Current status and future prospects of natural gas markets in Asia

Japan-China Joint Symposium on Asian Oil & Gas

-The 8th IEEJ/CNPC Research Meeting-

November 21, 2014

The Institute of Energy Economics, Japan

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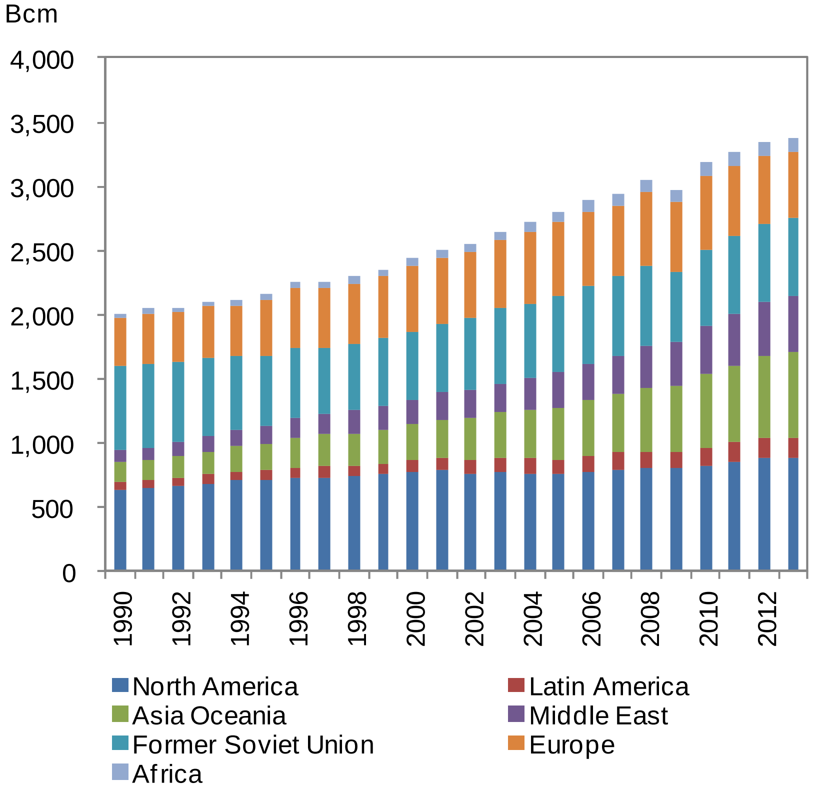
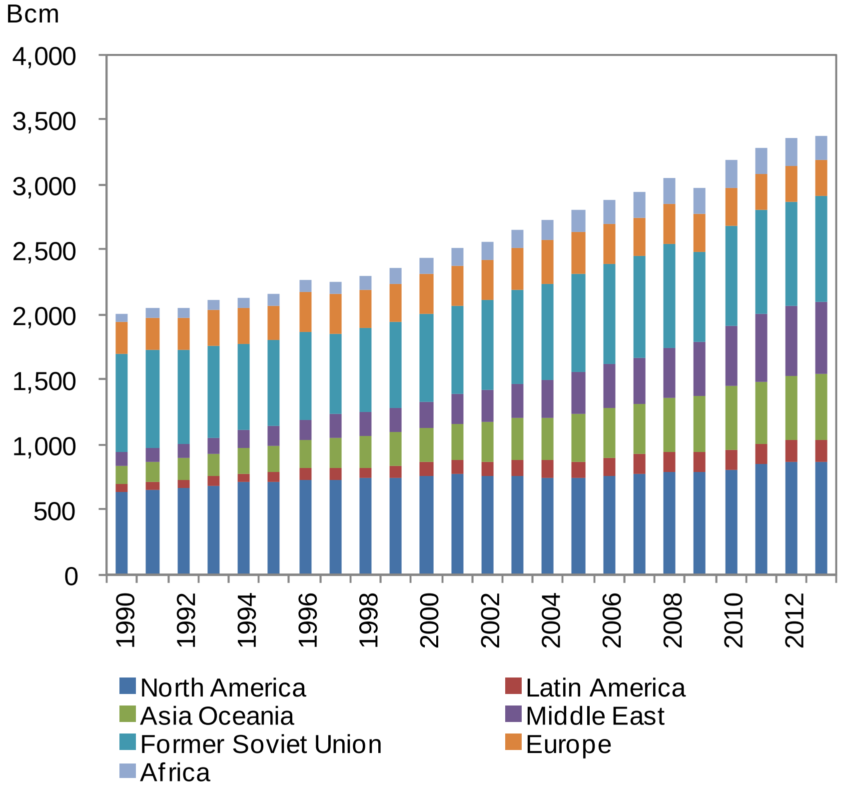
Natural gas supply and demand

Supply



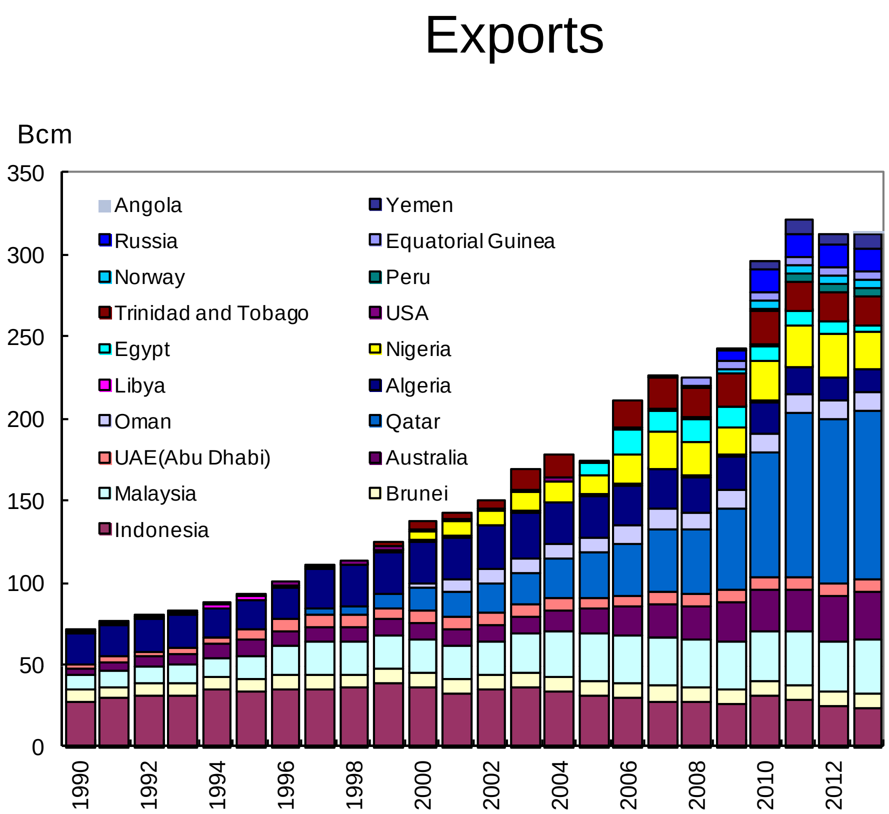
Demand

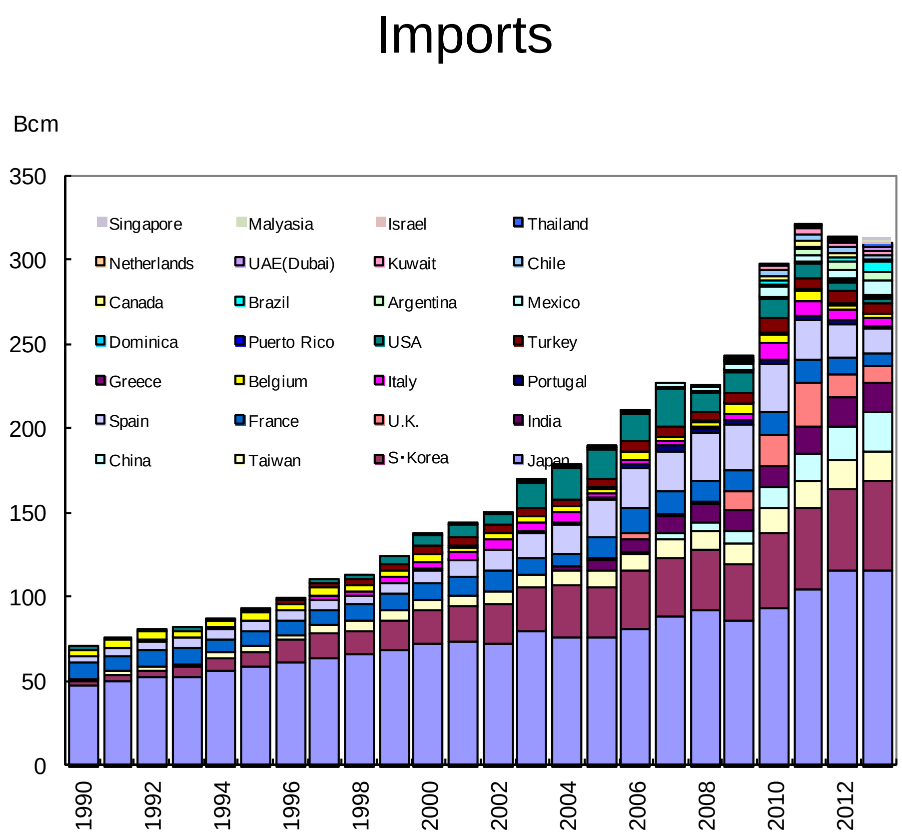


Source: Cedigaz

- Rapid supply and demand growth in Asia Oceania and Middle East
- Shale gas revolution pushing up the supply in North America
- Sluggish demand continuing in Europe

LNG trades



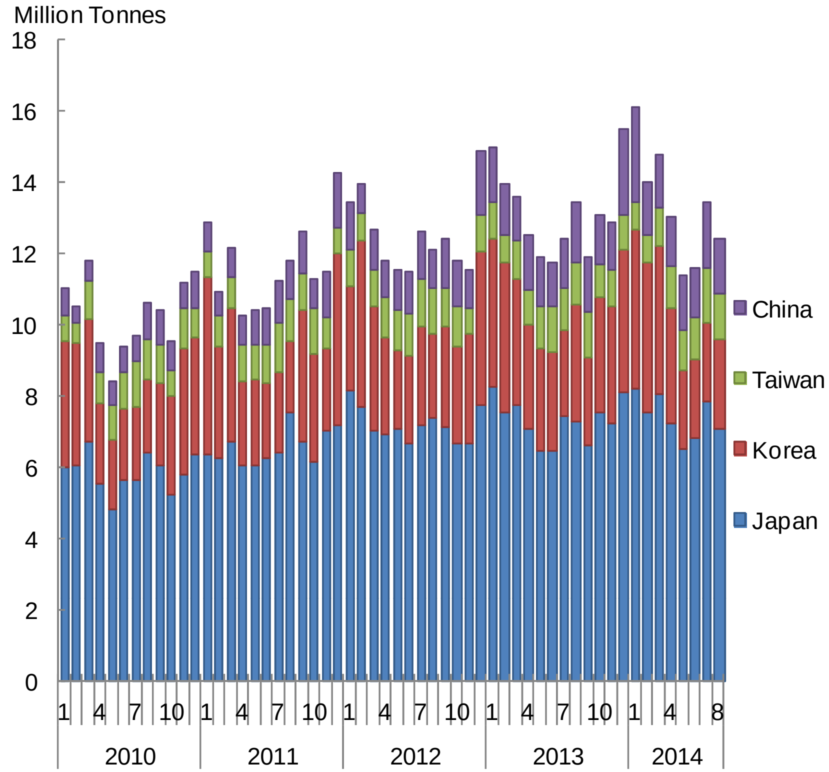


Source: Cedigaz

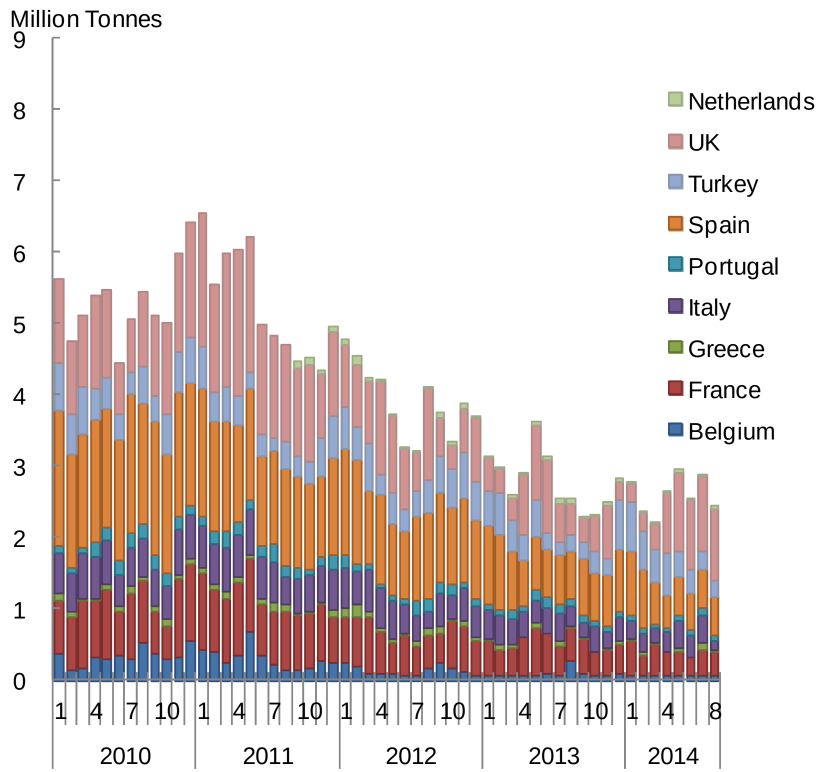
- Strong demand in Asia, but demand decrease in Atlantic led to little global demand growth in 2013
- PNG LNG and QC LNG as new LNG projects in 2014

Monthly LNG imports in Northeast Asia and Europe

Northeast Asia



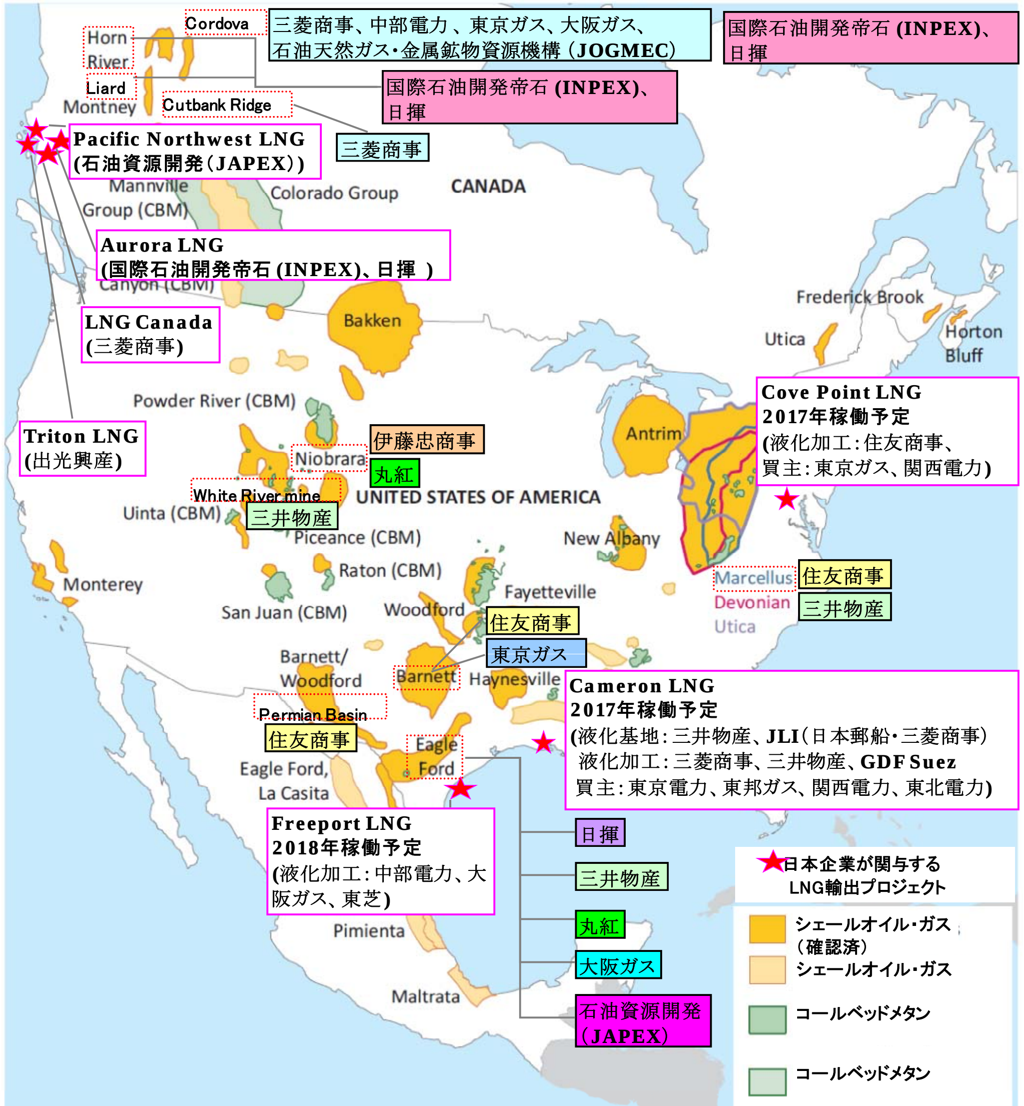
Europe



Source: Custom statistics, IEA

- Imports in Jan-Aug 2014: 106.56MT in Northeast Asia (+2.26MT y/y), 23.55MT in Europe (-2.70MT y/y)
- European imports still slow due to weak competitiveness of natural gas

LNG export projects in North America



- DOE authorized 9 projects (about 80 MT/y) for export to non-FTA countries
- Out of those, FERC approved 4 projects (53MT/y) for construction
- Streamlined authorization process being implemented
- LNG export projects in North America important in terms of supply and pricing diversifications

 Source: IEA and company websites

Europe and Russia

Source: Added on JOGMEC

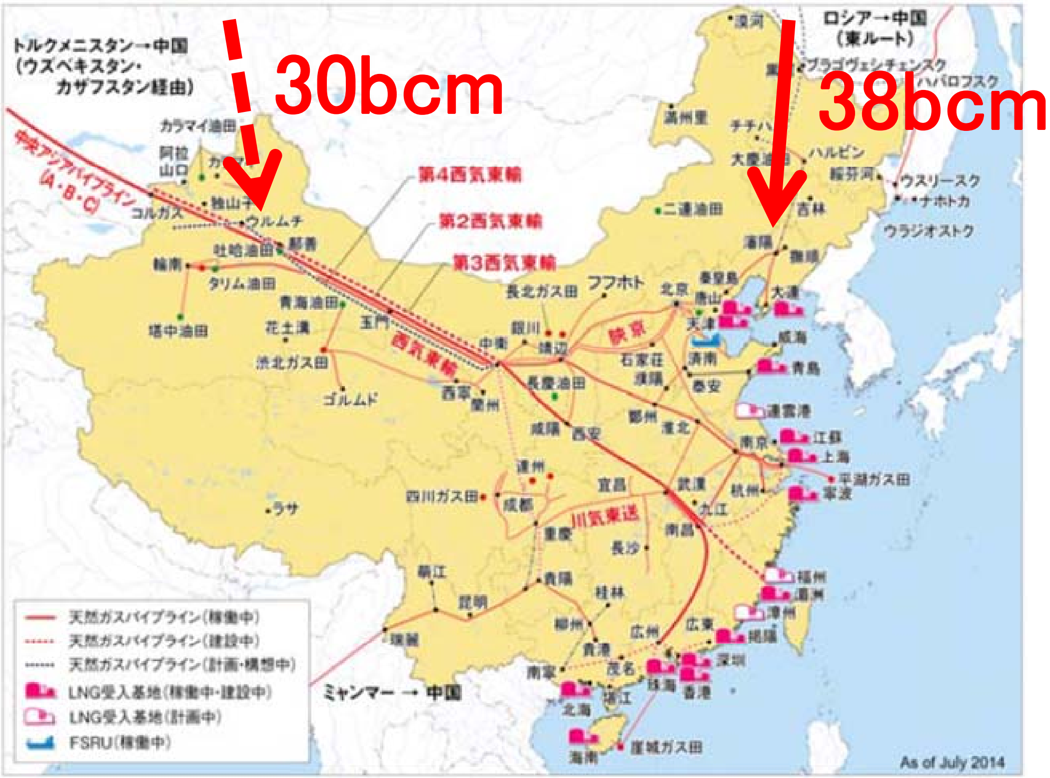
- Conflict already evident in terms of the Third Energy Package and pricing of natural gas for Europe (de-oil indexation)
- Diplomatic relations aggravated by Ukraine Crisis

⇒ Encouraging Russia to shift to Asia

⇒ EU controlling gas demand, diversifying supply sources

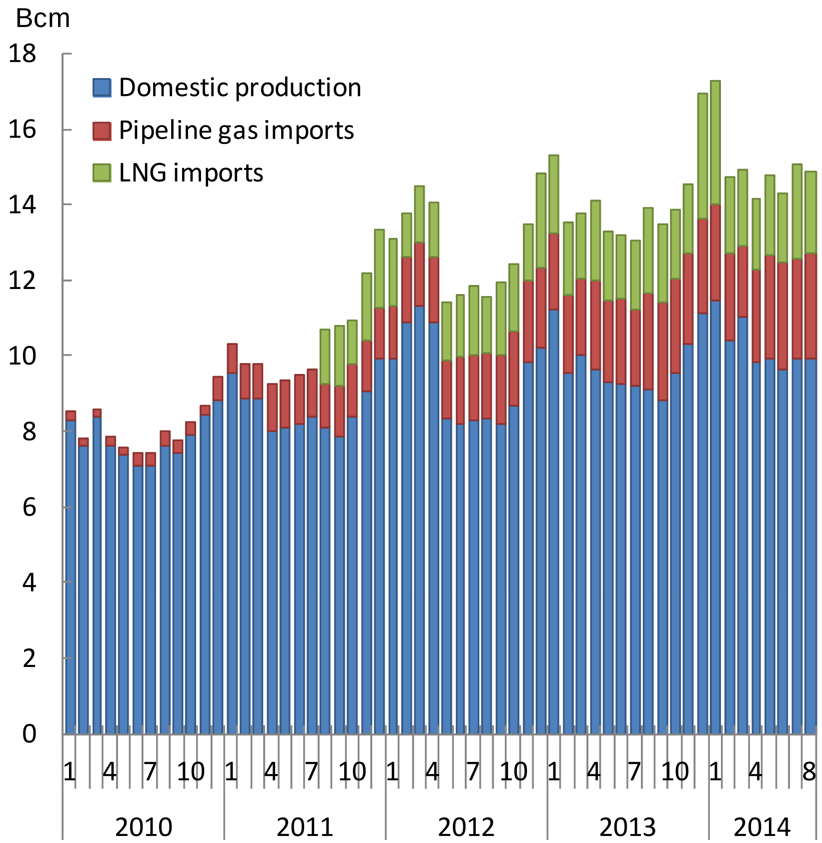
Natural gas demand/supply in China

Gas infrastructures



Source: JOGMEC

Domestic production and imports

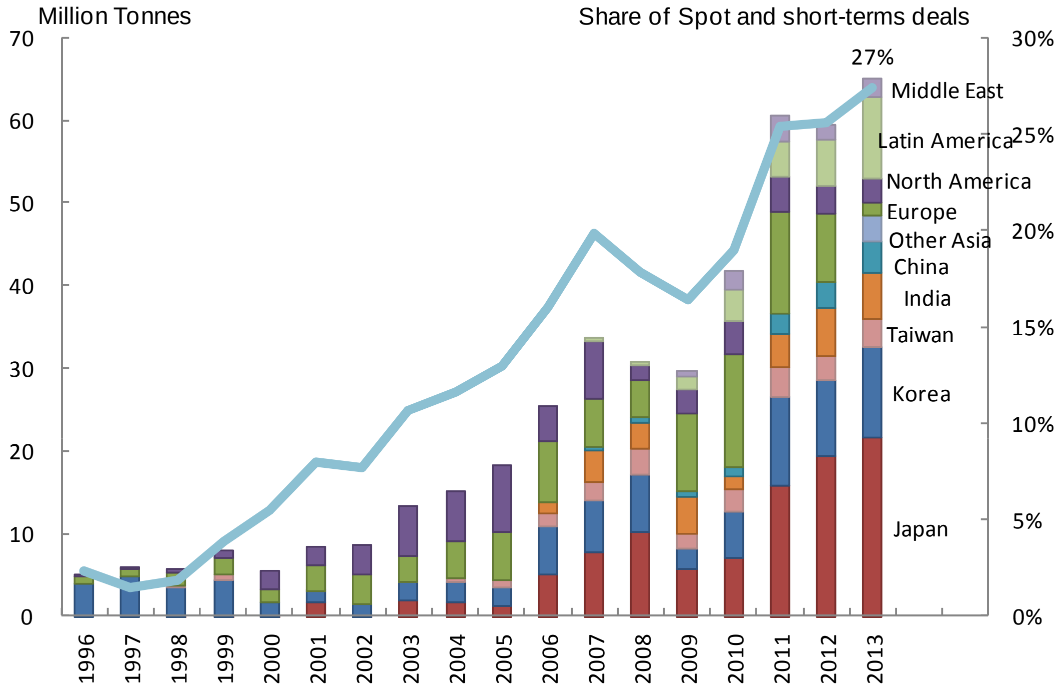


Source: China OGP

- Russian pipeline gas will contribute to control China's LNG imports

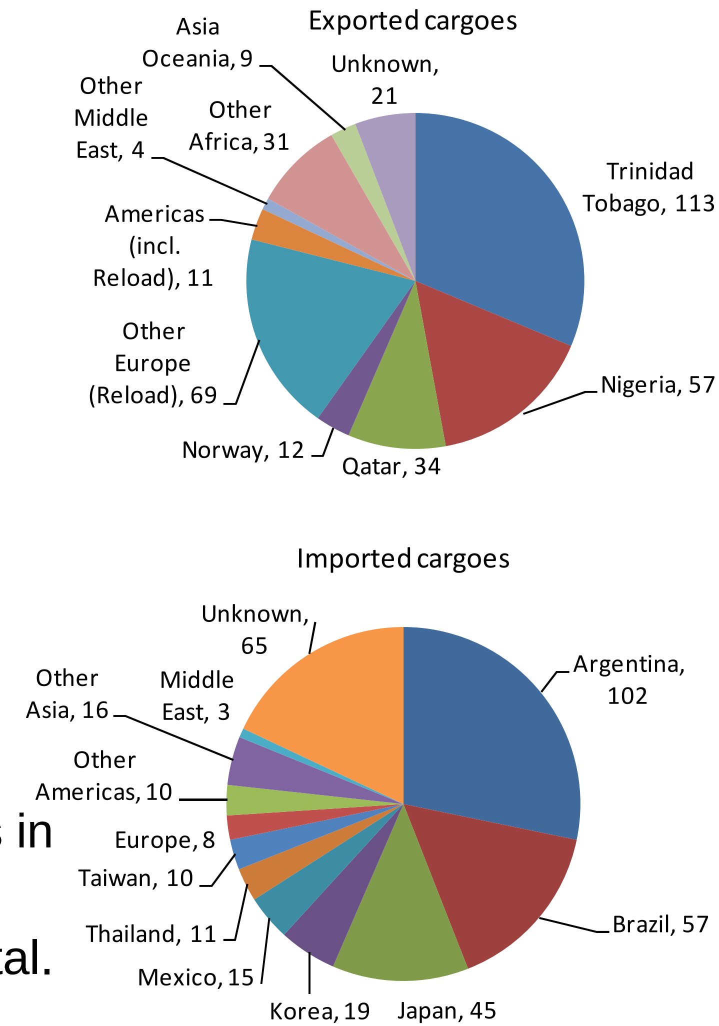
LNG spot and short-term deals

Spot and short-term deals



Source: GIIGNL

Spot imports/exports (2013)



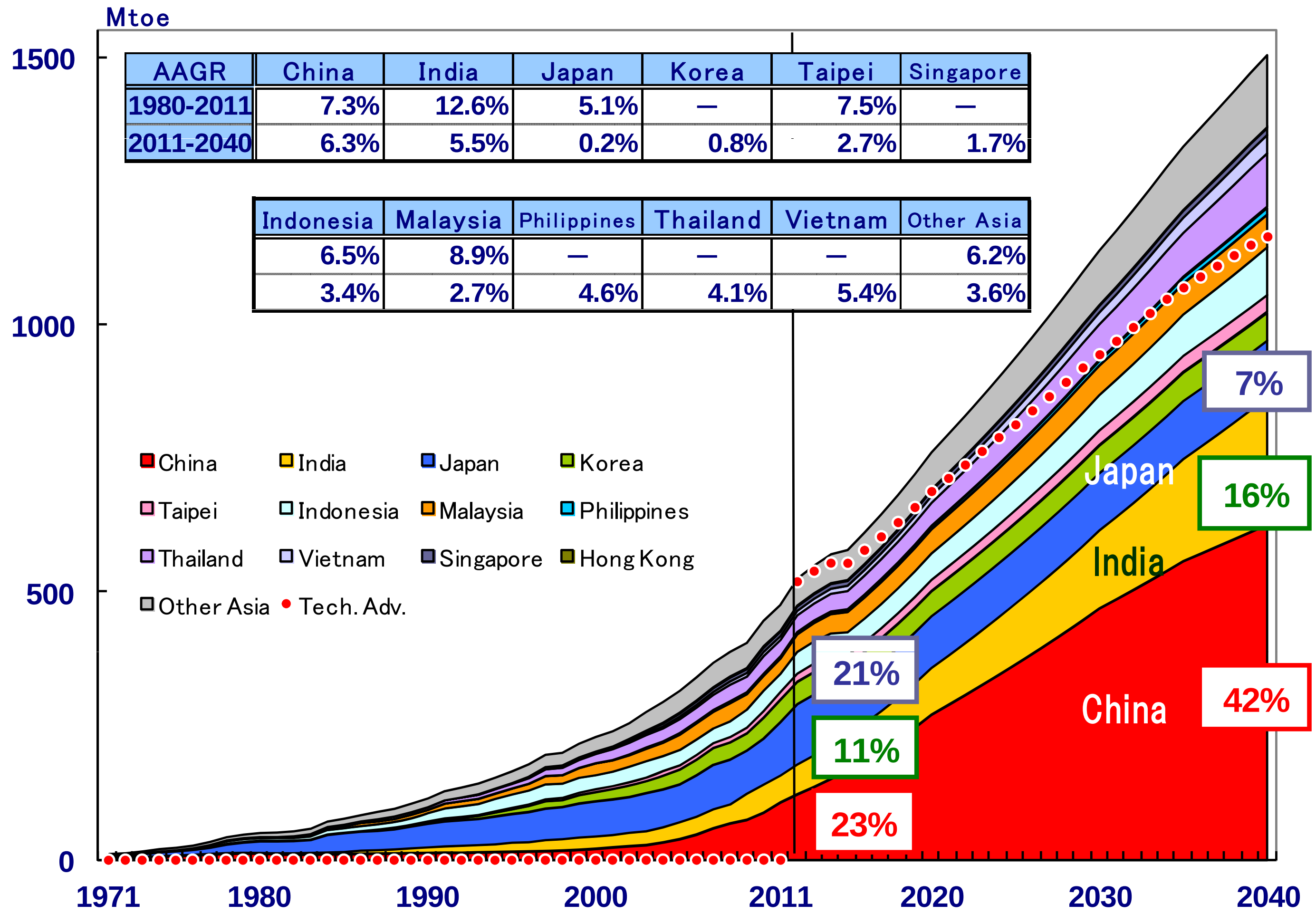
Source: ICIS Heren

- 64.98MT traded by spot and shor-term contracts in 2013 (+4.58MT y/y).
- Japan imported 21.69MT, sharing 33% of the total.
- Nuclear restart will push down spot imports significantly.

Natural gas demand outlook in Asia

AAGR	China	India	Japan	Korea	Taipei	Singapore
1980-2011	7.3%	12.6%	5.1%	—	7.5%	—
2011-2040	6.3%	5.5%	0.2%	0.8%	2.7%	1.7%

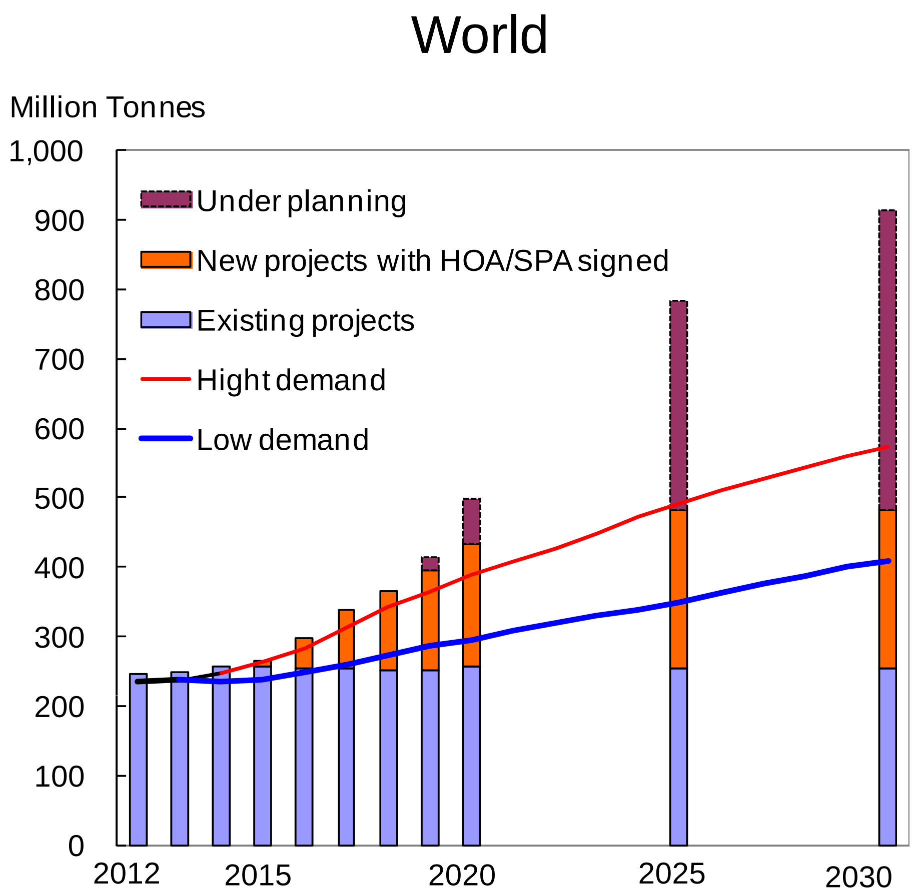
	Indonesia	Malaysia	Philippines	Thailand	Vietnam	Other Asia
1980-2011	6.5%	8.9%	—	—	—	6.2%
2011-2040	3.4%	2.7%	4.6%	4.1%	5.4%	3.6%

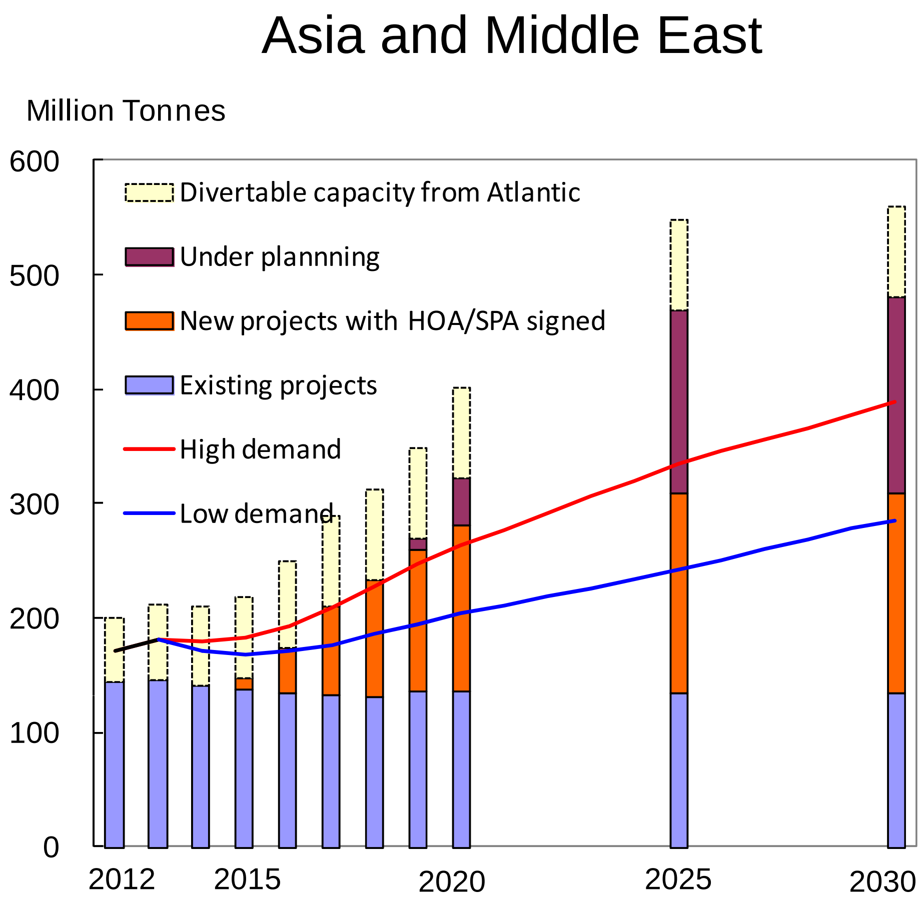


Source: IEEJ

- China and India will lead the Asian demand growth.

LNG supply/demand outlook

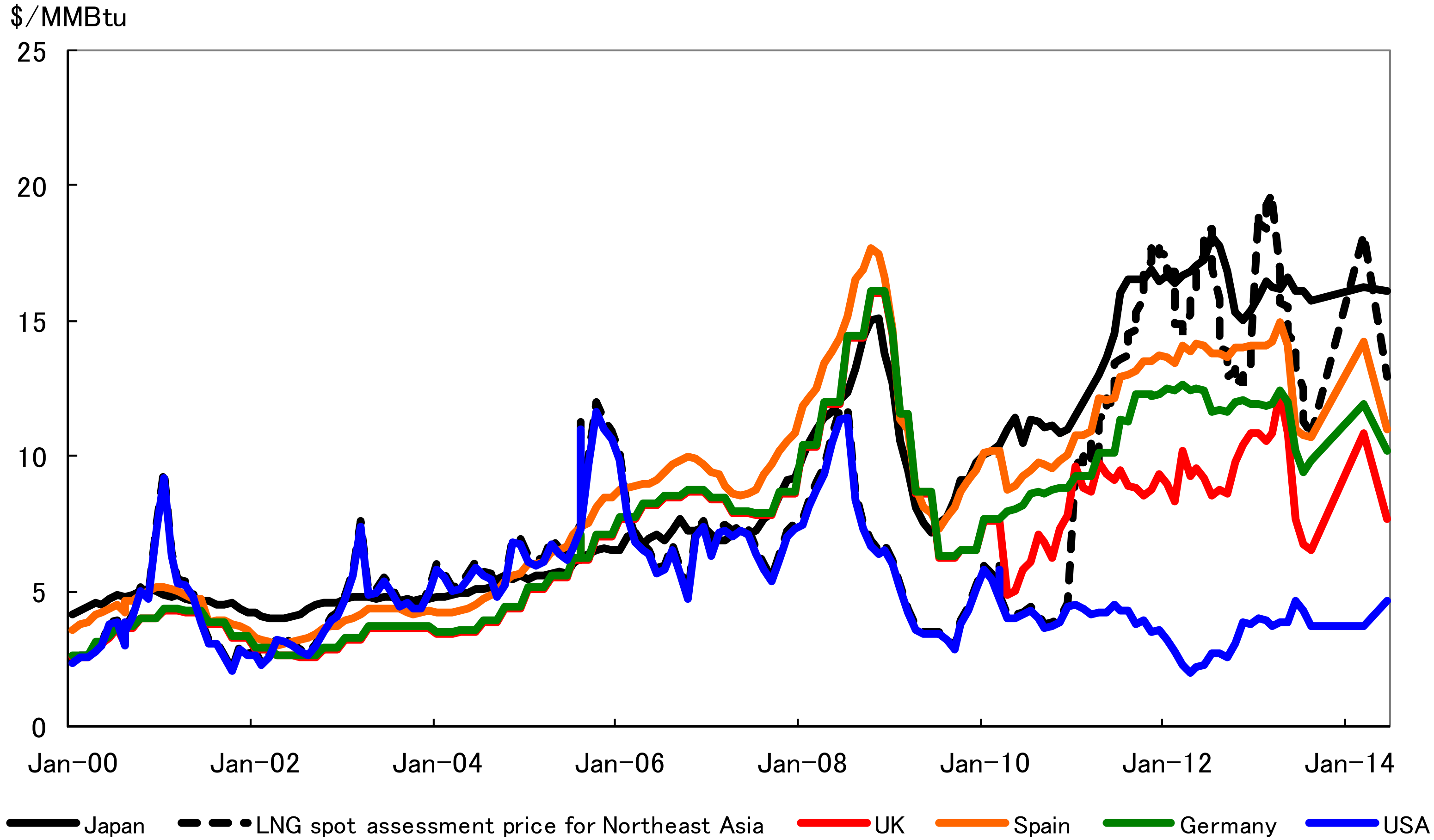




Source: IEEJ

- New projects will ease LNG market towards 2020.
- Timely investment is the key to realize ample supply potential post 2020.

International natural gas prices



Source: Energy Intelligence, EIA

- Asia premium of LNG still significant, yet spot prices dropped significantly in this summer

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	• Already available • Lower prices (for now)	• Possible to reflect regional market balance	• Already available	• Possibly the quickest solution	• Rational for power utilities
Disadvantages	• Higher volatility • Asia market balance not reflected	• Not yet available • Higher volatility	• Higher volatility • Limited liquidity (so far)	•Gas market balance not reflected	• 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

LNG Producer-Consumer Conference 2014

- Held on November 6th
- About 1,000 attendee from more than 50 countries

Program	
Keynote speeches	* Yoichi Miyazawa, Minister of Economy, Trade and Industry * Mohammed Bin Saleh Al-Sada, Minister of Energy and Industry, Qatar * Ian Macfarlane, Minister for Industry, Australia * Greg Rickford, Minister of Natural Resources, Canada * Maria van der Hoeven, Executive Director, International Energy Agency
Session 1	LNG supply outlook & Actions by producers
Session 2	LNG demand outlook & Actions by consumers
Session 3	New movement towards developing flexible LNG market and change in LNG trade
Session 4	LNG technology developments

LNG Producer-Consumer Conference 2014

- Participants shared view on weakening Asian LNG market
  - Japan's import price can be 20-30% lower (Minister Miyazawa)
  - New capacity in Australia will weaken LNG market (Minister Macfarlane)
- Appeal from the US west coast LNG projects
  - LNG buyers accessible to cost-base LNG
  - Relatively shorter transportation distance
  - No Panama canal risk
  - Existing infrastructure available
- Still searching for alternative pricing to replace oil indexation
  - Price level vs Pricing
  - Hybrid pricing as a transitional measure
  - How will we establish Asian benchmark prices?

Multilateral joint study group on LNG

- Proposed by IEEJ at the LNG Producer-Consumer Conference 2013
- Participants
  - Members： Research institutes from LNG importing/exporting countries, International organizations
  - Observers: Government agencies
- Workshops in February and September in 2014
- Policy recommendations at LNG Producer-Consumer Conference 2014（http://eneken.ieej.or.jp/press/press141106a.pdf）
  - Cooperation between sellers and buyers, governments and companies
  - Pricing diversifications
  - Flexible and transparent market developments

Conclusions

- Natural gas supply and demand
  - Demand strong in Asia, still weak in Europe
  - LNG market being weakened
  - Decreased spot LNG prices
- Issues in major countries
  - Expectation raising for North American LNG
  - Russia’s shift to Asia
  - Supply diversifications by China
- LNG Producer-Consumer Conference2014
  - Shared view on weaker market
  - US west coast LNG
  - How can Asian benchmark prices be established?
  - Flexible and transparent LNG market needed

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