

The Role of Natural Gas in Japan and Asia



2017 Korea-China-Japan Joint Energy Workshop
Seoul, Korea

11 September 2017

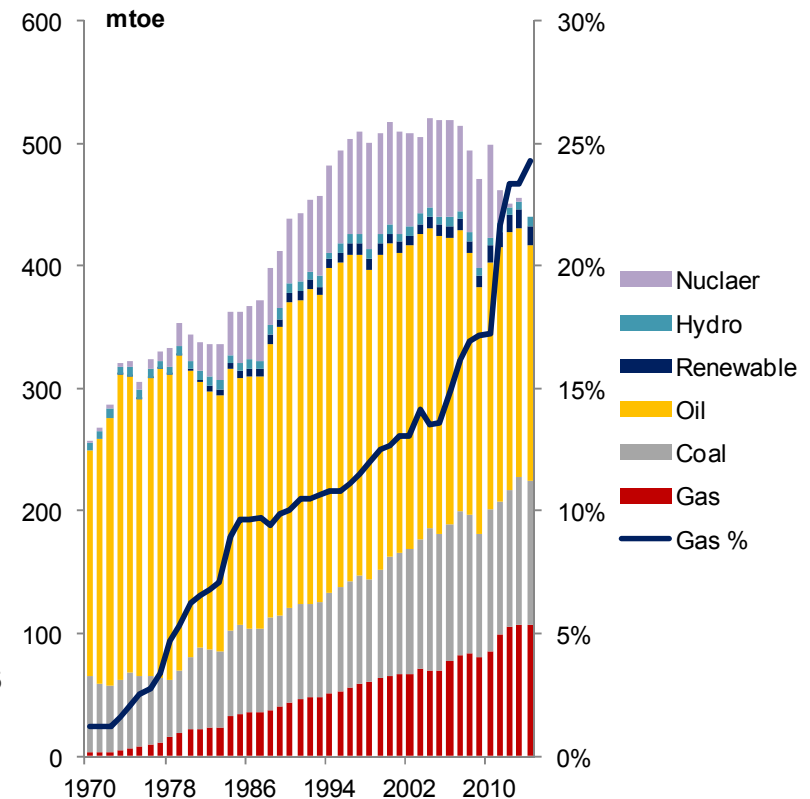
Yoshikazu Kobayashi
The Institute of Energy Economics, Japan

The role of natural gas in Japan

- Japan's Basic Energy Plan positions natural gas as “an important energy source whose role is expected to expand.”
 - Smaller geopolitical risks, least GHG emissions among fossil fuels, source of H₂.

- Demand of natural gas, however, will decline in the coming years.
 - Declining demand for power sector due to restarts of nuclear and penetration of renewable demand.
 - Matured market in residential / commercial sector due to energy conservation and energy switch to electricity
 - There are still rooms for fuel switch from oil products in industrial sector.
 - What if nuclear restarts will not be realized as expected?
 - Impacts of market liberalization?

Japanese gas demand by sector



Full liberalization of gas market

- ▣ Retail sector of Japanese market had been regulated and supplied by local gas monopolies to secure stable gas supply.
 - The size of the regulated market was approximately 20 billion USD.
- ▣ The sector was liberalized in April 2017 and it is expected to reduce the cost by activation of competition, as well as to increase the convenience for consumers.

Already Liberalized

(Over 100,000m³ ~)

Market Size
 \2.6trillion
 (=\$21.7bn, €19.3bn)



Large factory



Mid-sized office



Small factory

Liberalized on April 1st, 2017

Market Size 2.4trillion(=\$20.0 bn, €17.8bn)
 Number of Household 24.7 million
 Number of Shops & Offices 1.2 million



Household

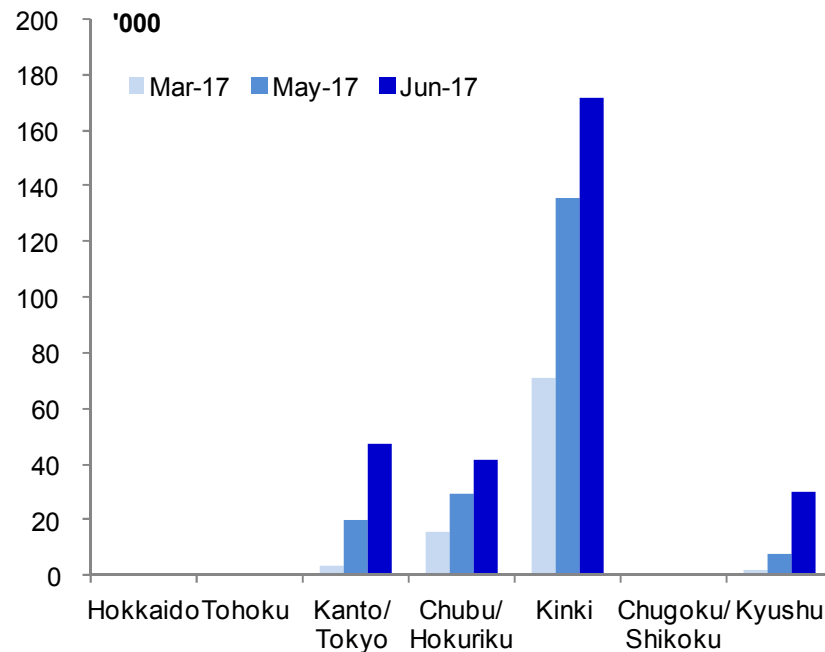


Shops

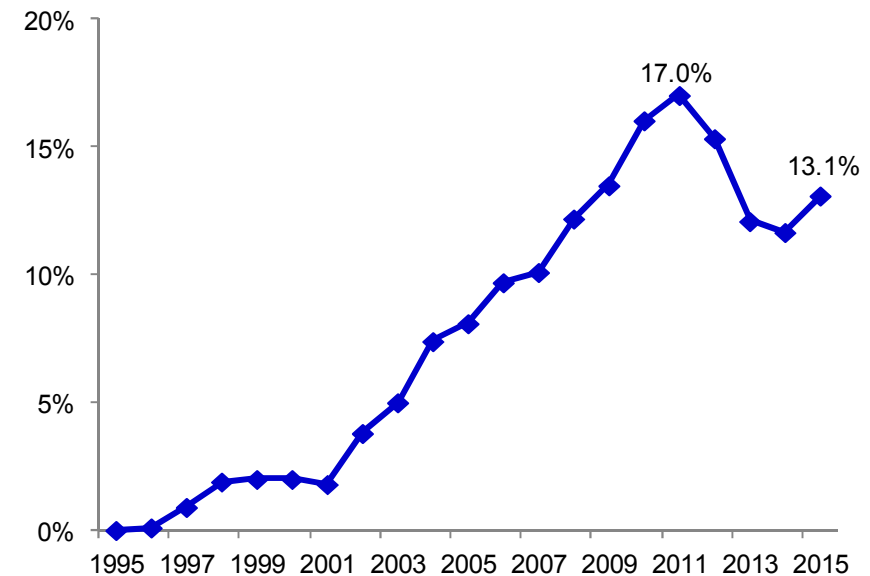
Current status of liberalization

- The impact of liberalization is so far limited although in some regions such as Kinki (Osaka area) competitions become fierce.
 - The degree of competition depends on the power companies' behaviors.
- Competitions in the already liberalized industrial sector may become more intense.
 - Regulation of “dual pipeline” was relaxed so that power companies can build their own pipeline to industrial users.

Switching numbers in each region



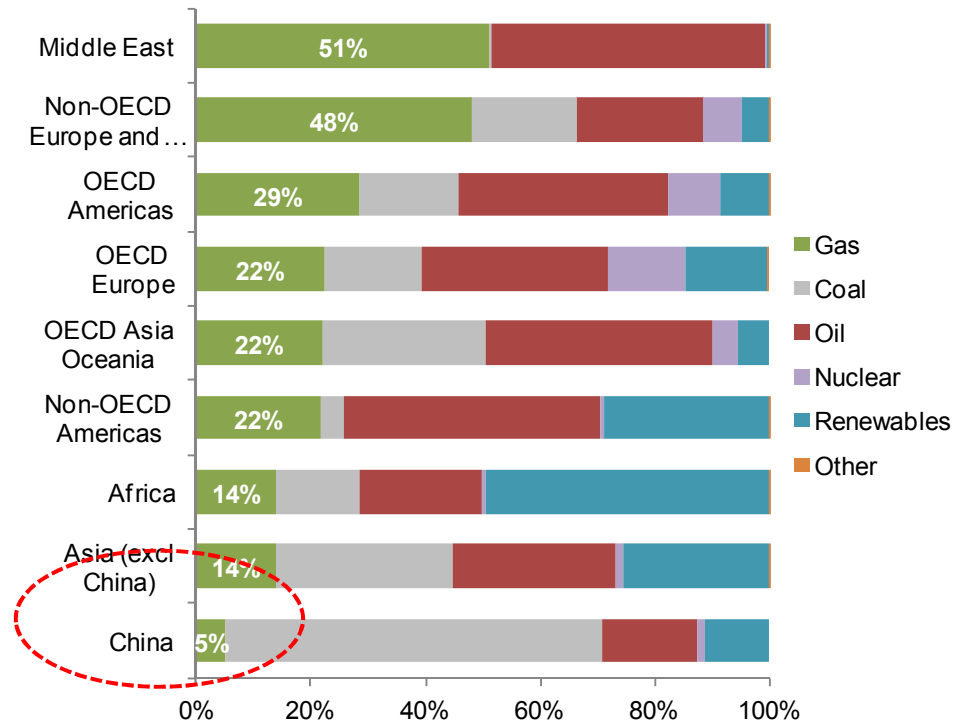
Share of Non-gas companies' supply in large demand users



Growing significance of “gasification” in Asia

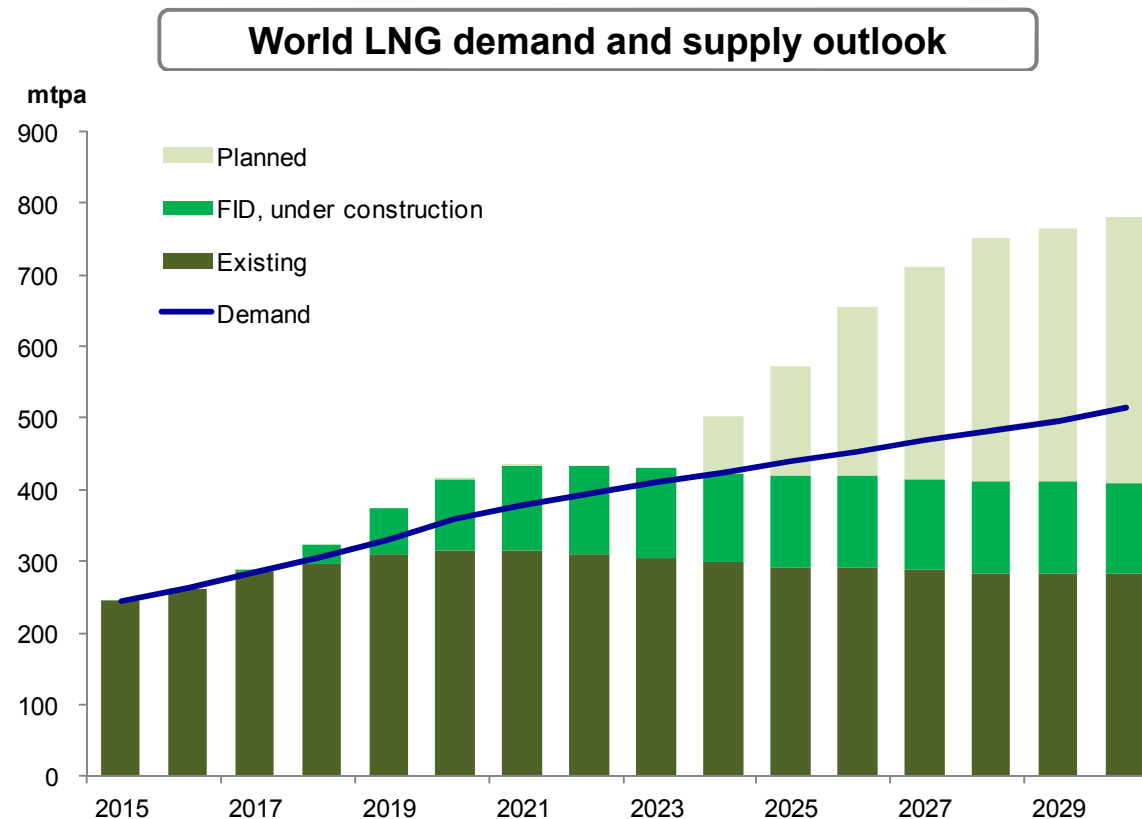
- Asia will experience the fastest energy demand growth in the world, and has a significant potential of energy switch to natural gas.
- Natural gas contributes to 4E_s of Asia.
 - Equity: No need for fuel collection, women’s participation to social and economic activities, children’s enrollment of school, etc.
 - Environment: GHG emissions reduction, improvement of air quality
 - Energy security: Diversification of energy sources and geographical supply sources
 - Economic competitiveness: Economic alternative to oil products though less competitive than coal or subsidized renewable energy.

Energy mix by region



Outlook of the world LNG demand and supply.

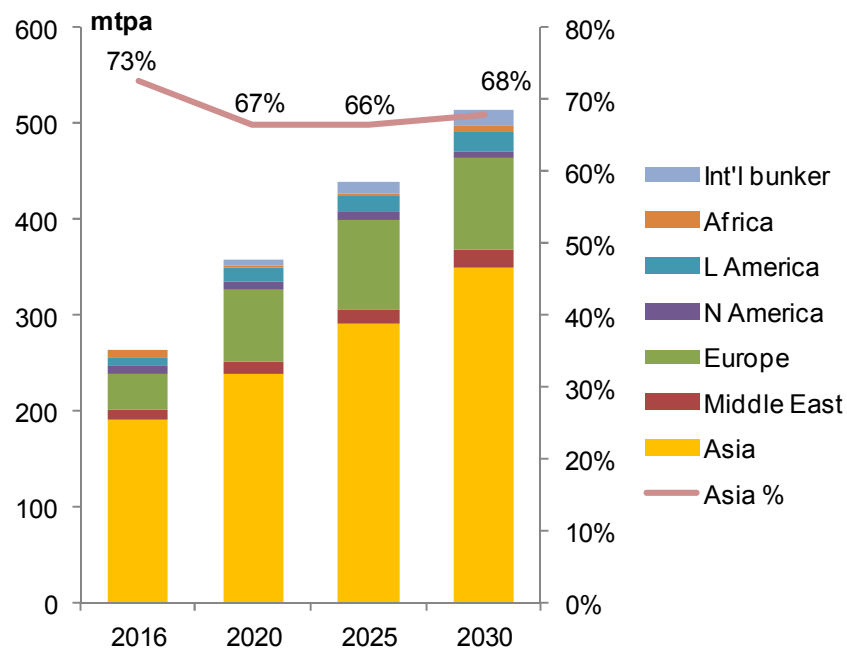
- Supply surplus is likely to continue in the medium term (~2024).
- Realization of planned capacity in a timely manner is needed to keep the demand and supply balanced beyond the mid-2020s.
 - Qatari expansion of its capacity may greatly contribute to maintain the balance.



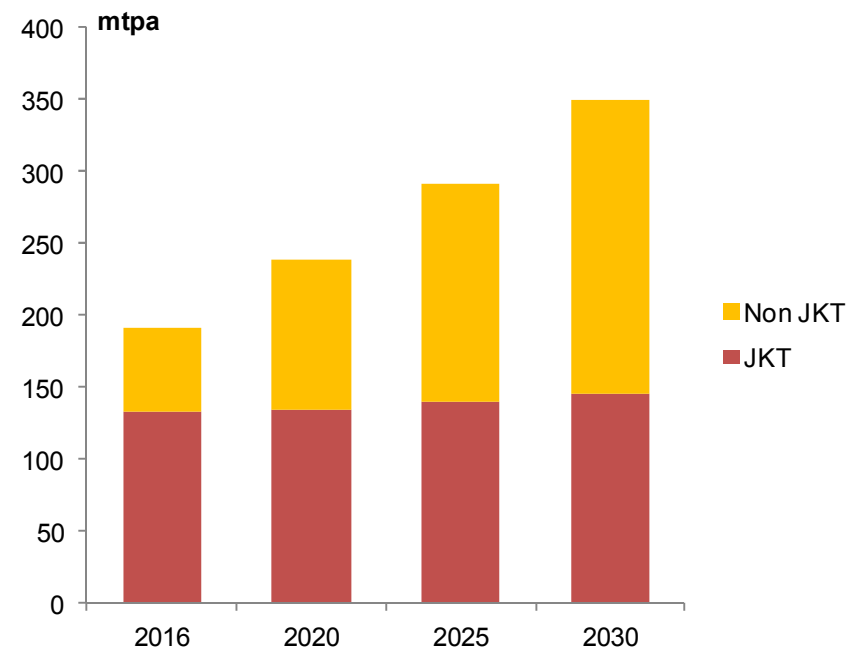
LNG demand in Asia

- The share of Asia will remain high despite emerging countries start to import LNG.
- The market becomes more price-elastic.
 - Emerging countries have more options compared to JKT; domestic coal consumption, domestic natural gas production, pipeline imports, renewable energy supply, etc.
- Emerging countries prefer more flexibilities in supply.

The share of Asia in world LNG demand



LNG demand of JKT and other Asia



Supply flexibility of LNG

- Inflexible contractual terms prevent liquidity improvement in Asian LNG market.
 - Contract duration (20 years+)
 - Take or Pay
 - Destination clause

- Background of inflexibility
 - Remote greenfield projects need traditional rigid contract to manage the investment risk.
 - Flexible LNG can cause additional cost in logistics.

- Changing realities in the world LNG market:
 - Increasing supply of US LNG without destination restriction
 - Operational flexibility in tolling business model in the US
 - Lowering the hurdle to introduce LNG thanks to adoption of FSRU
 - Market liberalization of the uncertain demand for each buyer
 - Uncertainty in nuclear power generation due to policy and PA factors

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

Implications of JFTC's study on LNG trading

- Japan Fair Trade Commission (JFTC) published a study of international LNG trading practice.
- Significance of the study
 - The study clearly mentions that the destination restriction in the existing LNG long-term contract violates the Japanese Anti-Monopoly Act.
 - It urges Japanese companies not to accept the destination clause in the new and renewed contract.
 - It recommends the companies to renegotiate the destination restriction also in the existing contracts.
 - It first comments that Take-or-pay provision also can violates the Anti-Monopoly Act.
- Challenges
 - Effectiveness to foreign firms is the biggest challenge.
 - Application to DES contracts
- It can set a standard of long-term contract if FTCs in other countries may follow the JFTC study.

Conclusions

- The role of natural gas in Japan will remain significant though its demand will slowly decline.
- The impact of market liberalization is limited at this stage; the degree of market competitions depend on the power companies' intentions and strategies.
- Natural gas is expected to play a far more important role to improve 4Es of Asia.
- Enhancement of supply flexibility will become more important in the Asian LNG market as the share of non-traditional (non-JKT) markets expands.