

# Initiatives for Expanding Natural Gas Demand and Hopes for Russian Natural Gas

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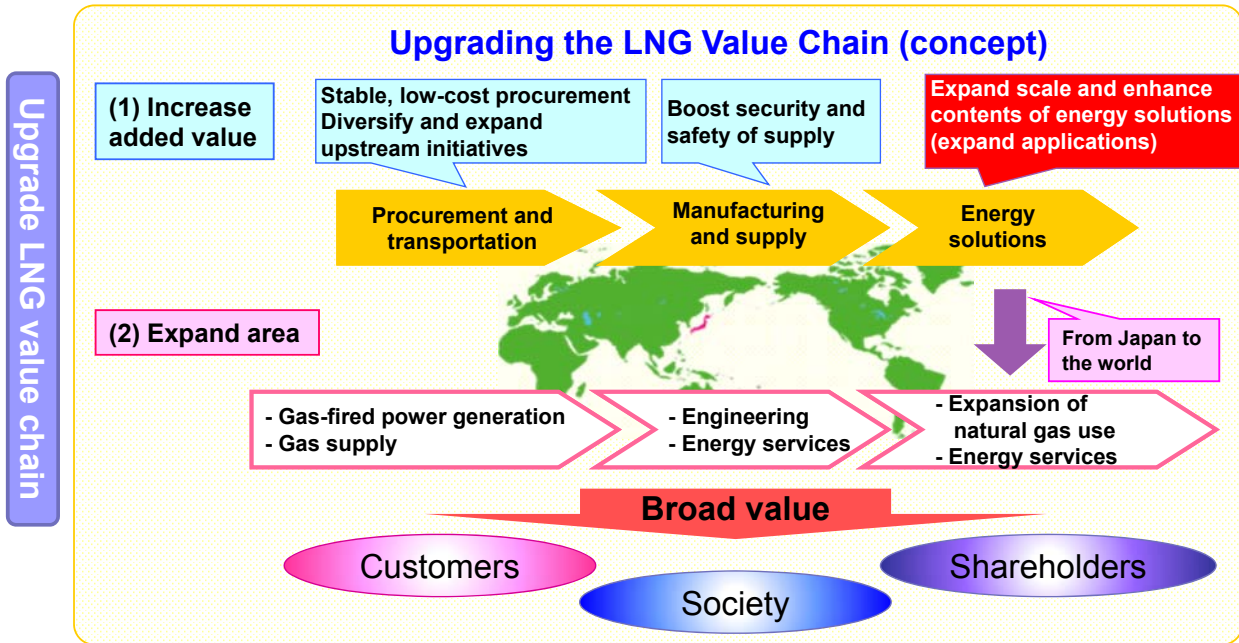
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1. Initiatives by City Gas Companies to Expand Demand



# Upgrading the Tokyo Gas LNG Value Chain

- Upgrade the LNG value chain and provide broad value to customers, society, and shareholders
  - 1) **Increase added value** provided through LNG value chain
  - 2) **Expand area** where LNG value chain is deployed, thereby creating new value

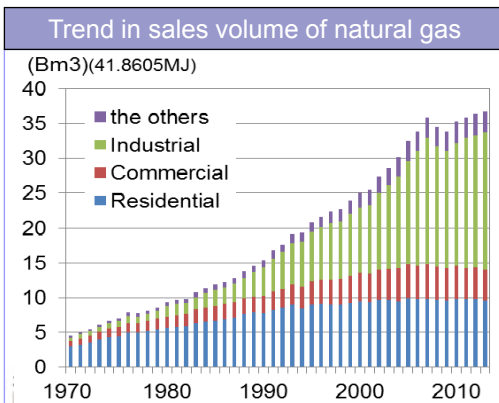


1. Initiatives by City Gas Companies to Expand Demand



# History of LNG Application Development (city gas industry)

- City gas companies, in cooperation with manufacturers, have been working to expand applications of natural gas from cooking, heating, and hot water supply to thermal equipment for industrial use, air conditioning equipment, and CHPs.



**Technology Development**

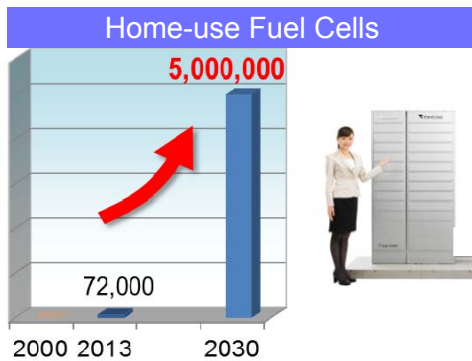
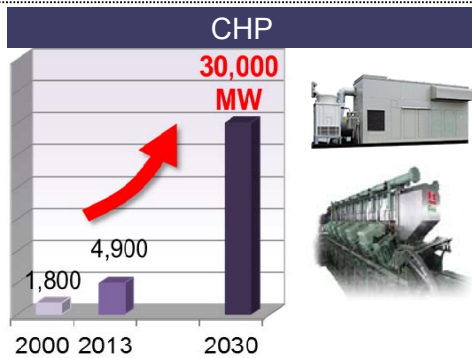


1. Initiatives by City Gas Companies to Expand Demand

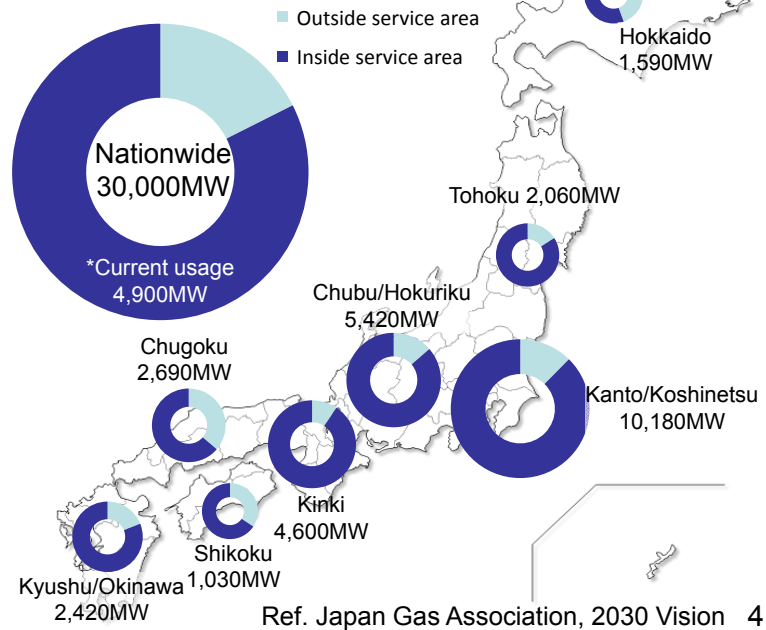


# Initiatives for Developing LNG Demand (1)

- By promoting the use of environmentally friendly CHPs as well as home-use fuel cells and other distributed generation sources, we are aiming to reduce CO<sub>2</sub> and expand natural gas demand.



Potential for spread of CHP in each region  
⇒ There is potential throughout Japan



1. Initiatives by City Gas Companies to Expand Demand



# Initiatives for Developing LNG Demand (2)

- In the transportation field, a promising target for LNG use, we have set high goals for introduction by 2030 and are promoting strong initiatives including technology development and infrastructure investment in order to expand LNG demand.

**Help environment**

- Reduce CO<sub>2</sub> (global warming countermeasure)
- Reduce NOx and PM (regional environmental protection measures)

**Fuel diversification in transportation field**

- Aim for 50 to 70% share of “next-generation vehicles” in new vehicle sales by 2030 (Strategic Energy Plan of Japan: April 2014)
- In Great East Japan Earthquake, vehicle fuel (gasoline, light oil) was in short supply
- Highlighted need for fuel diversification in transportation field

Strengthen coordination with stakeholders

Expand use of large trucks for inter-city transportation

Promote deregulation



	2013	2020	2030
Vehicles in use	43,600	110,000	500,000
CO <sub>2</sub> reduction	—	790kt	6,700kt
Natural Gas sales	0.1Bm <sup>3</sup>	0.9Bm <sup>3</sup>	2.7Bm <sup>3</sup>

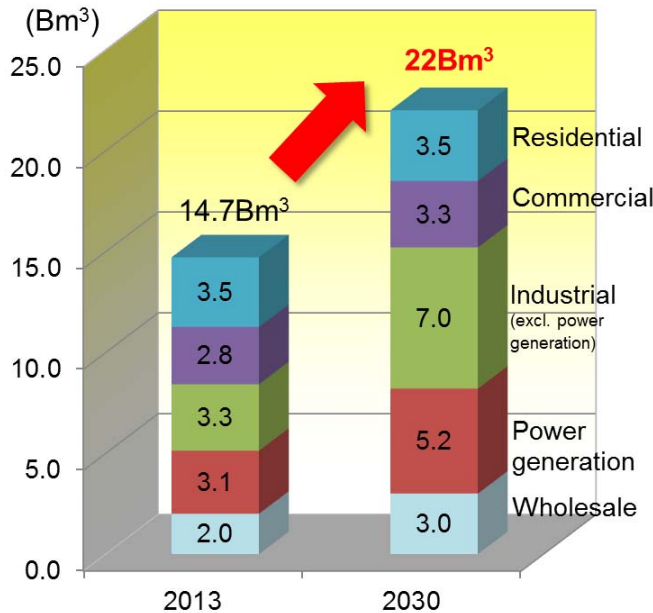
1. Initiatives by City Gas Companies to Expand Demand



# Initiatives by Tokyo Gas to Expand Demand

- By promoting development of various applications, expand natural gas demand 1.5 times by 2020.
- In addition to supplying gas to consumers, expand electric power generation business, e.g., high-efficiency natural gas-fired power generation.

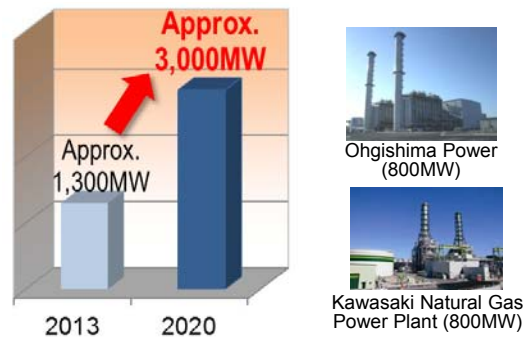
## Tokyo Gas, Challenge 2020 Vision



## Targets for 2020

- (1) CHP  
1,900MW → 4,000MW
- (2) Gas air conditioning  
4,100,000 RT → 5,700,000 RT
- (3) Home-use fuel cells  
9,000 → 300,000

## Growing scale of power generation business



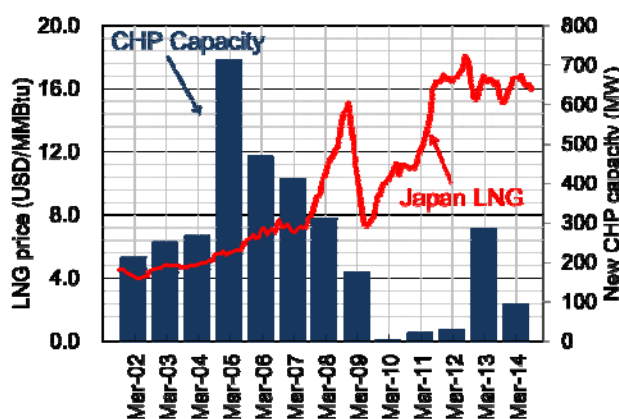
2. Initiatives for Lowering LNG Prices



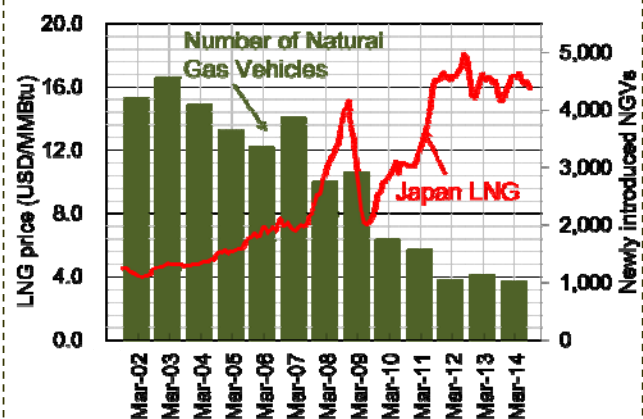
# Importance of LNG Price in Developing Demand

- Up to now we have encouraged use of natural gas by creating demand through strong technology development efforts aimed at improving equipment performance and lowering costs.
- Yet the cost advantages to customers were hit by the rise in LNG prices in the latter half of the 2000s, stalling the growth of CHP and natural gas vehicles.

## CHP growth and LNG price



## NGV growth and LNG price



Lehman Brothers collapse

Great East Japan Earthquake

\*Introduction increased with awareness of security value from distributed generation sources.

Lehman Brothers collapse

2. Initiatives for Lowering LNG Prices



# Natural Gas Procurement Initiatives

## Three Kinds of Diversification Aimed for by Tokyo Gas

### 1. Diversification of supply sources

- North America, Africa, Russia, etc. in addition to Asia-Pacific and Mideast
- Pipeline use also being considered

### 2. Diversification of contract conditions

- Adoption of Hub price linked formula in addition to crude oil price linked formula
- Destination flexibility, etc., for greater market liquidity

### 3. Globalization and diversification of LNG network

- Considering entry in Atlantic market and inter-market trading, toward three-market integration



HOA executed for procurement of 1.4 million tons/year of LNG from **Cove Point LNG in US** (April 1, 2013)

- Procurement from new regions and players (diversification of supply sources)
- Henry Hub pricing and full destination flexibility (diversification of contract conditions)
- Ease of investment in US upstream and access to Atlantic LNG market (diversification of LNG network)

→ Acquisition of 25% share of shale gas development project of Quicksilver Resources Inc. in Barnett Shale assets (Texas) (equivalent to 350,000 tons LNG/year)

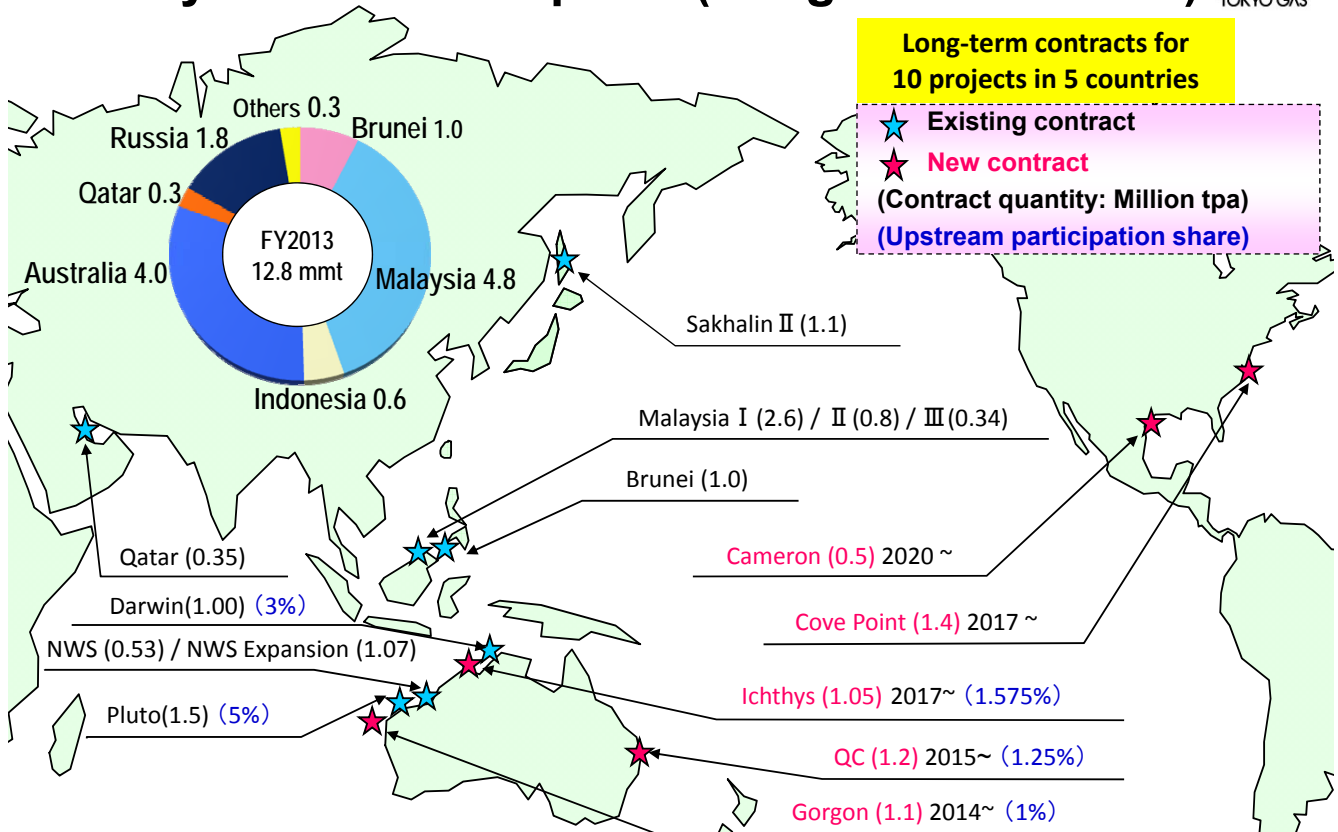


Open the door widely to projects throughout the world, and pursue competitive contracts with other new and existing projects as well.

2. Initiatives for Lowering LNG Prices



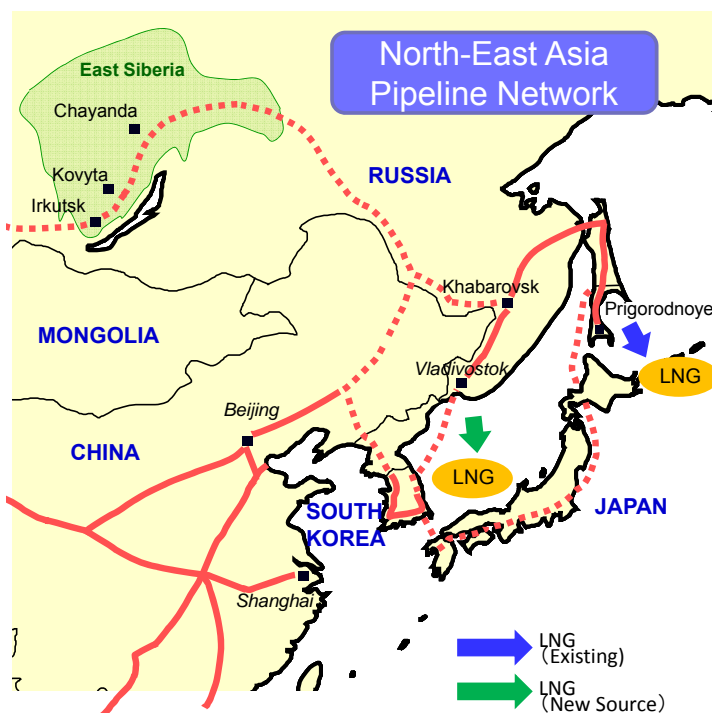
# Tokyo Gas LNG imports (Long-term contract)



3. Expectations of Russia as Seller of Natural Gas



## Important Role of Russian Gas in North-East Asian Market

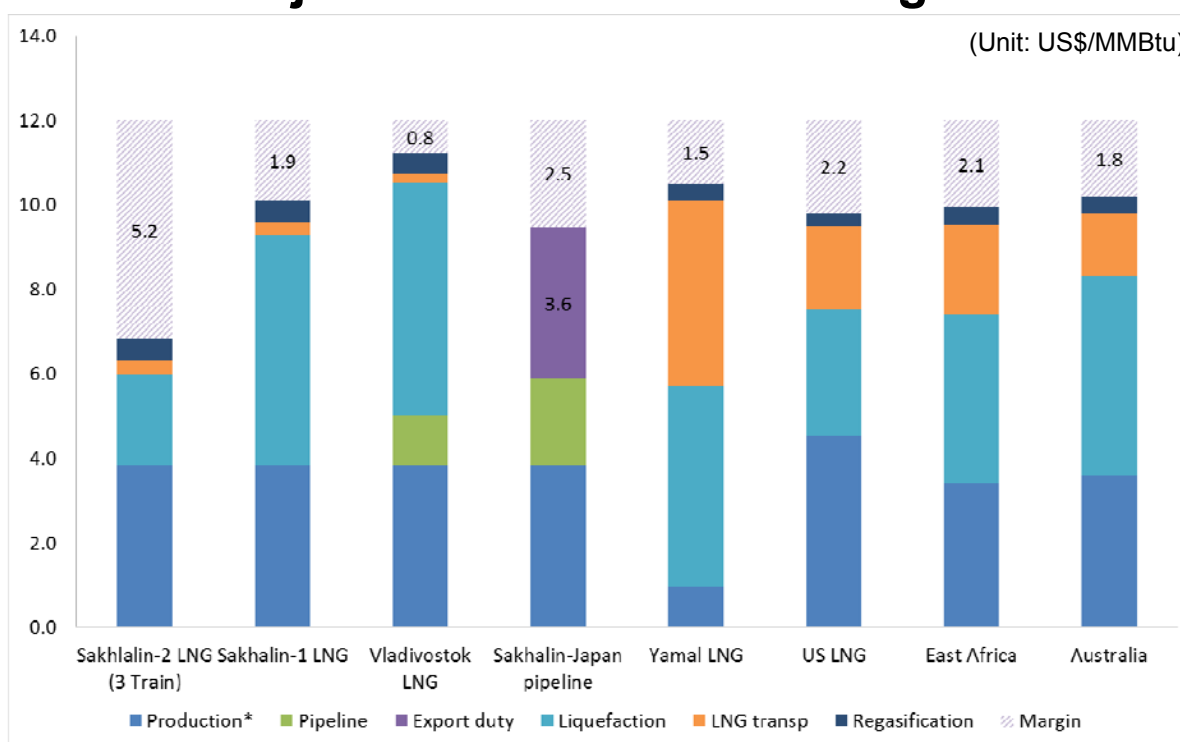


- Supply potential of competitive gas to North-East Asian market by pipeline & LNG
- Wider market access by LNG
- Higher feasibility of pipeline supply
  - Russia-China new pipeline gas contract
  - Feasibility study on Russia-Japan pipeline
- Expansion of gas market and improvement of supply security through North-East Asian pipeline network
- Growing potential for large off-take of Russian gas

3. Expectations of Russia as Seller of Natural Gas



## International Comparison of LNG Project Costs under Planning



\*Production tax included, except for the Yamal project.

Source: Compiled by ERI and IEEJ, based on various sources. 11

4. Our Proposals



## Cooperation between buyer and seller

The following efforts are necessary from a long-term perspective in order for LNG to continually be selected by end users as fuel, for the sustained growth of the LNG industry.

**Efforts by Tokyo Gas as buyer**

Efforts to promote development of gas demand (including technology development and capital investment) & deployment of application development technologies to gas producer countries

**Seller cooperation**

Efforts to achieve Asian LNG price levels that are reasonably fair in comparison with the global LNG market

**3) Deployment of usage technologies to gas producer countries**

- Area-wide use of electricity and heat in industrial park development
- Energy network provision in urban development

**4) Further encouragement of LNG development**

- Increasing incentives for gas field development with growth in LNG demand

**2) Expansion of LNG demand by developing applications**

- Distributed generation systems (CHP, FC, etc.)
- NGV/FCV
- Gas air conditioning, etc.

Sound growth of LNG market

**1) Reasonable LNG prices**

- Diverse price formulas
- Expansion of liquidity

Спасибо за внимание.

ご清聴ありがとうございました。

