on publicly available information
### Equity participation

<table>
<thead>
<tr>
<th>Project</th>
<th>Partners</th>
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</thead>
<tbody>
<tr>
<td>Cameron</td>
<td>Sempra, Total (Engie), JLI (Mitsubishi Corporation and NYK), Mitsui and Company</td>
</tr>
<tr>
<td>Freeport</td>
<td>Freeport LNG, Jera and Osaka Gas</td>
</tr>
<tr>
<td>LNG Canada</td>
<td>Shell, Petronas, PetroChina, Mitsubishi Corporation, and Kogas</td>
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### Liquefaction tolling

<table>
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<th>Project</th>
<th>Tolling Customers</th>
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<tr>
<td>Cove Point</td>
<td>Sumitomo Corporation and Tokyo Gas</td>
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<td>Jordan Cove</td>
<td>Jera and Itochu</td>
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While demand is growing, its growth speed seems to have slowed down due to the recent price rise.

- LNG demand in India very price-sensitive.

Major areas of natural gas use are industrial and power generation.

- LNG is mainly used for industrial fuel and feedstock for fertilizer.

Current government strongly support "gasification" of India.

Infrastructure bottleneck is another obstacle for LNG use.

- Lack of breakwater or pipeline connection prohibits LNG adoption.

Sources: GIIGNL, IEEJ
Various factors drive LNG demand.
- Energy demand growth, improvement of air quality, and the depletion of domestic natural gas production are increasing LNG demand in ASEAN.

LNG can be an economic solution for diesel-fired power generation in archipelagic areas.

In many countries, however, securing investments for LNG receiving and utilization is the biggest challenge.
- Domestic price regulation
- Competitiveness against coal
- Priority against renewable energy
- Asian premium caused by crude oil price link
- Limited financial capability

**LNG demand in ASEAN**

Sources: GIIGNL, IEEJ
Inflexible contractual terms prevent liquidity improvement in the Asian LNG market.
- Destination clause, Take or Pay

Background of inflexibility
- Greenfield projects required traditional rigid contract to manage the investment risk in the past.
- Flexible LNG was supposed to cause additional cost in logistics in the past.

Changing realities in the world LNG market:
- Increasing supply of LNG without destination restriction
- Operational flexibility in tolling business model in the United States
- Lowering the hurdle to introduce LNG thanks to FSRUs
- Liberalization in the downstream markets
- Uncertainty in nuclear power generation

Flexibility is essential and useful for both importers and exporters because right price signal will adjust demand/supply efficiently.
Significance of the study

- The study clearly states that destination restriction in existing LNG contracts are likely to violate the Japanese Anti-Monopoly Act.
- LNG sellers should neither provide competition-restraining clauses nor adopt competition-restraining business practices, when LNG sellers conclude a new contract or revise a contract after the expiration.
- LNG sellers, at least, should review competition-restraining business practices, as for the existing contracts before the expiration.
- The study states take-or-pay provisions also can violate the Anti-Monopoly Act.

The study can set a standard of long-term contract if competition authorities in other countries follow it.
To Enhance Flexibility

• To abolish such restrictions, multi-front approach should be pursued: legal and commercial
• To achieve flexibility within the region, regional cooperation is necessary
• Should convince producers that flexibility will be beneficial to all parties involved
Penetration of FSRUs

Rapid increase of FSRUs (Floating Storage and Regasification Units)
- Nearly 30 units are in operation in 2018.
- Significantly contributed to LNG introduction in emerging countries

Advantages
- Low initial CAPEX, shorter construction period, no need to secure land, smaller environmental footprint, operational flexibility, etc.

Sources: IEEJ, JOGMEC
# How to promote gas (LNG) demand and ensure investments?

<table>
<thead>
<tr>
<th>Sellers</th>
<th>Financial sector</th>
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<tbody>
<tr>
<td>Cost reduction</td>
<td>Financing based on new natural gas pricing benchmarks</td>
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<tr>
<td>Removal of destination restriction</td>
<td>Encouraging and advising natural gas producers and users to improve investment climate</td>
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<tr>
<td>Creation / adoption of reliable and transparent gas price benchmark</td>
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<td>Transition to gas-to-gas competition price</td>
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<td>Investments in new project</td>
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<td>Investment in downstream sector</td>
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<th>Buyers (company)</th>
<th>Importer’s government</th>
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<tr>
<td>Cost reduction</td>
<td>Provision of clear policy target</td>
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<tr>
<td>Creation / adoption of reliable and transparent gas price benchmark</td>
<td>Promotion of infrastructure development (public financial support, tax incentive for investment, dialogue with local community, etc)</td>
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<tr>
<td>Commitment for long-term contract</td>
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<td>Upstream equity participation</td>
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<td>Enhancing trading capabilities</td>
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<tr>
<td>Utilizing new technologies such as FSRU, LNG vessels, etc.</td>
<td>Clear policy direction on GHG emission reduction</td>
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Source: IEEJ
Three Major Factors from Japan Impacting the Global LNG Market

• The greatest restructuring process for Japanese city gas and electric power companies - Companies are responding to new reality
• A new regulation on third party use of LNG terminals
• Japan Fair Trade Commission’s investigation in LNG destination restrictions
The Latest LNG Terminal Third-Party Use Regulation

- To utilise unused capacity
- Prohibiting owners of primary LNG receiving terminals, without justifiable reasons, from rejecting third parties
- Before the latest regime, third-party use of LNG terminal capacity had been at the discretion of each terminal owner
- LNG terminals with tank capacity of 200,000 kl or more shall be covered
- City-gas companies, electric power utility companies, petroleum companies, and others, who own primary LNG receiving terminals shall be covered
- 18 out of 32 terminals are covered
Growth of LNG demand is certain.
- Although LNG is still a minor portion of the world natural gas supply, its demand growth is promising because of the world energy demand growth and climate change actions.
- Unprecedented expansion of supply capacity and transformation of ways of transactions create opportunities to create new demand for natural gas especially in Asia.

Timely investment is very important.
- Timely decision-making and swift implementation of LNG projects are critically important for both LNG producers and consumers.

The role of policy is vital.
- Government and policy actions are important to ensure a sound development of market.