

# Outlook for Gas Markets

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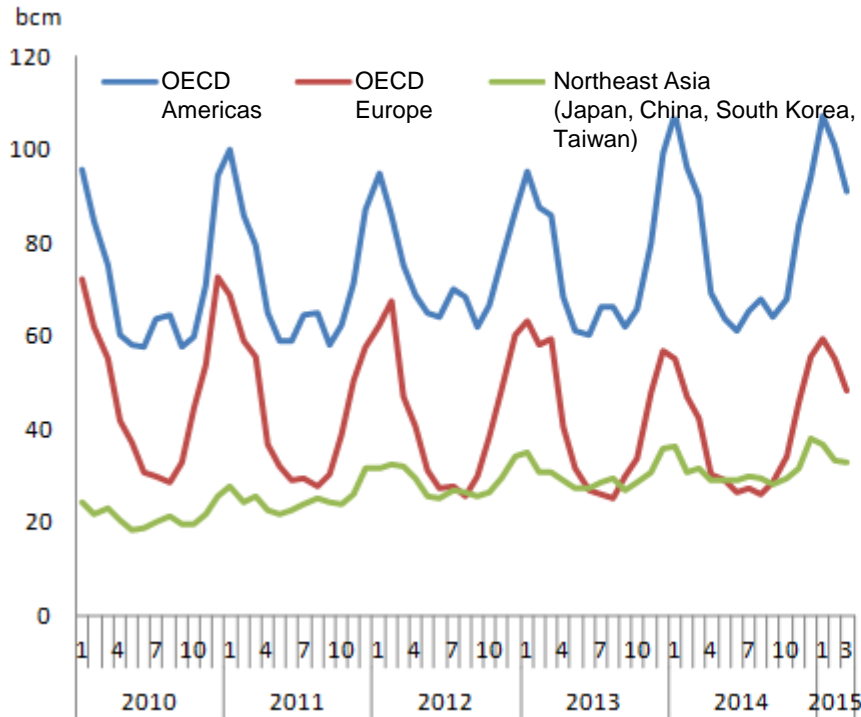
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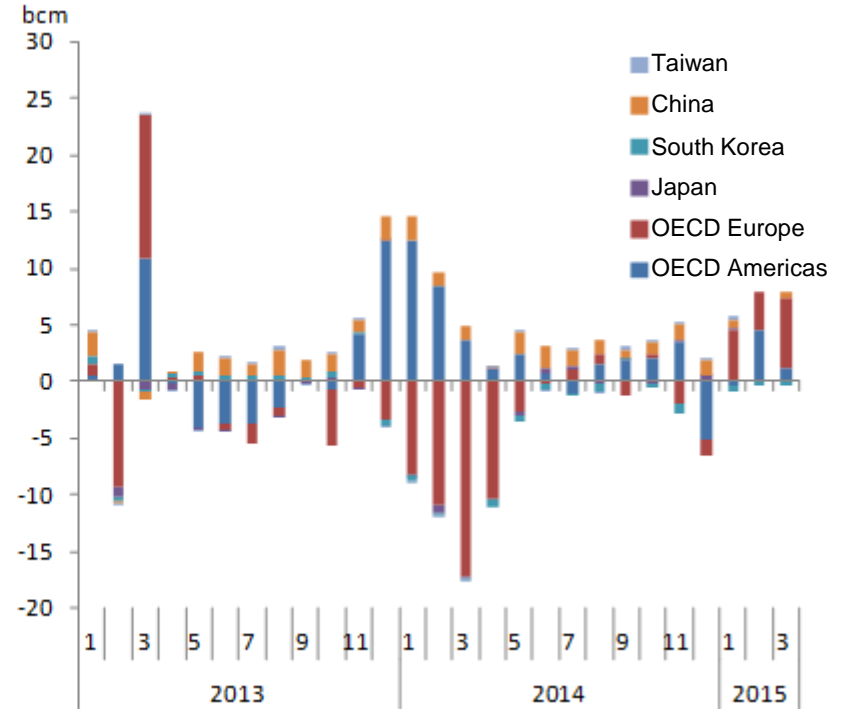
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# Natural gas demand in major consuming regions

## Monthly demand



## Year-on-Year Changes



(Sources) IEA; China OGP; Bureau of Energy, Ministry of Economic Affairs, Taiwan

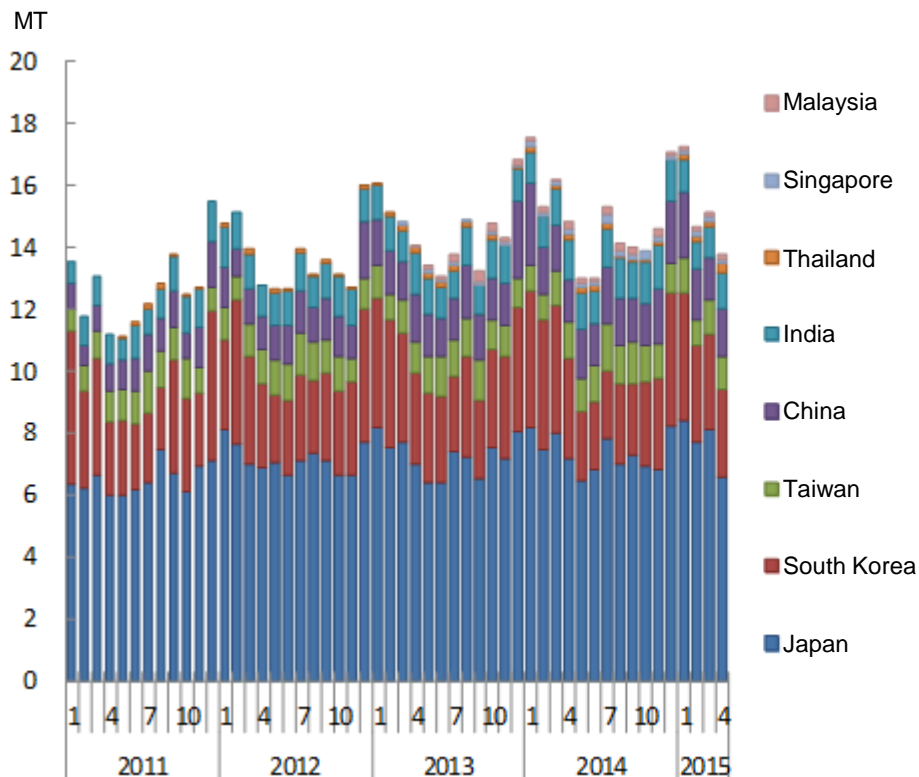
### Demand in 2014:

- OECD Americas 930 bcm (up 32 bcm or 4% year on year)
- OECD Europe 447 bcm (down 52 bcm or 10%)
- Northeast Asia 360 bcm (up 15 bcm or 2%)

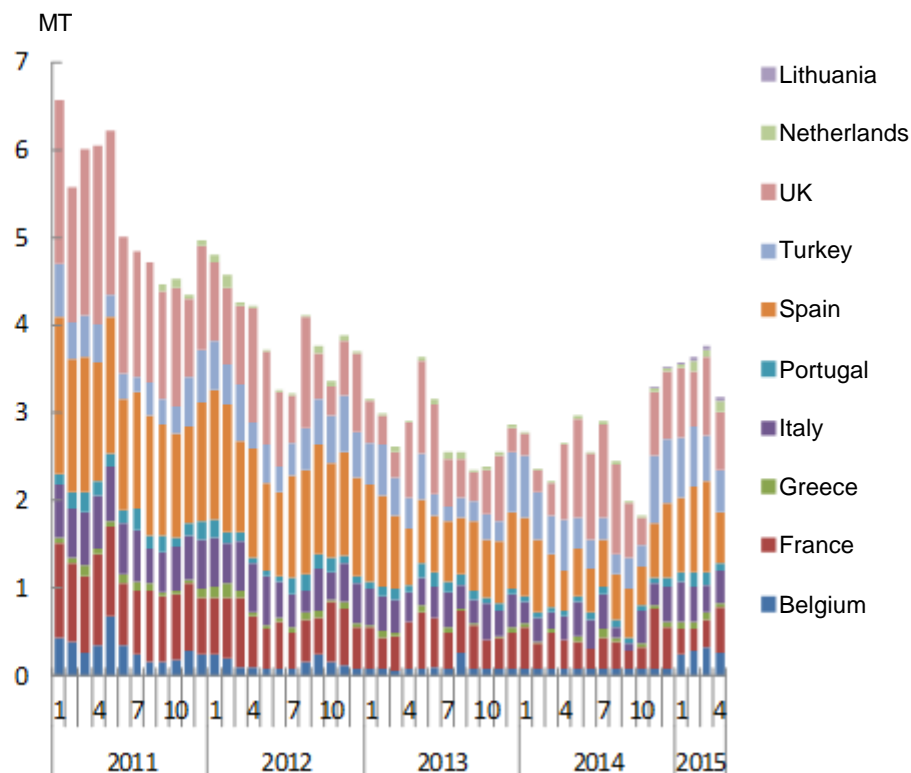
While demand in Europe increased from early 2015, the sovereign debt risk resurfaced.

# Monthly LNG imports in Asia and Europe

## Asia



## Europe

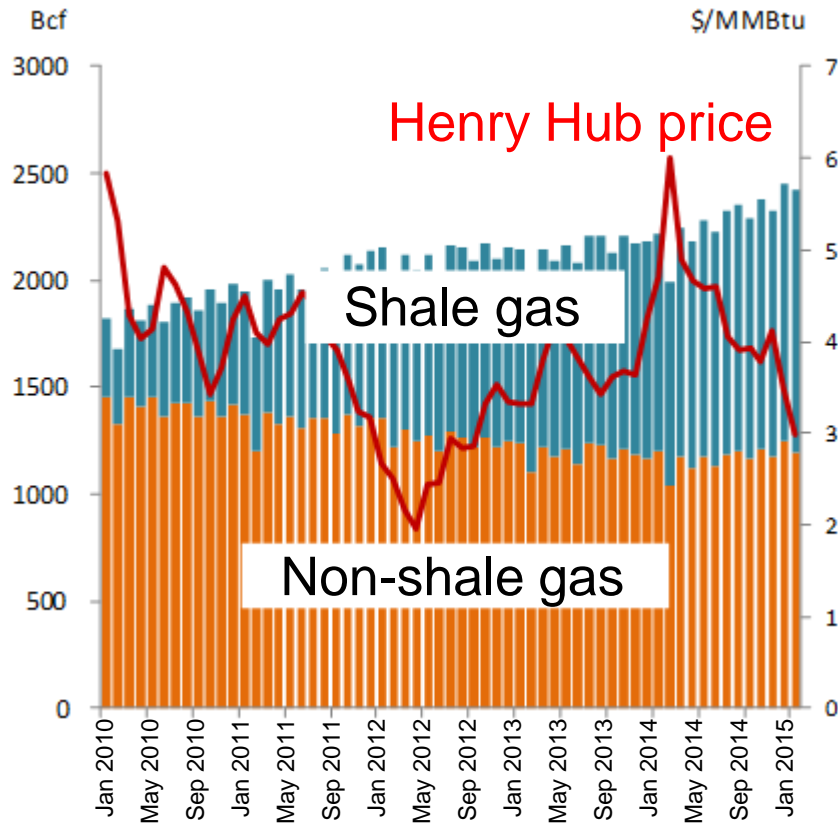


(Sources) Customs statistics in each country, IEA, etc.

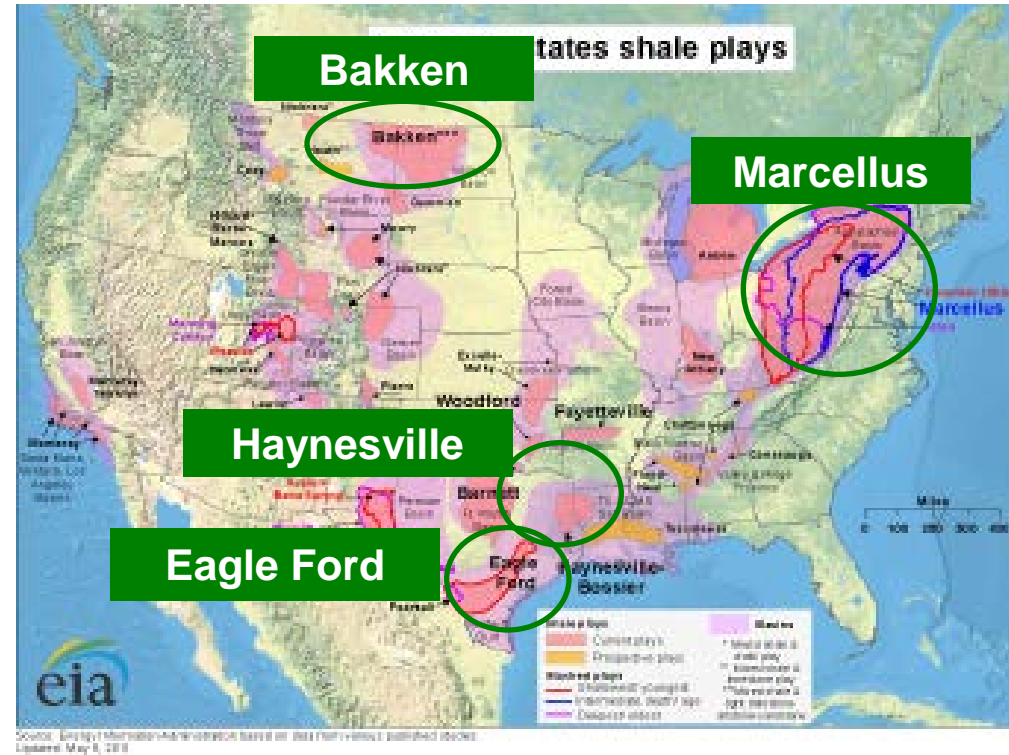
- LNG imports: 180.10 MT in Asia (up 2.06 MT year on year), 32.44 MT in Europe (down 1.49 MT)
- LNG imports in Europe increased since late 2014.

# U.S. natural gas production

## Output and prices



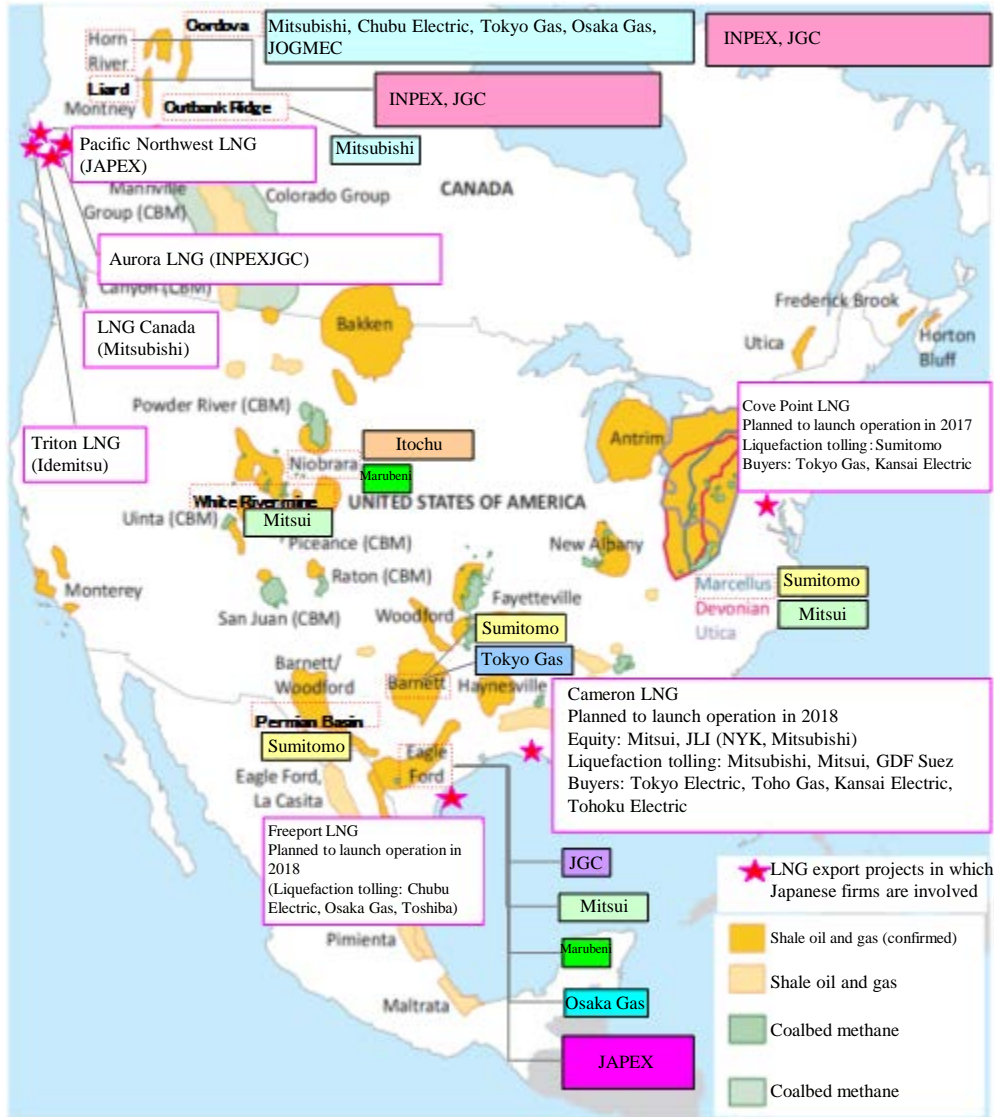
## Major shale gas play



(Source) EIA

- Shale gas production has been robust despite price falls as productivity is improving.
- In January 2015, shale gas output exceeded 50% of total natural gas output for the first time.

# LNG export projects in North America



## U.S.

- 54 projects (350 MT)
- Four export projects have won approval for exports to non-FTA countries and for the construction of natural gas liquefaction facilities, (52 MT/year)
- Sabine Pass will launch operation in late 2015 or early 2016.

## Canada

- 35 projects (390 MT)
- While 10 projects (about 120 MT/year) have won approval for exports, only LNG Canada has received approval for construction.

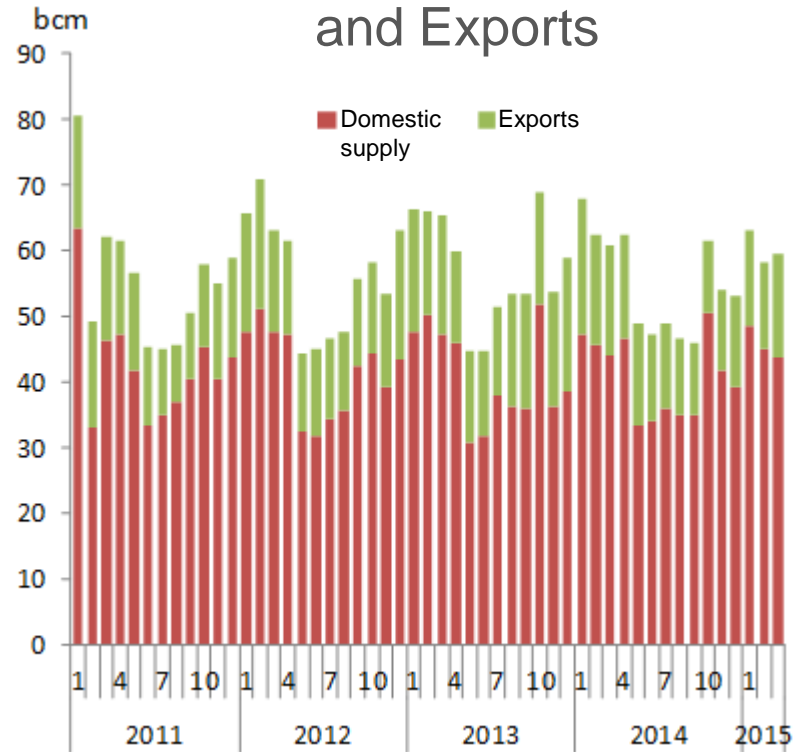
(Source) IEA and company websites

# Russia's shift to Asia



(Source) JOGMEC

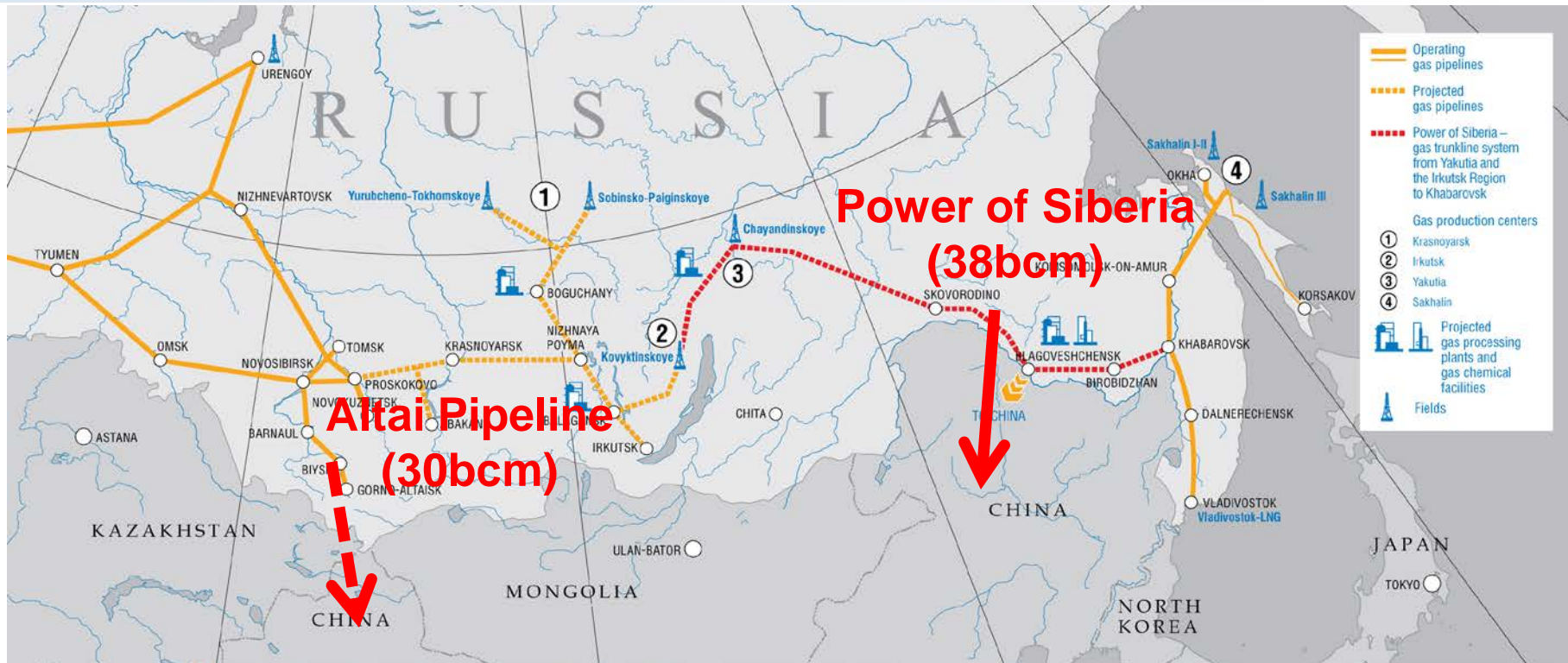
## Domestic Natural Gas Supply and Exports



(Source) Russian Energy Monthly

- Exports in 2014 totaled 193 Bcm, down 12% year on year.
- As supply to Europe is not likely to expand, Russia urgently needs to explore Asian markets.
- As well as pipeline gas supply to China, the expansion of LNG supply to other Asian countries including Japan is an issue.

# Russian gas supply routes to Asia



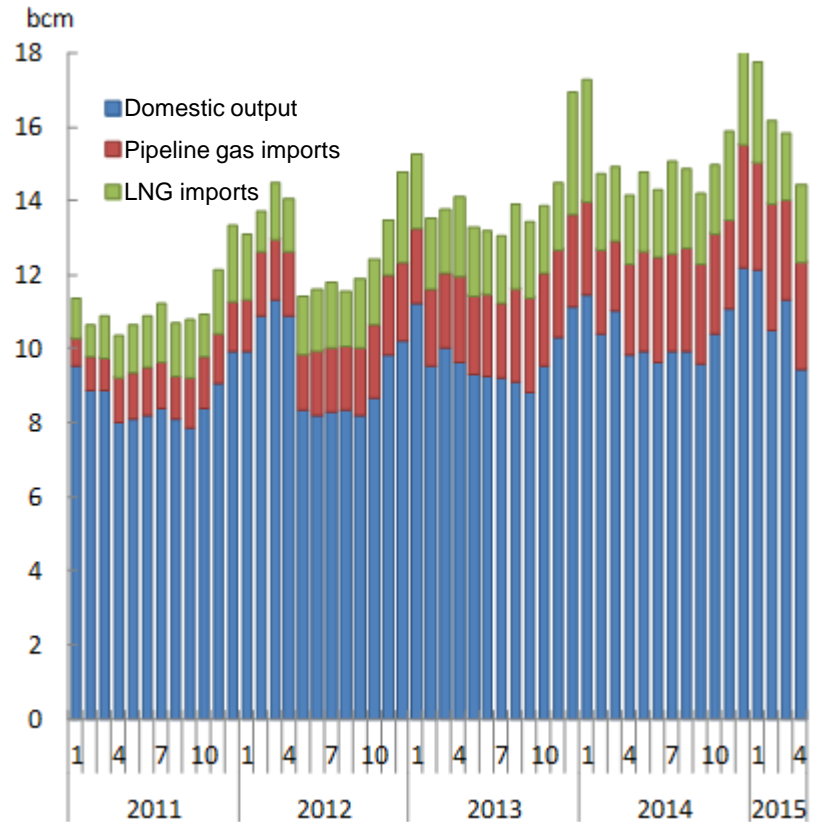
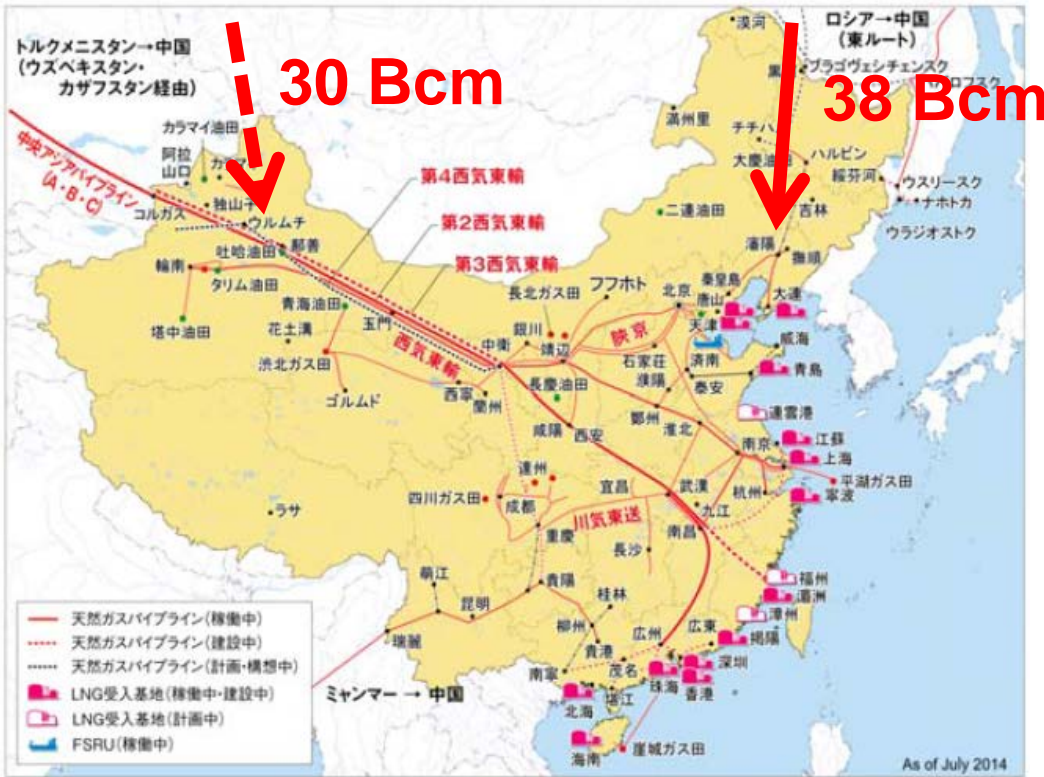
(Source) Gazprom

- Russia signed a gas sales contract for 38 bcm/year (for Power of Siberia) in May 2014 and a memorandum of understanding for 30 bcm/year (for Altai Pipeline).
- The oil price plunge has cast a shadow on investment in Eastern Siberian gas fields development and in the Power of Siberia construction.
- Greater priority might be given to the Altai Pipeline project in which no upstream development is required.

# Natural gas supply and demand in China

## Gas infrastructure development

## Domestic production and imports



(Source) JOGMEC

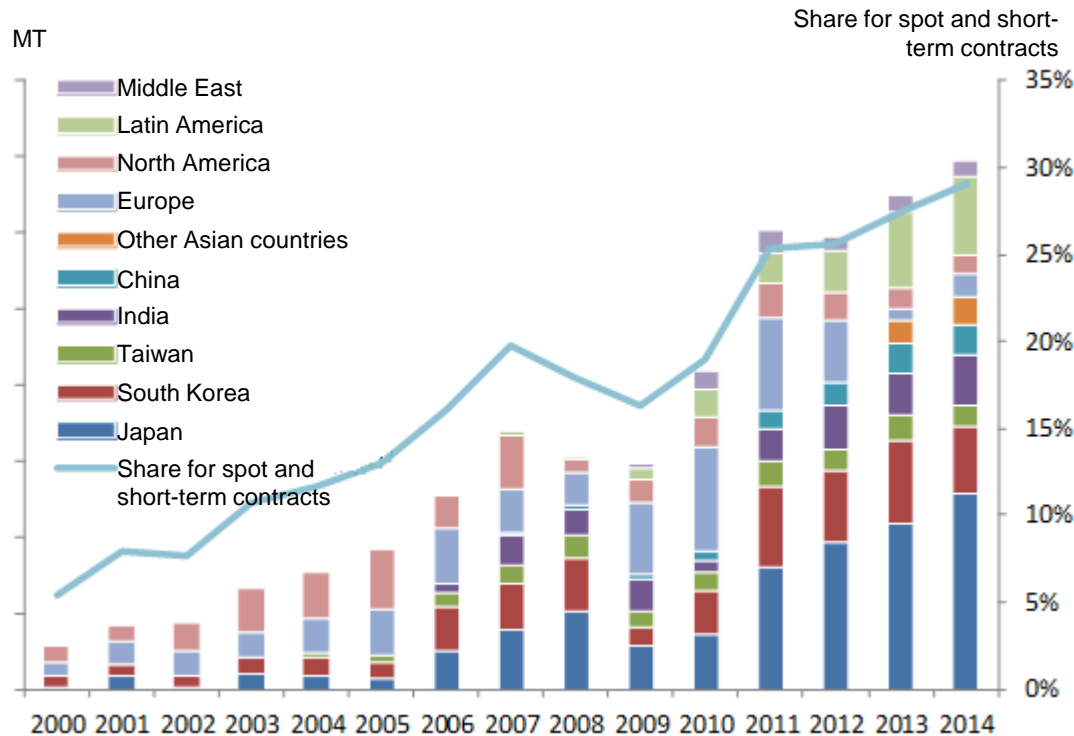
(Source) China OGP

- Demand in 2014 totaled 183 Bcm (up 7% year on year).
- Pipeline gas imports posted remarkable growth (up 15% year on year).
- Lower LNG prices have not impacted on import increase to a significant extent. LNG import terminals' operating rates remain low.



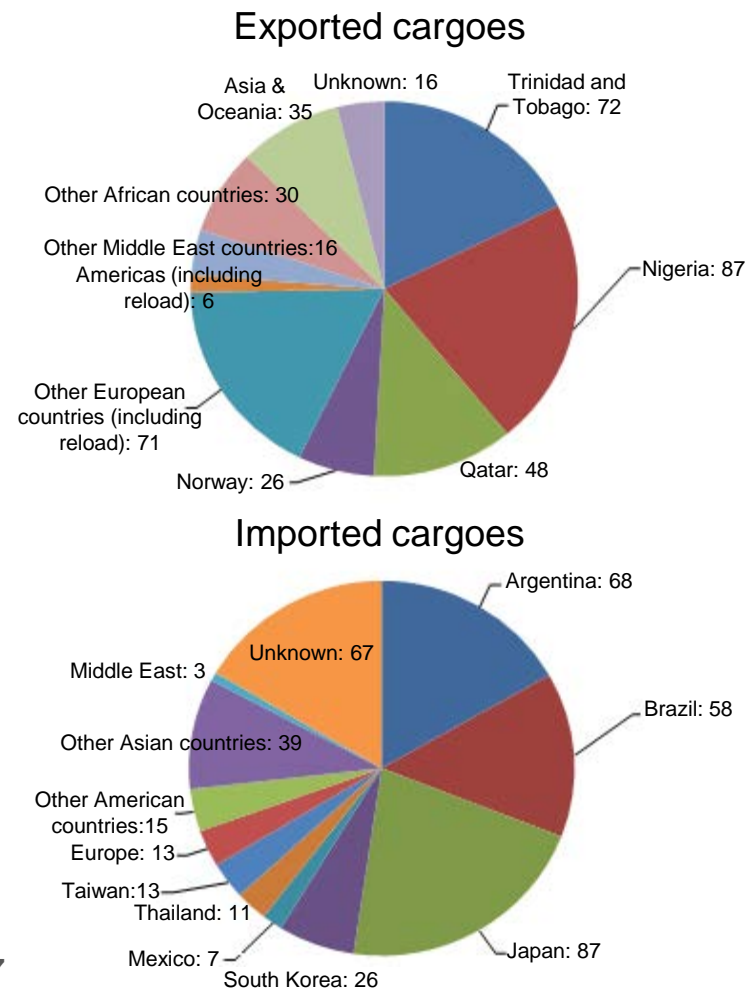
# Spot and short-term LNG trade

## Spot and Short-term LNG Trade Volume



(Source) GIIGNL

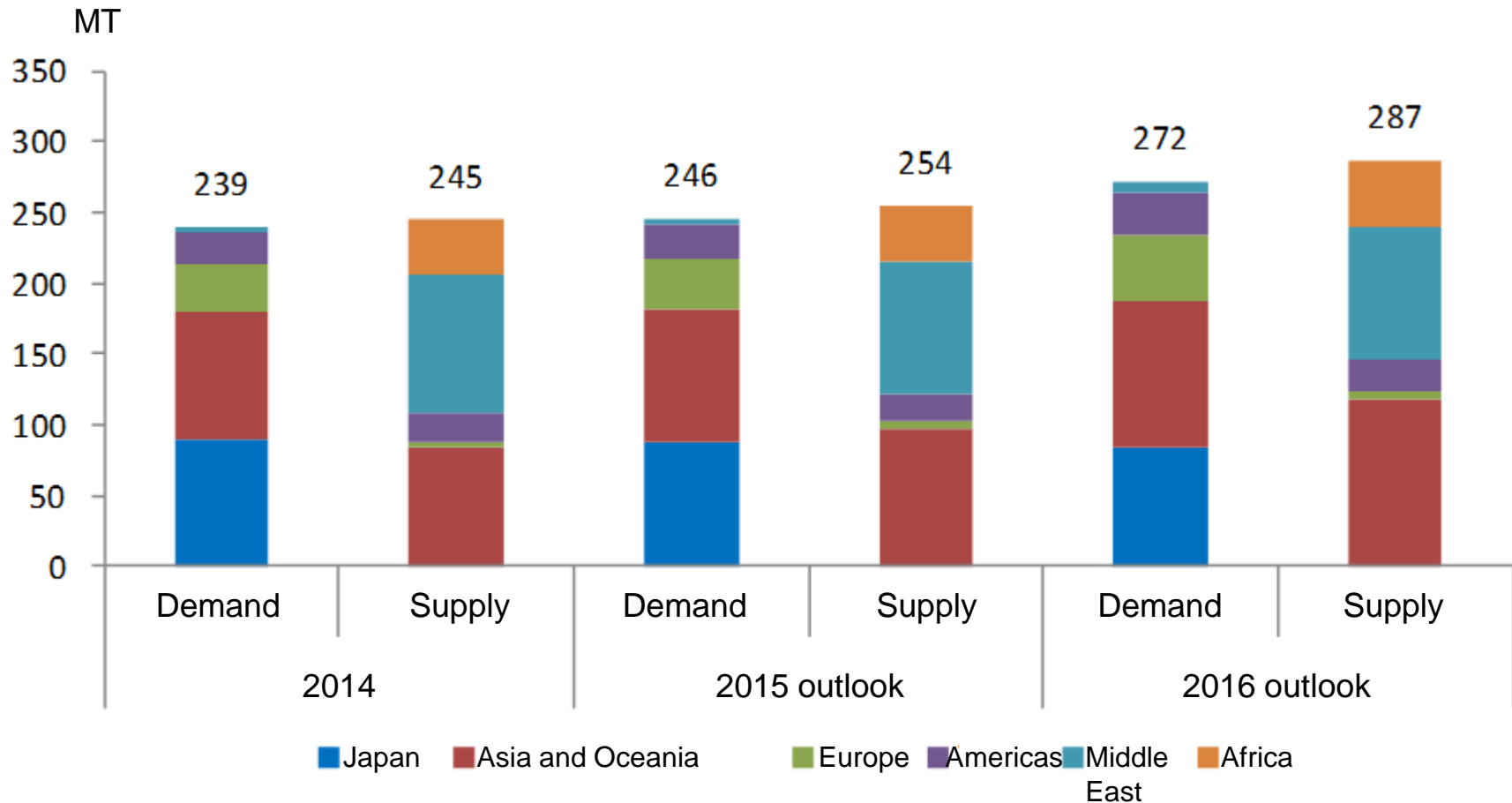
## Spot LNG Imports/Exports (2014)



(Source) ICIS Heren

- 69.58 MT (of which Japan accounted for 37%) traded via spot and short-term contracts in 2014
- Japan's spot procurement in 2014 estimated at 87 cargoes (about 5.2 MT accounting for 6% of total LNG imports)

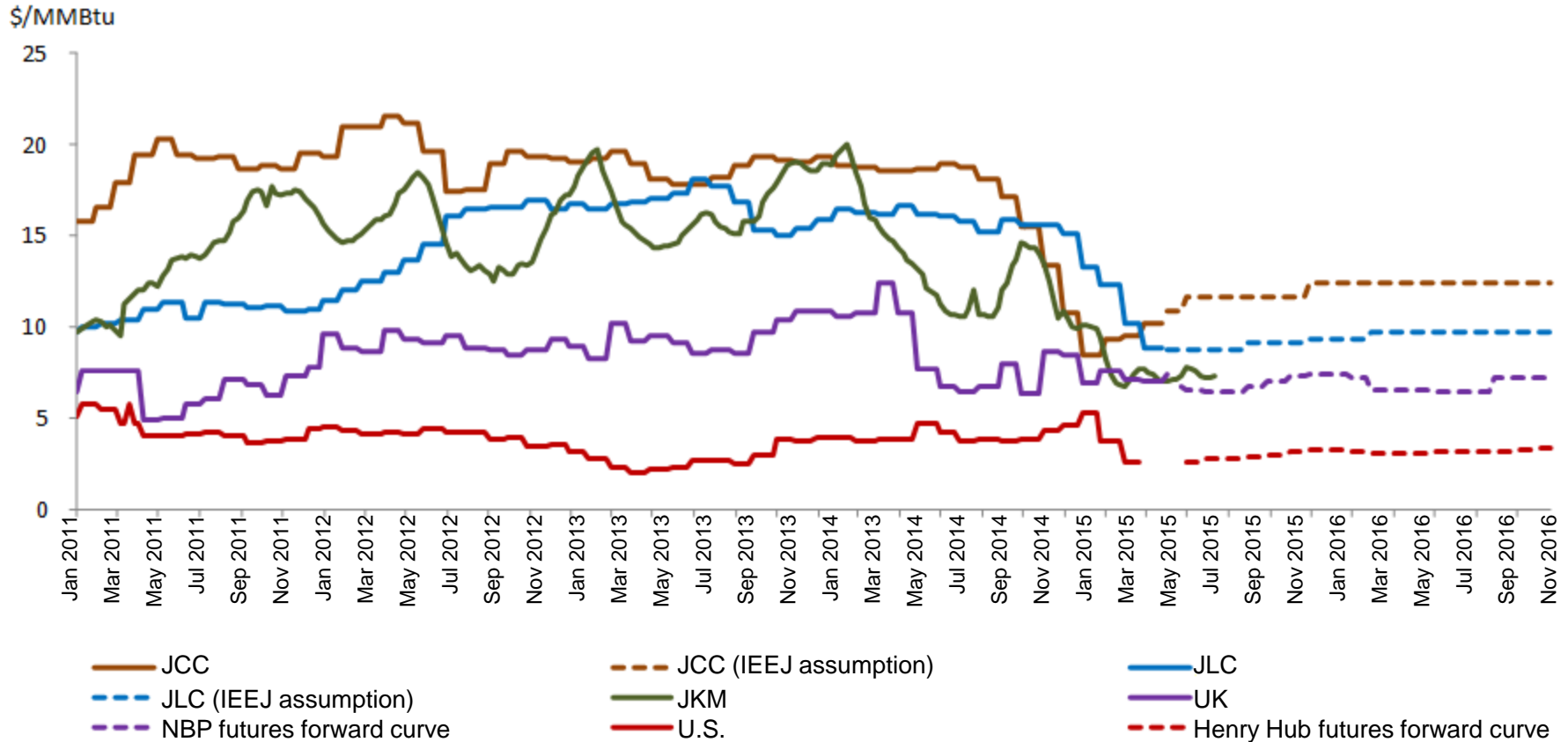
# LNG supply and demand outlook



(Source) IEEJ

- As new supply sources have launched operation one after another, supply-pushed growth in demand will be increasingly clear.
- Emerging markets especially in Asia will continue to expand imports.

# Natural gas prices



(Sources) Energy Intelligence, EIA, Platts, CME, IEEJ

- Japan's average LNG import price (JLC) has fallen since early 2015 due to the crude oil price decline.
- While Asian premium has substantially shrank, the rationality of oil-indexation remains an issue.
- Japan's average LNG import price in the second half of 2015 and 2016 is projected at \$8.8-9.7/MMBtu.

# Conclusions

## Natural gas supply and demand in major markets

- Demand has been firm in the Americas and Asia. Future demand in Europe is uncertain with sovereign debt risks.
- U.S. shale gas has remained competitive despite price falls.
- Demand growth has been decelerating in the Chinese market. The oil price decline is affecting Russian pipeline gas export projects to China.

## LNG markets

- Demand growth has decelerated in Asia while turning upward in Europe recently.
- Market liquidity has been enhanced with growing spot trade.
- While the Asian premium has shrunk, the rationality of oil-indexation remains an issue.
- Substantial supply growth will accelerate buyers' market situation.