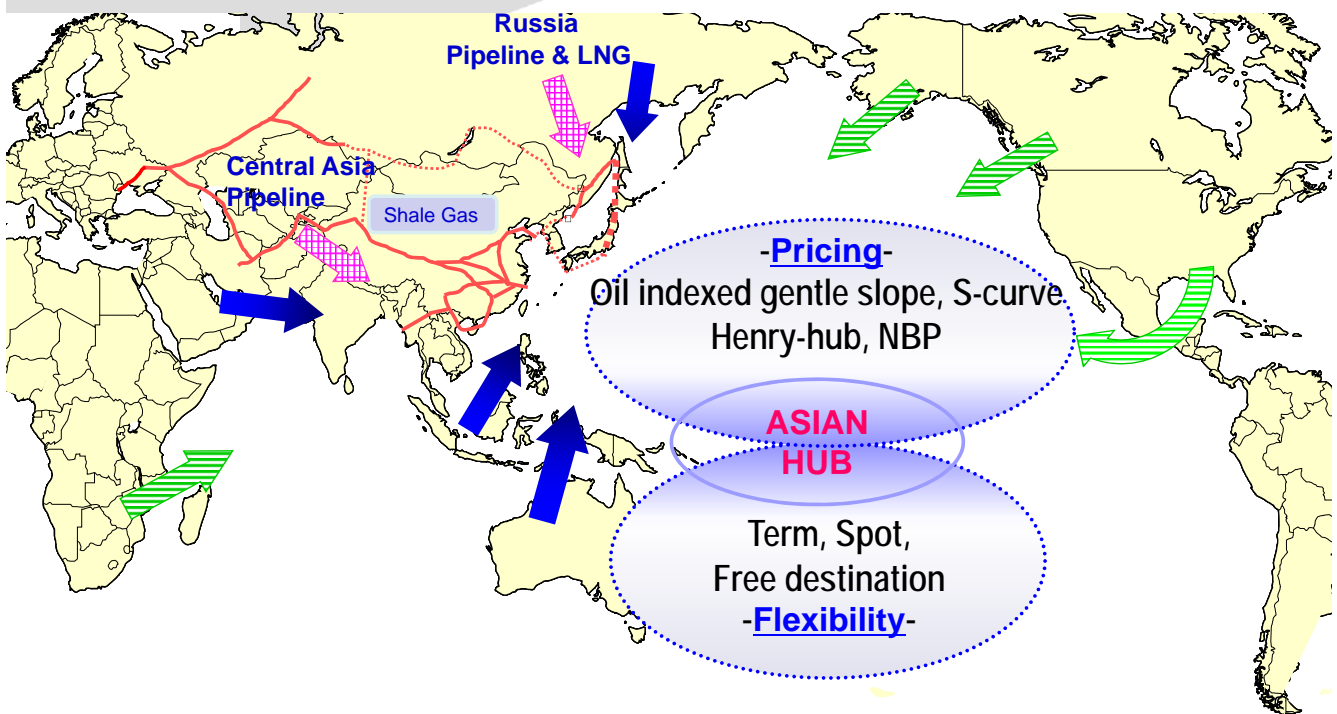




# Diversifications in Japan & Asian Natural Gas Market

Nobuaki Aoyama  
Nippon Steel Sumikin Engineering Co., Ltd.  
November 18, 2013

## Asian Natural Gas Market : Diversification of Supply and Conditions



## Changes in Japan & Asian Natural Gas Market

---

### I . High Supply Potential with Diversification

New sources:

U.S shale, Canada, Alaska(North Slope), Mozambique,

**Russia(LNG & Pipeline)**

Regional Sources:

Unconventional gas in China, Pipeline from Central Asia

### II . Enhanced Competitiveness among fuel mix

Stable pricing; Oil-indexed gentle slope

Global pricing; Henry-hub, NBP, Combination of Indexes

Flexibility; Term, Spot, Free destination, LNG trading hub

---

2

## Changes in Japan & Asian Natural Gas Market

---

### III. Smart Use(Demand side control)

Highly efficient power generations:

Advanced Gas Turbine, CHP(Combined Heat and power), Fuel Cell

Smart Energy Network in Smart Community:

Smart use of heat/power in distributed energy system with CHPs and renewable

### IV. Other Energy

Renewable Energy (wind, solar, biomass, geothermal)

Development of CCT(Clean Coal Technology)

### **【Summary of Changes】**

- Limited Players ⇒ Many Potential Players
- Fixed and Long Term ⇒ Free and Spot
- Oil Link Formula ⇒ Henry Hub, NBP, Mixed formula

**Suppliers' Market ⇒ Buyers' Market**

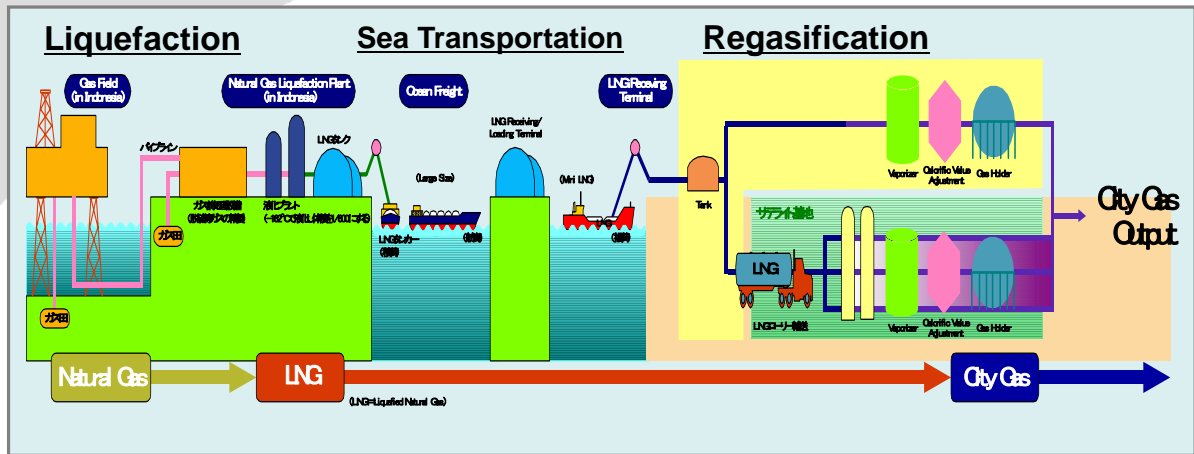
◎ **Key for Success : Cost Competitiveness & Stable Supply**

---

3

# LNG VS Pipeline

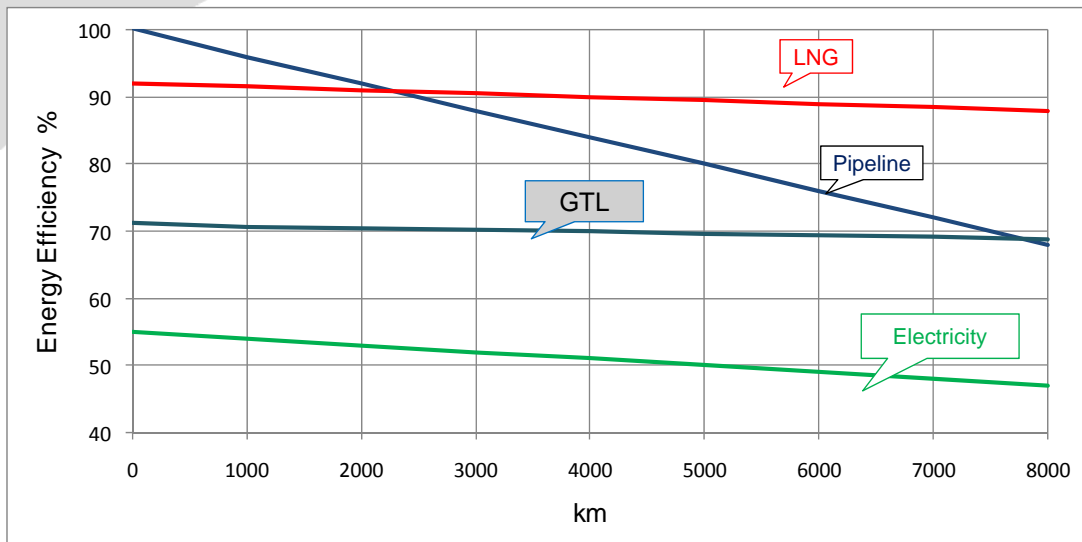
## LNG Scheme



## PL Scheme

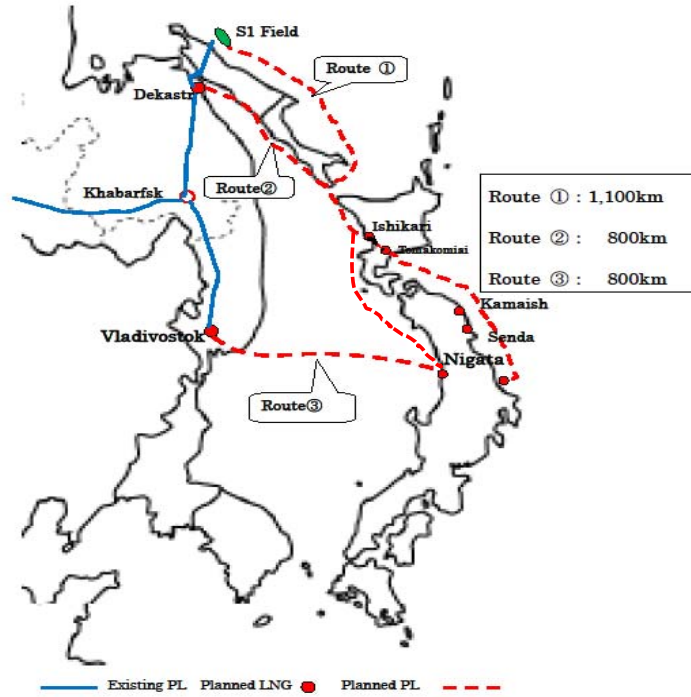


# Gas Monetization Summary

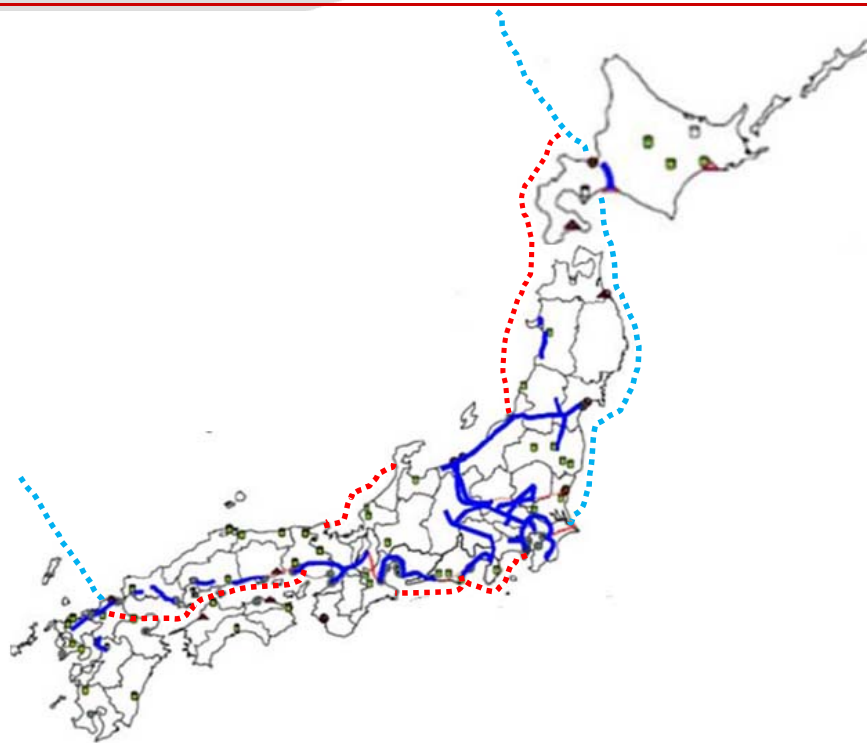


Source: WPC

# Natural Gas Pipeline from Russia to Japan

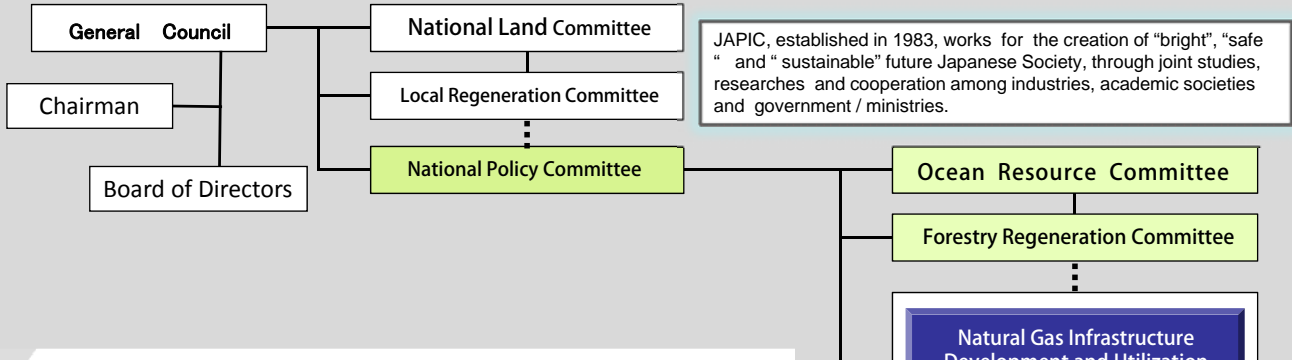


# National Pipeline Network in Japan(Under Study)

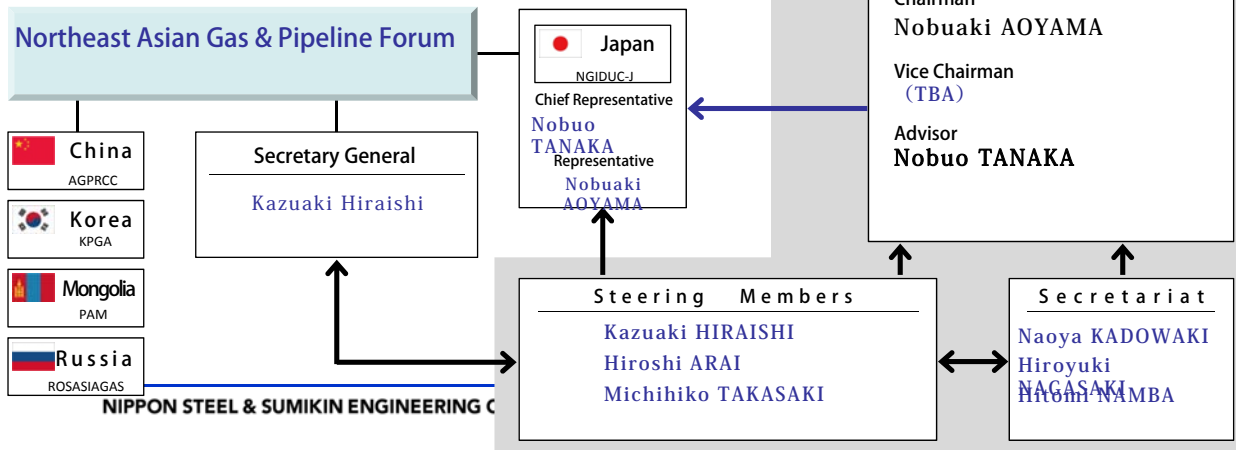




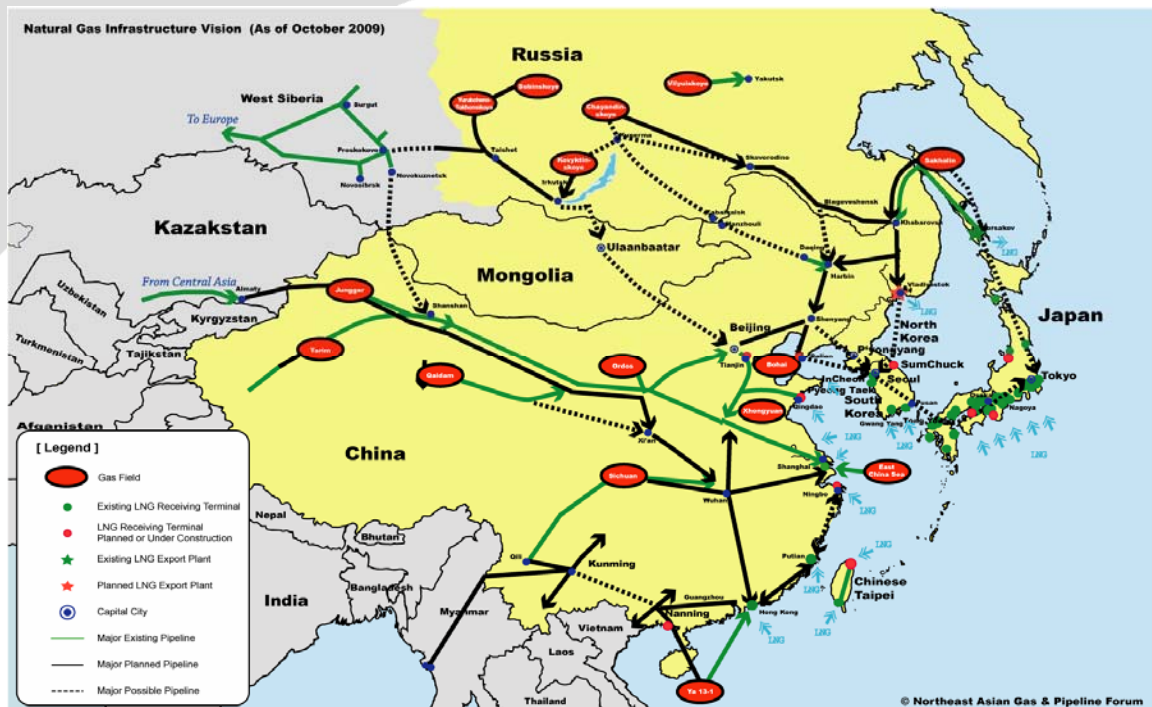
# JAPIC (Japan Project-Industry Council)



## NAGPF



## Northeast Asia Pipeline Network



## Conclusion

---

- Key for Success in Japan/Asian Natural Gas market  
Cost Competitiveness & Stable Supply
  - Pipeline from Russia to Japan is the competitive way  
for Natural Gas Transportation
  - Pipeline net work shall contribute for
    - Security for the parties
      - \* Market security for Russia, Energy security for Japan
    - to strengthen the Mutual trust
      - \* One- to- one Relation
-