

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

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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

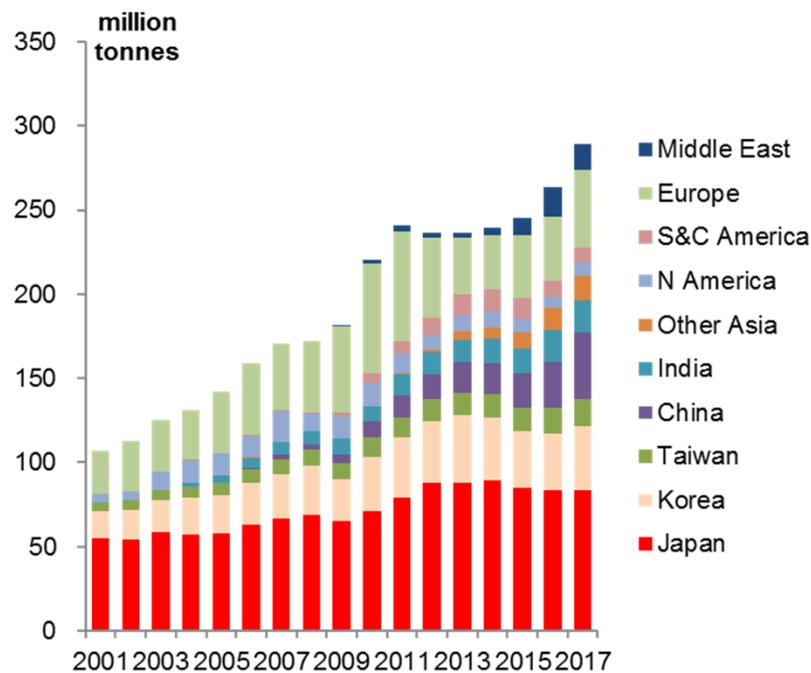
2018 LNG Market

- 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

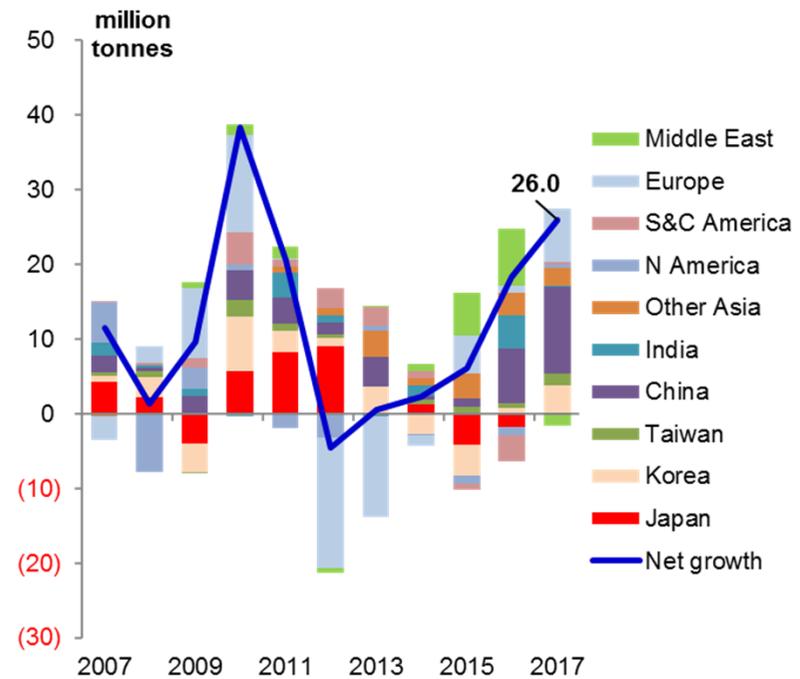
World LNG Demand Grows Fast

- 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.

World LNG demand



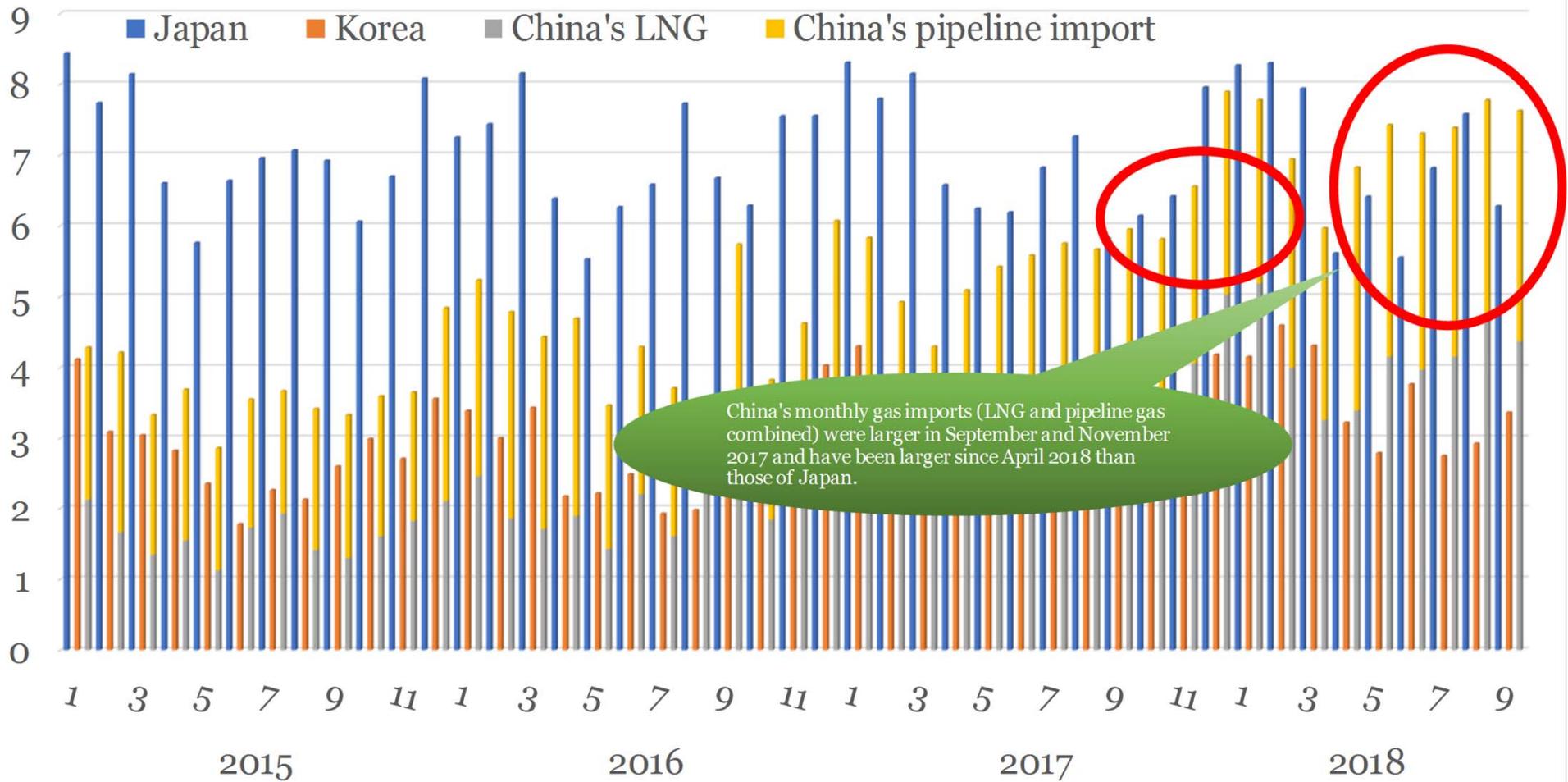
World LNG demand growth (y-o-y)



Source: GIIGNL

China Becomes the Largest Importer of Gas

(million tonnes)

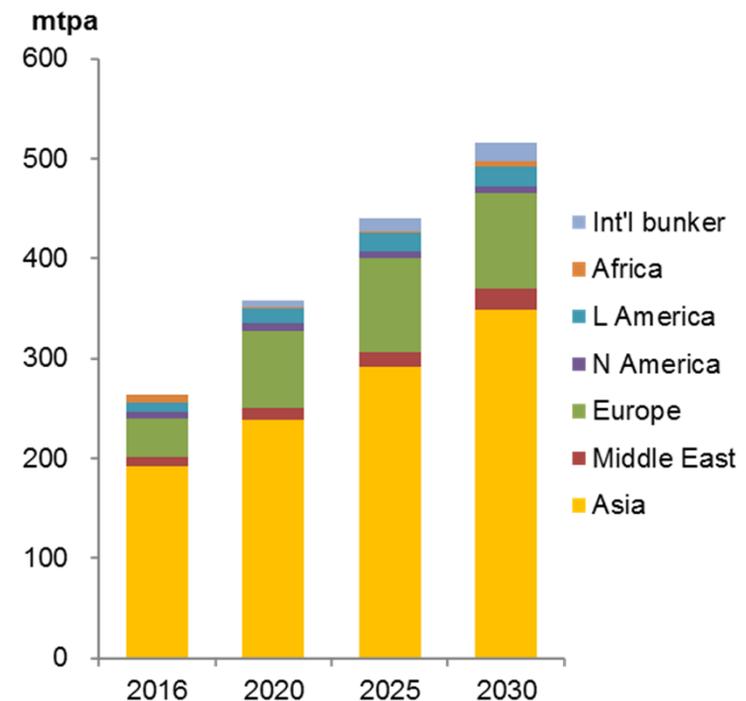


Source: Compiled by the author based on customs statistics

World LNG Demand Is Expected to Grow

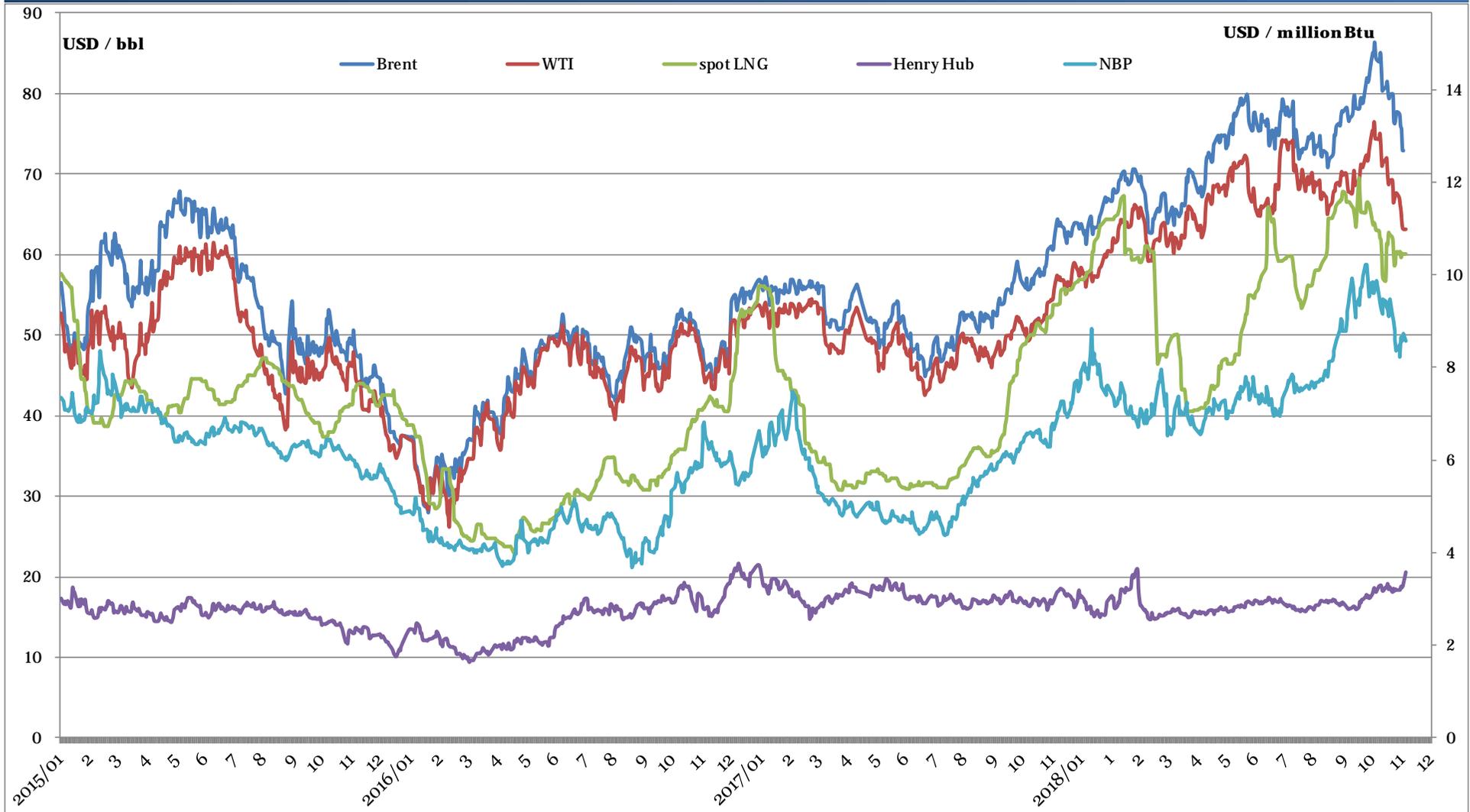
- Demand in traditional LNG importers (Japan, Korea, and Chinese Taipei; JKT) will remain almost flat.
 - Yet the restart of nuclear power plants (Japan) and the progress of nuclear phase-out program (Korea and Chinese Taipei) may affect LNG demand.
- China and India will lead the world LNG demand growth.
- 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.

World LNG demand outlook



Source: IEEJ

LNG and Oil Prices Have Been Higher in 2018

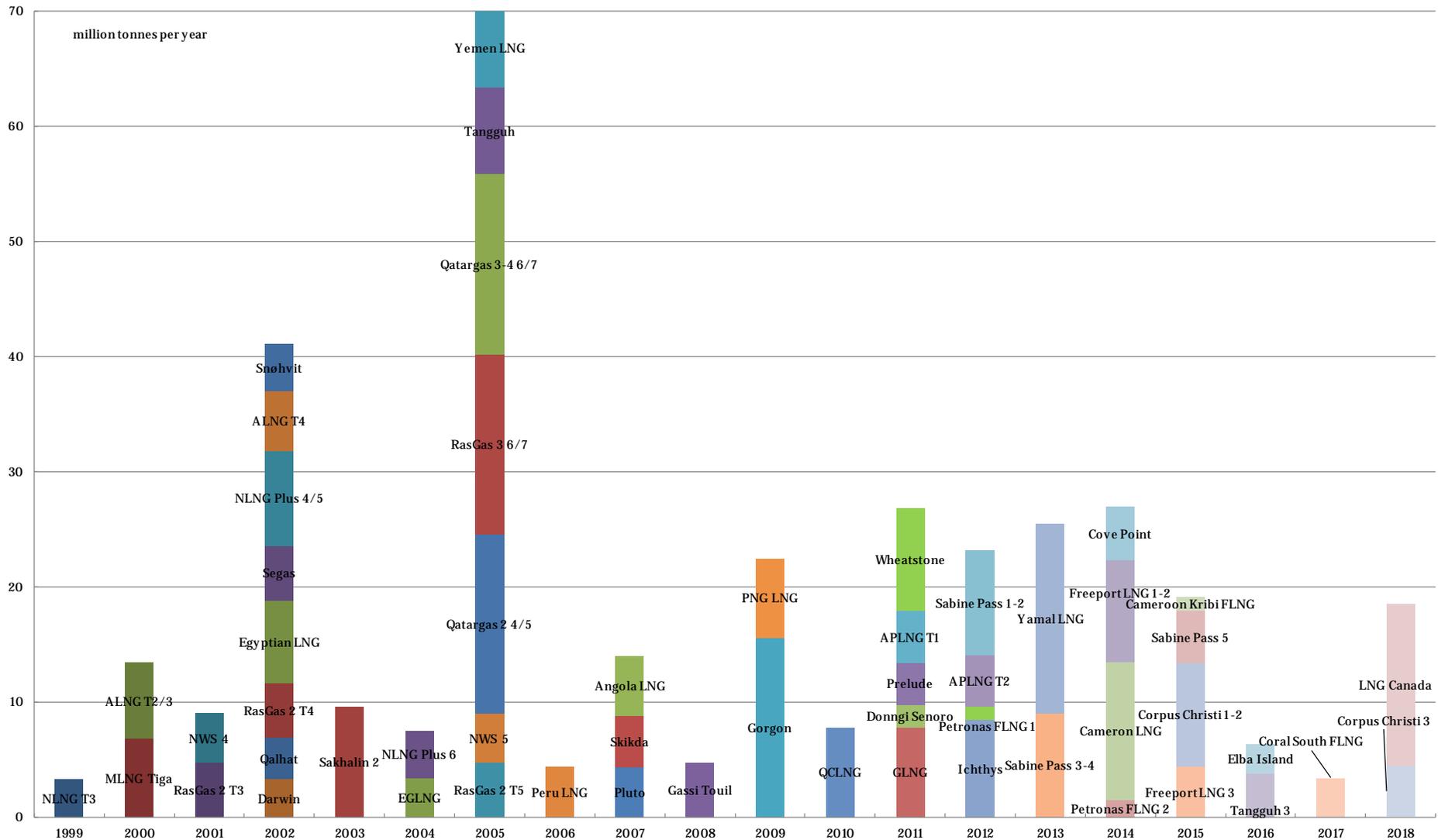


Source: Compiled by the author based on data from exchange places

Projects Vying for Next Pole Positions



A History of LNG FIDs



Source: Compiled by the author based on publicly available information

Japanese Involvement in North American LNG

Equity participation

Project	Partners
Cameron	Sempra, Total (Engie), JLI (Mitsubishi Corporation and NYK), Mitsui and Company
Freeport	Freeport LNG, Jera and Osaka Gas
LNG Canada	Shell, Petronas, PetroChina, Mitsubishi Corporation, and Kogas

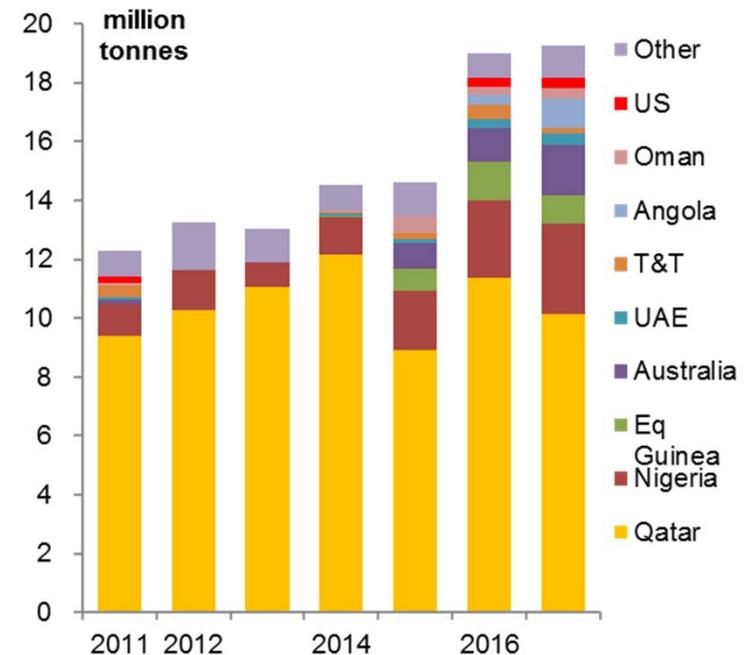
Liquefaction tolling

Project	Tolling Customers
Cove Point	Sumitomo Corporation and Tokyo Gas
Cameron	Mitsubishi Corporation, Mitsui and Company
Freeport	Osaka Gas, Jera, Toshiba and Sumitomo Corporation
Jordan Cove	Jera and Itochu

LNG Demand in India Is Expected to Grow

- 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.

LNG demand in India

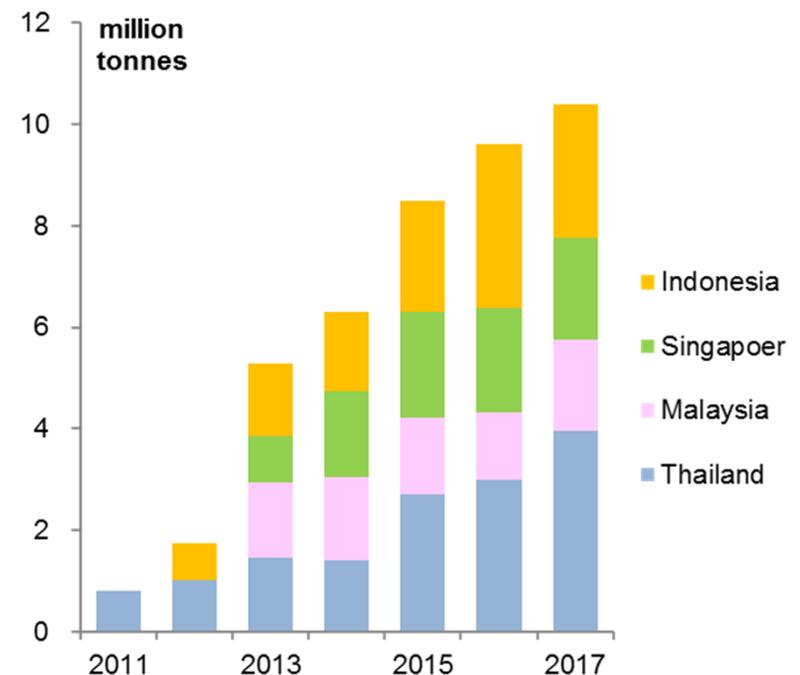


Sources: GIIGNL, IEEJ

LNG Demand in ASEAN Also Is Expected to Grow

- 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

Supply Flexibility Is the Key

- 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.

Implications of JFTC Study on Destination Restriction

- 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.

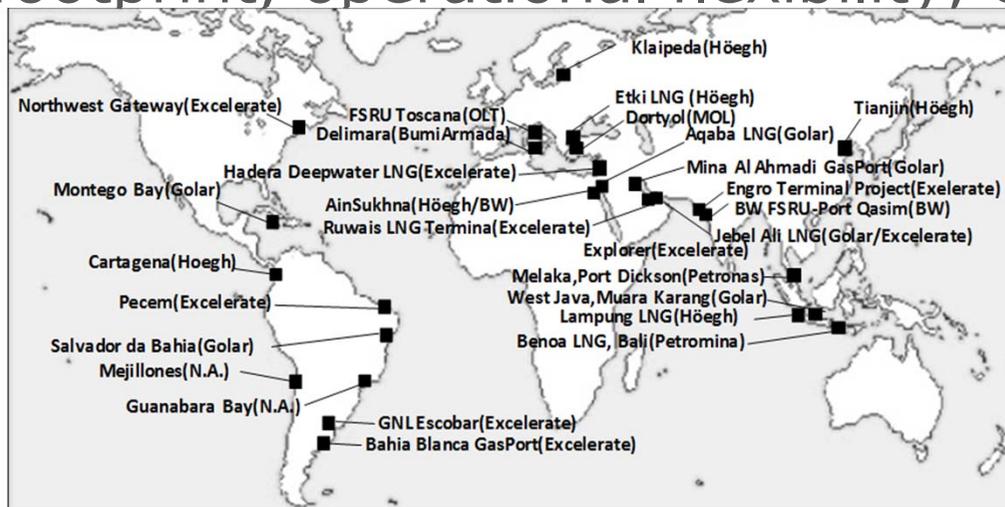
- The study can set a standard of long-term contract if competition authorities in other countries follow it.

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?

Sellers

- Cost reduction
- Removal of destination restriction
- Creation / adoption of reliable and transparent gas price benchmark
- Transition to gas-to-gas competition price
- Investments in new project
- Investment in downstream sector

Buyers (company)

- Cost reduction
- Creation / adoption of reliable and transparent gas price benchmark
- Commitment for long-term contract
- Upstream equity participation
- Enhancing trading capabilities
- Utilizing new technologies such as FSRU, LNG vessels, etc.

Financial sector

- Financing based on new natural gas pricing benchmarks
- Encouraging and advising natural gas producers and users to improve investment climate

Importer's government

- Provision of clear policy target
- Promotion of infrastructure development (public financial support, tax incentive for investment, dialogue with local community, etc)
- Clear policy direction on GHG emission reduction

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

Key Takeaways - Thank You

- **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.