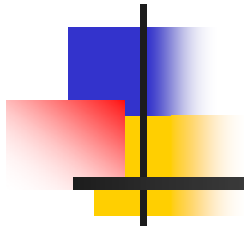


Issues and Challenges to Gas Market in Japan and NE Asia



**Presentation at Session 3 in Korea-China-Japan Joint Energy Conference
For KEEI's 28th Anniversary Celebration**

September 25th, 2014

Ken Koyama, PhD

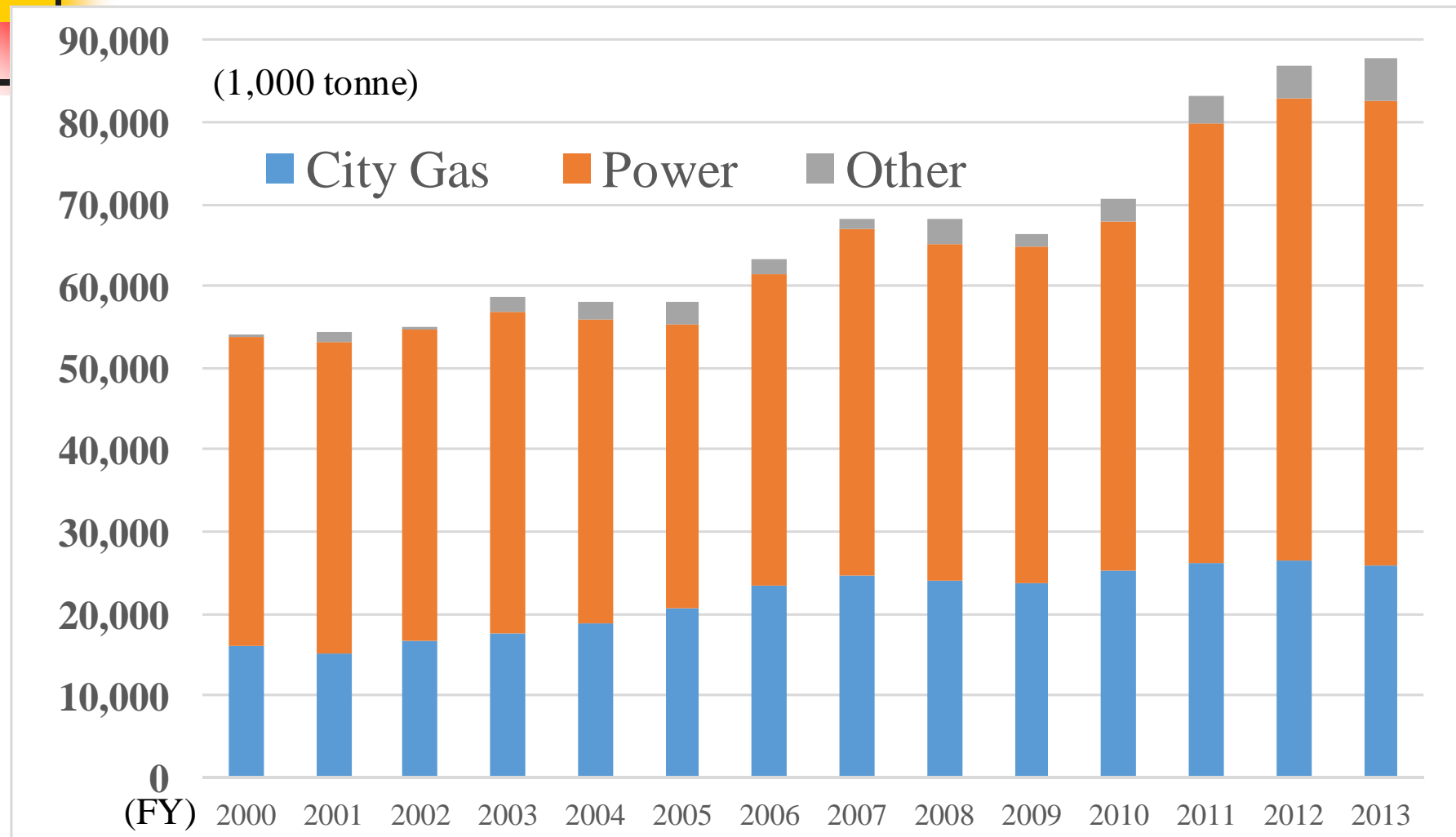
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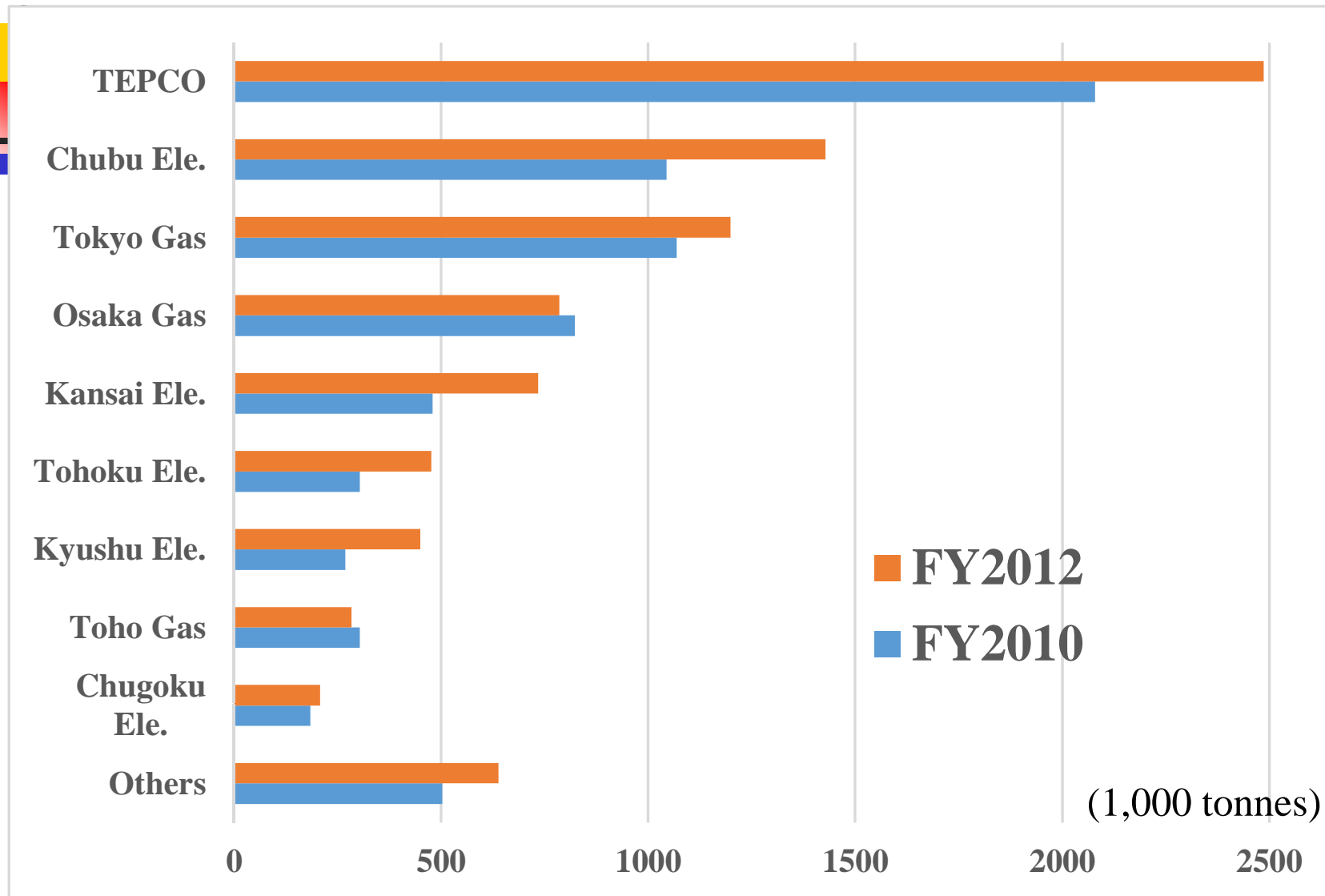
Japan's LNG consumption



Source: METI and MOF statistics



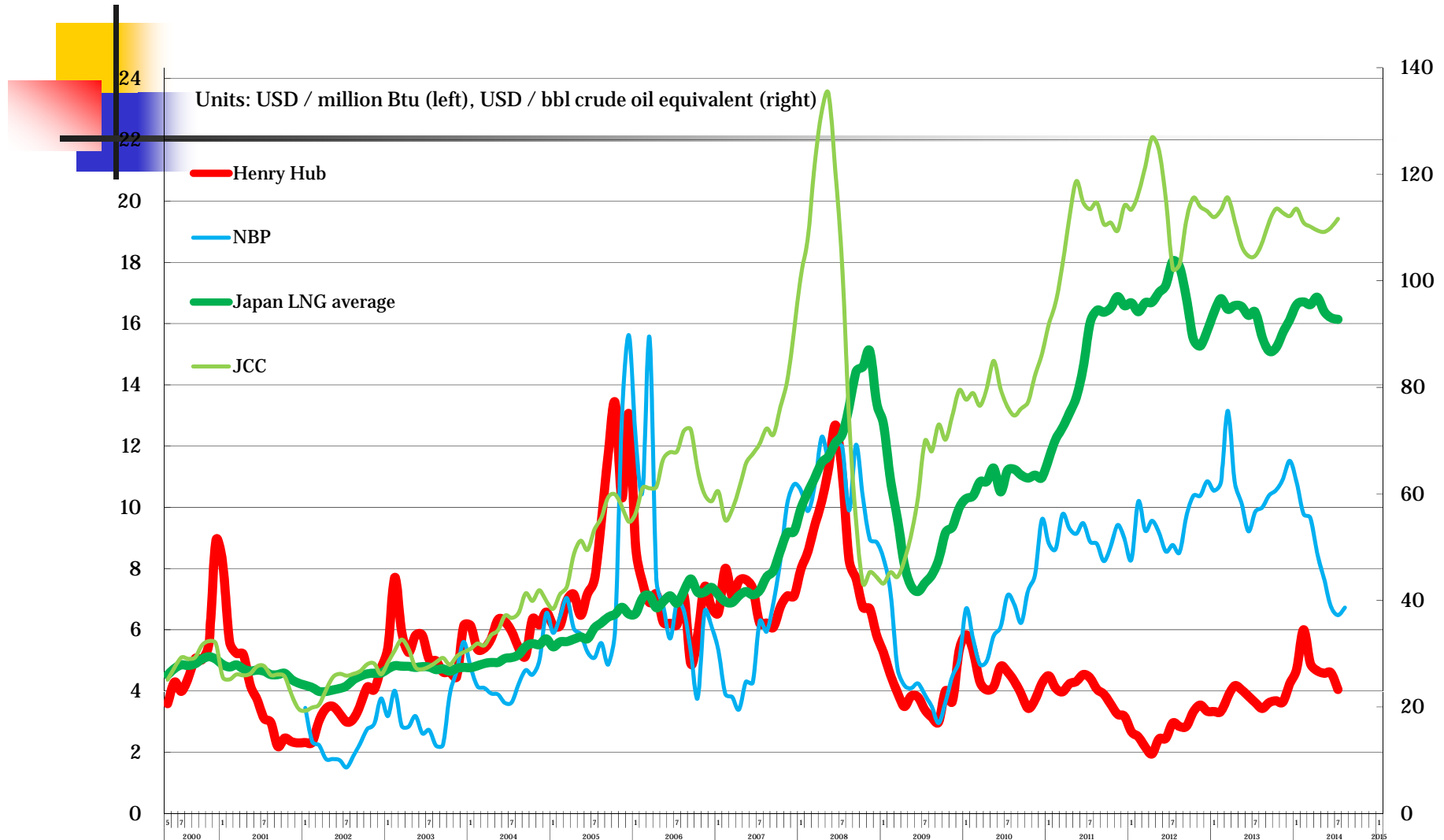
Japan's LNG import by company



Source: Prepared by the author



World gas prices by region

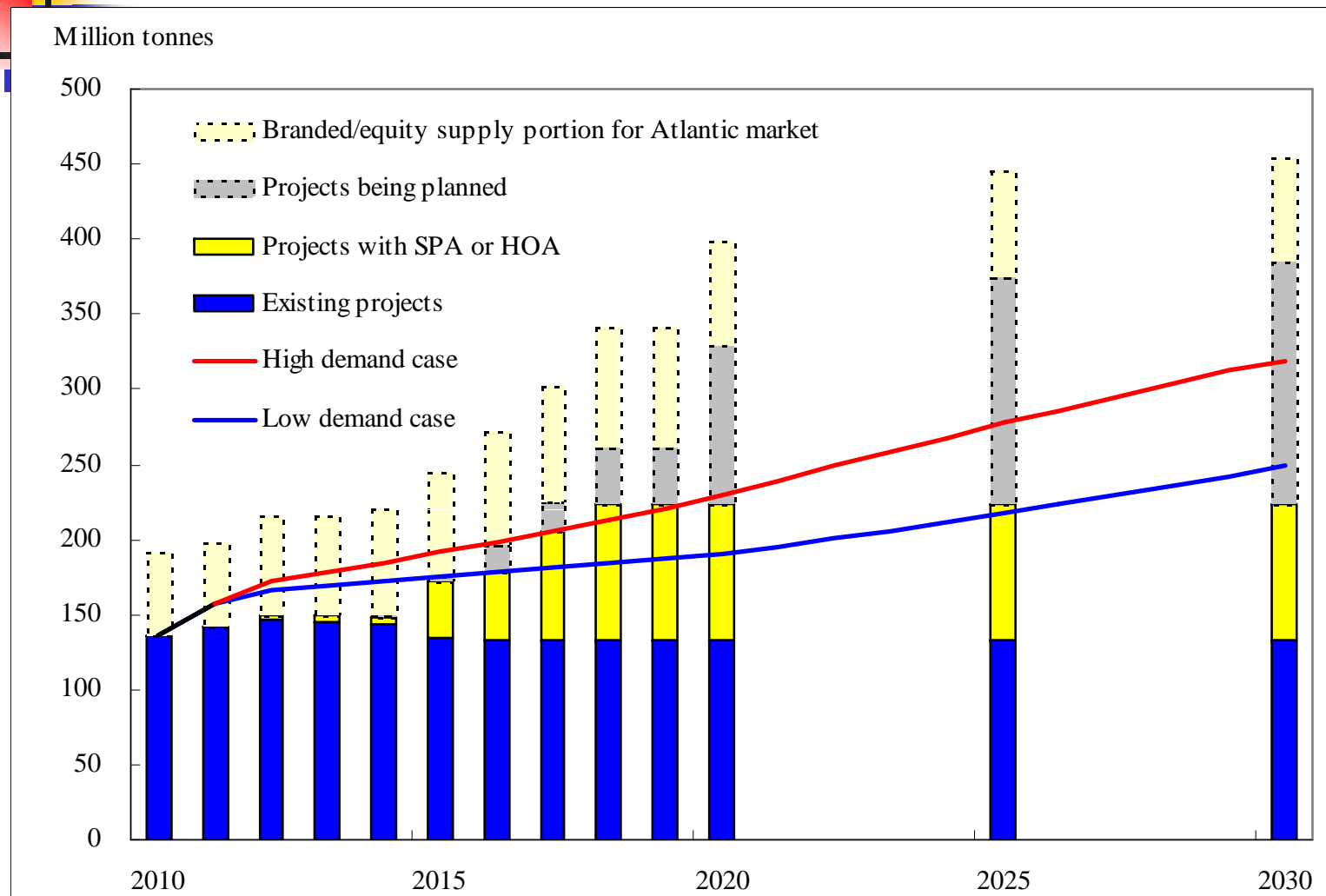


Source: US EIA and IEA



LNG Supply-Demand Outlook for Asia

- Asia's LNG demand will increase by 189 million tonnes, accounting for 80% of the world's LNG demand growth through 2035.
- Supply capacity will be enough to meet growing LNG demand in Asia



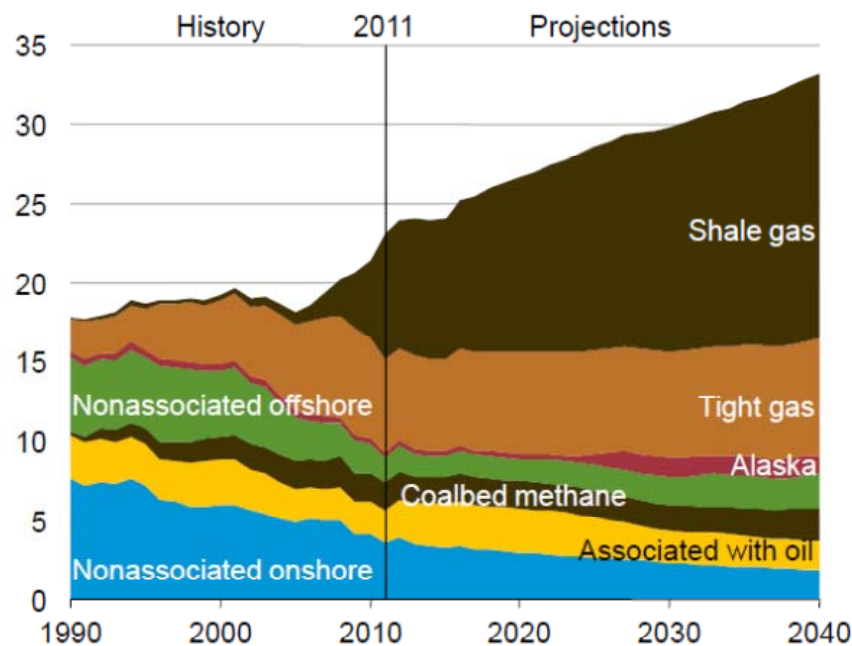
Source: IEEJ estimate



Growing expectations for US LNG exports

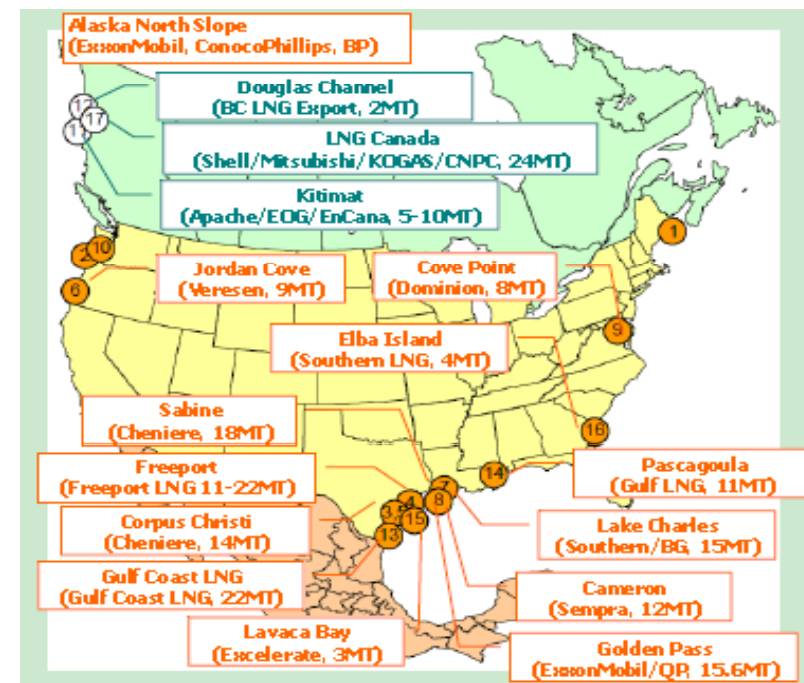
- Export projects with total capacity of more than 200 mil tonnes are on the list.
- Government permitted volume approaching 80 million tonnes.

US natural gas production outlook



Source: EIA

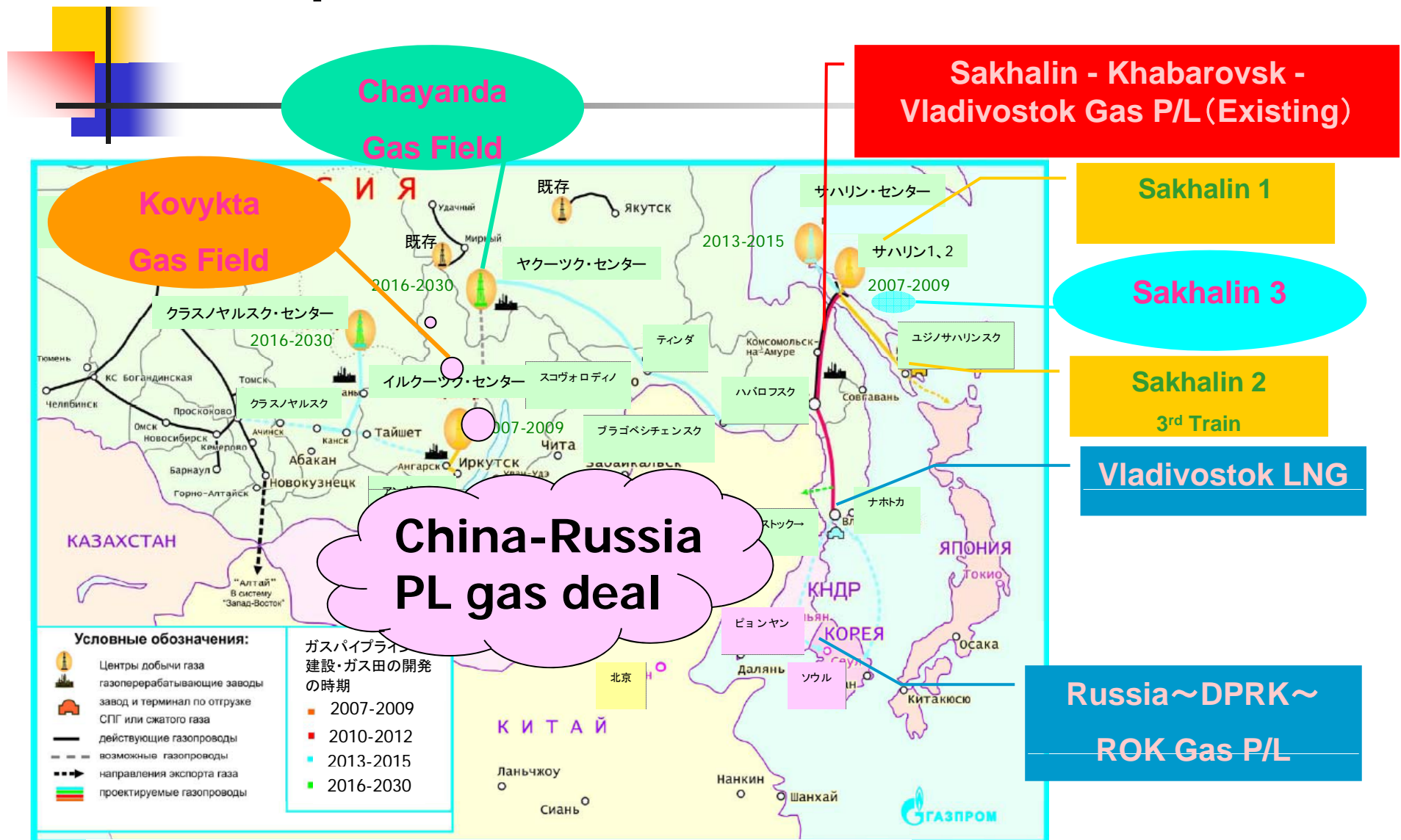
LNG exports projects in North America



Source: FERC; DOE



Gas development PJs in East Siberia and Sakhalin



(Source) Prepared by IEEJ based on Eastern Gas Program of Gazprom



Measures for Gas/LNG supply security

● Diversification of fuels for power generation

- ✓ Restarting nuclear

- ✓ Renewables

- ✓ Coal

● Diversification of supply

- ✓ North America

- ✓ Russia

- ✓ Africa

● Diversification of gas transportation mode

- ✓ Introducing pipeline gas

● Efficient use of gas for power generation

- ✓ MACC

- ✓ Co-generation

● Joint efforts

- ✓ Joint development

- ✓ Joint procurement



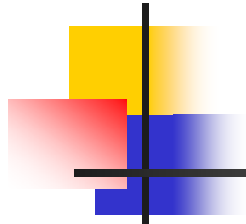
LNG Pricing Options for Asia

	Hub pricing		Spot LNG pricing	Adjustment within oil-linked pricing	Link with other fuels (Electricity, Coal)
	Henry Hub, NBP	Hubs in Asia			
Advantages	<ul style="list-style-type: none"> • Already available • Lower prices (for now) 	<ul style="list-style-type: none"> • Possible to reflect regional market balance 	<ul style="list-style-type: none"> • Already available 	<ul style="list-style-type: none"> • Possibly the quickest solution 	<ul style="list-style-type: none"> • Rational for power utilities
Disadvantages	<ul style="list-style-type: none"> • Higher volatility • Asia market balance not reflected 	<ul style="list-style-type: none"> • Not yet available • Higher volatility 	<ul style="list-style-type: none"> • Higher volatility • Limited liquidity (so far) 	<ul style="list-style-type: none"> • Gas market balance not reflected 	<ul style="list-style-type: none"> • Irrational for gas utilities • Lack of power market liquidity

- Rationality of oil-linked pricing being questioned
- Sustainable and rational pricing needs to emerge for mutual benefit between sellers and buyers



To find a better solution...



- In the long term, pricing mechanisms including hub-pricing based in Asia that reflect gas market fundamentals in Asia needs to be devised.
- In the medium term, Asian buyers will explore to increase LNG imports based on Henry Hub (HH) pricing (or possibly NBP pricing) and “Hybrid pricing”, in order to diversify pricing mechanism as well as to alleviate the problems associated with oil-linked pricing
 - In case of Japan, LNG import volume linked with HH pricing may reach about 17 million tonnes at around 2020, accounting for about 20% of total LNG import
 - Japanese buyers will also be required to explore more rational pricing mechanism for the existing LNG contracts, taking full account of new market development including expected growth in LNG imports based on HH pricing
- In any case, demand/supply fundamentals as the key
 - More supply sources: diversification of supply, including pipeline gas imports



LNG Producer-Consumer Conference





What we should do (1)

Individual effort in Northeast Asia to deal with Asia Premium

	Countermeasures
Pricing	Industry: <ul style="list-style-type: none"> • Pricing diversifications (Henry Hub, Asian hubs, spot LNG)
	Government: <ul style="list-style-type: none"> • Diplomatic effort towards export countries for rationale LNG pricing
Market liquidity	Industry: <ul style="list-style-type: none"> • Supply diversifications (including pipeline gas imports) • Flexible contractual terms (destination free, lower ToP)
	Government: <ul style="list-style-type: none"> • Creating competitive domestic energy market environment
Demand/supply fundamentals	Industry: <ul style="list-style-type: none"> • Supply expansion (domestic gas development, overseas upstream investment) • Joint procurement/Swap • Infrastructure developments
	Government: <ul style="list-style-type: none"> • <u>Nuclear re-start as a first option</u> (Japan) & development (other Asian importers) • Financial and diplomatic assistance for domestic and overseas gas/LNG developments • Promoting efficient use of gas (MACC, CHP etc) • Domestic pricing reform especially in China and India



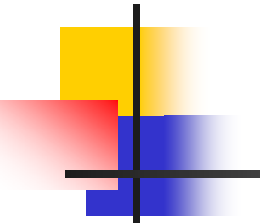
What we should do (2)

Joint effort in Northeast Asia to deal with Asia Premium

	Governments	Industries
Supply	<ul style="list-style-type: none"> ▪ Joint upstream financing (avoid resource acquisition race) ▪ Joint E&P technology developments ▪ Diplomatic effort for regional pipeline network 	<ul style="list-style-type: none"> ▪ LNG swap, Joint procurement ▪ Joint upstream developments
Demand	<ul style="list-style-type: none"> ▪ Efficient gas usage technology transfer 	
Trade	<ul style="list-style-type: none"> ▪ Joint legal actions on destination clause ▪ Improving market transparency through basic gas statistics (e.g. JODI-Gas) 	<ul style="list-style-type: none"> ▪ Taking advantage of the coming buyers' market in terms of price & pricing ▪ Information sharing (only if adopted as procurement strategy) ▪ Improving market liquidity (e.g. creating surplus capacity)
Importers' Relations	<ul style="list-style-type: none"> ▪ Promoting cooperation with Southeast and South Asian importers 	



Conclusion

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- A decorative graphic consisting of overlapping yellow, red, and blue squares with a black crosshair.
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- Unprecedented energy challenges after “March 11th” for Japan
 - Comprehensive review for Japan’s energy policy is required while taking into full account of achieving “3Es” plus “Safety” and impacts on macro economy
 - Natural gas/LNG demand in Japan increased substantially to replace reduced nuclear contribution
 - Security of gas/LNG supply is a top priority in Japan
 - Asian Premium needs to be addressed
 - Implications of LNG exports from US, Russian supply potential and other emerging supply options
 - Importance of cooperation among consuming countries in Asia