

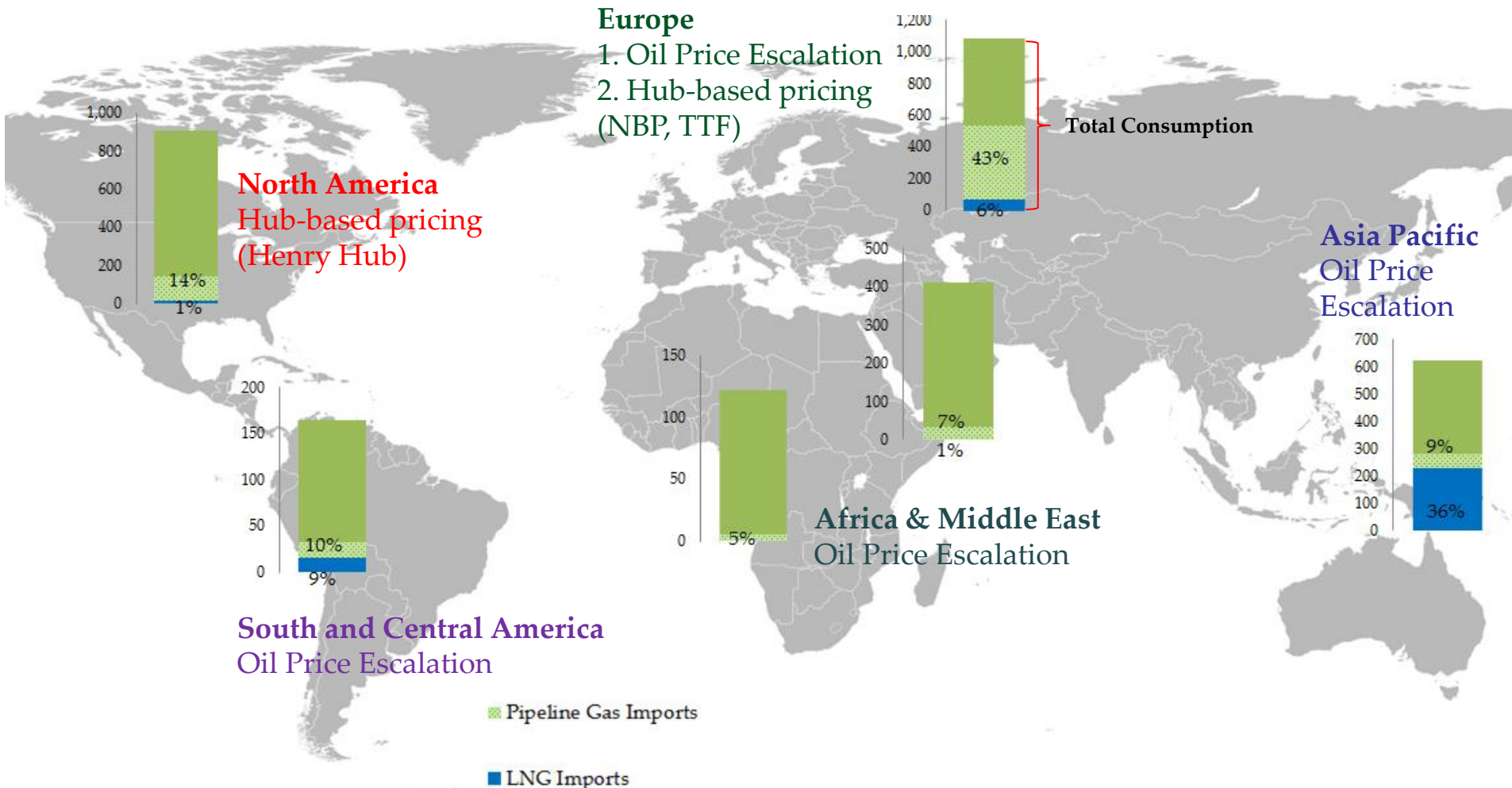


Session 4: LNG PRICING WORLDWIDE AND GAS MARKETS REFORM

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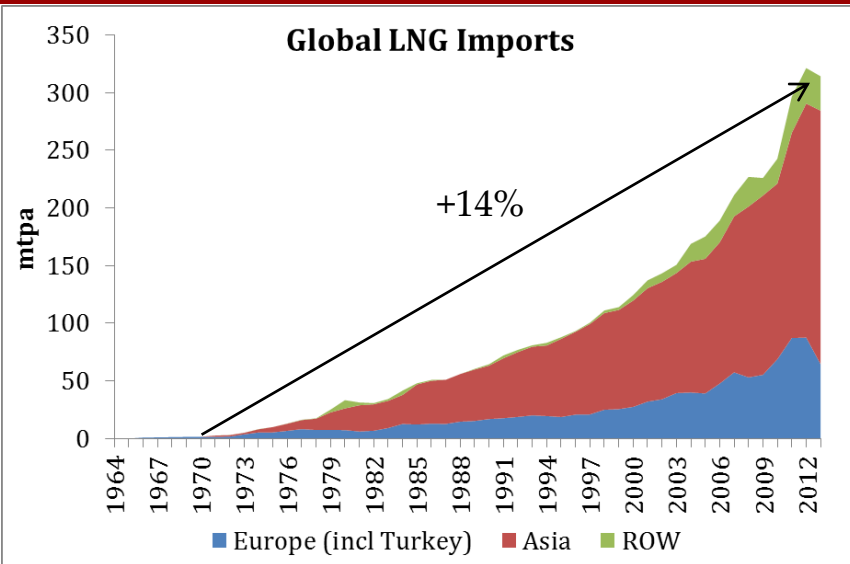
Russia LNG Congress, Moscow, 13-14 March 2014

International natural gas trade & pricing

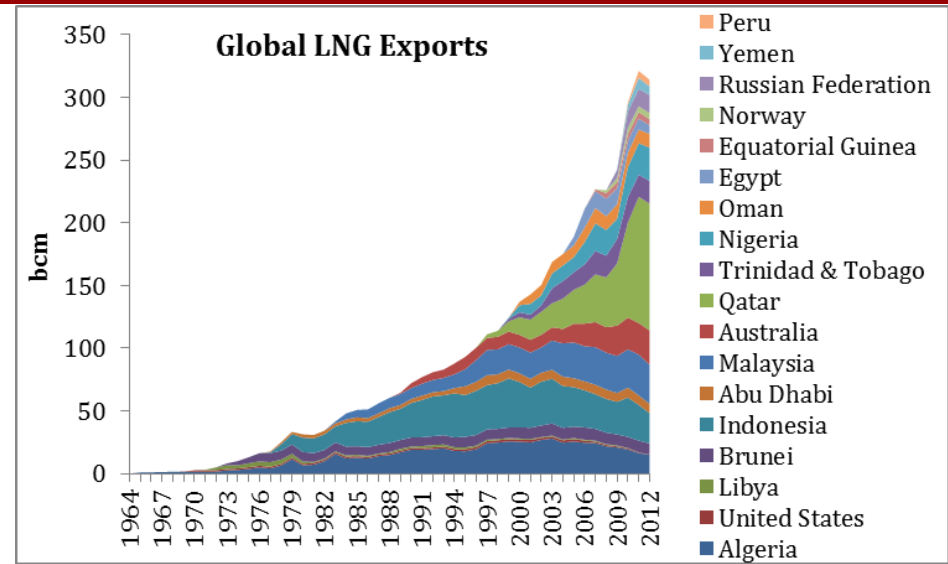


Source: BP Statistical Review 2013
Note: 2012 data

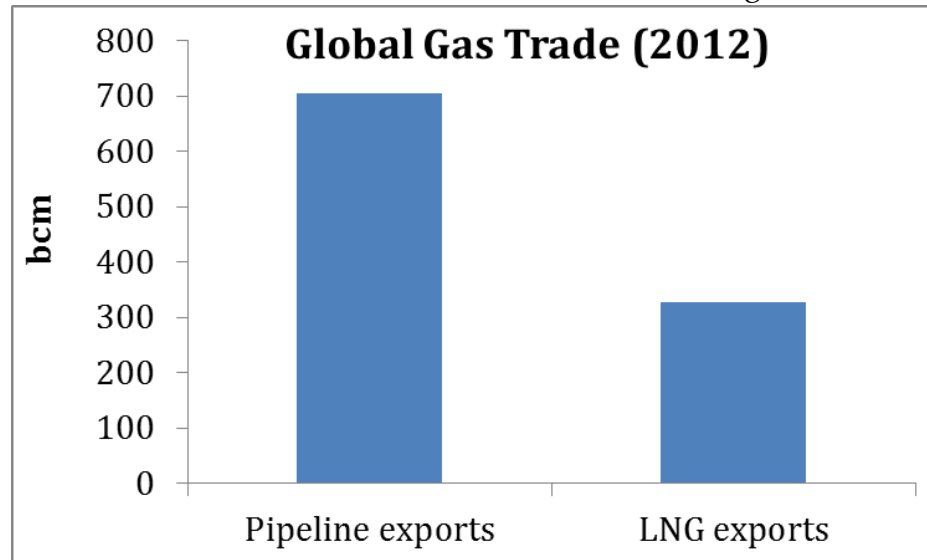
Integration of regional markets through global LNG trade



Source: Bloomberg

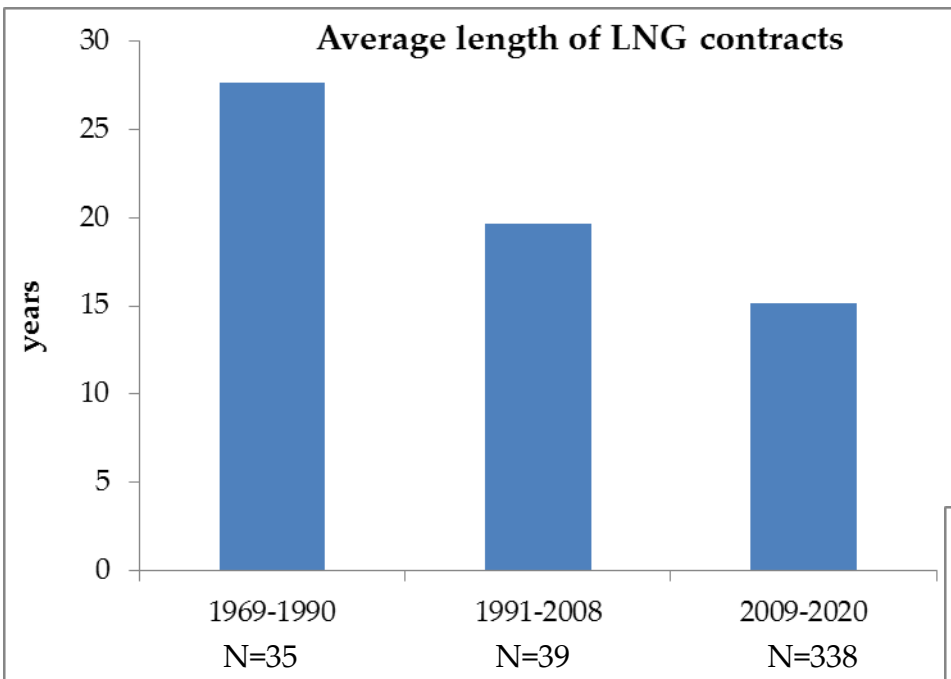


Source: Bloomberg

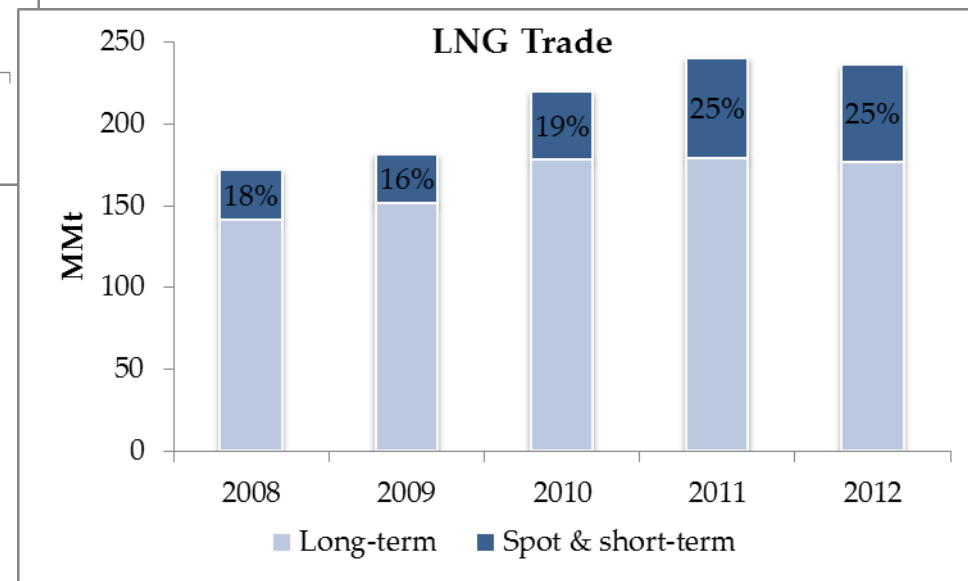


Source: BP Stat Review 2013

Evolution of LNG spot and short-term trading

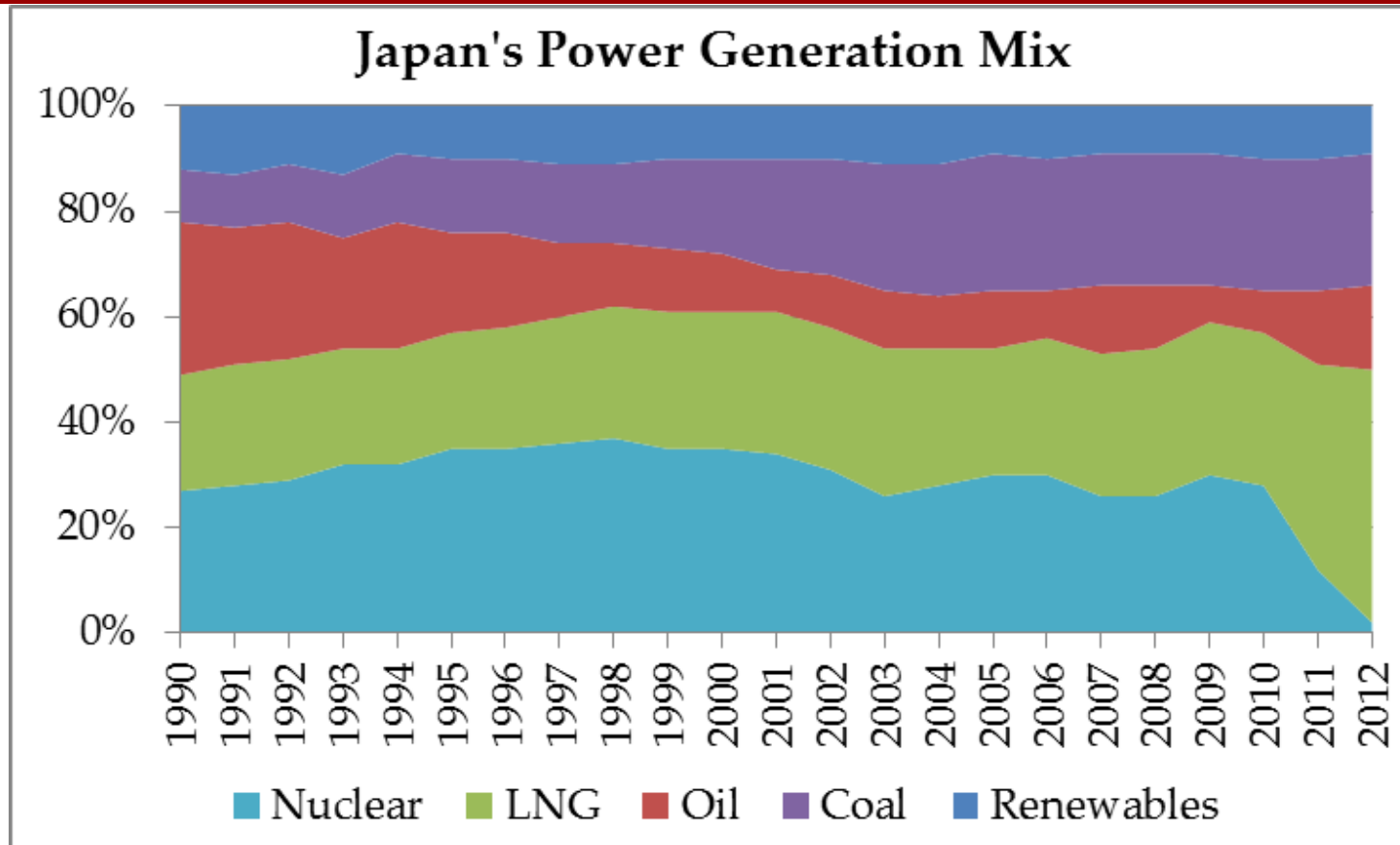


Source: Bloomberg



Source: GIIGNL

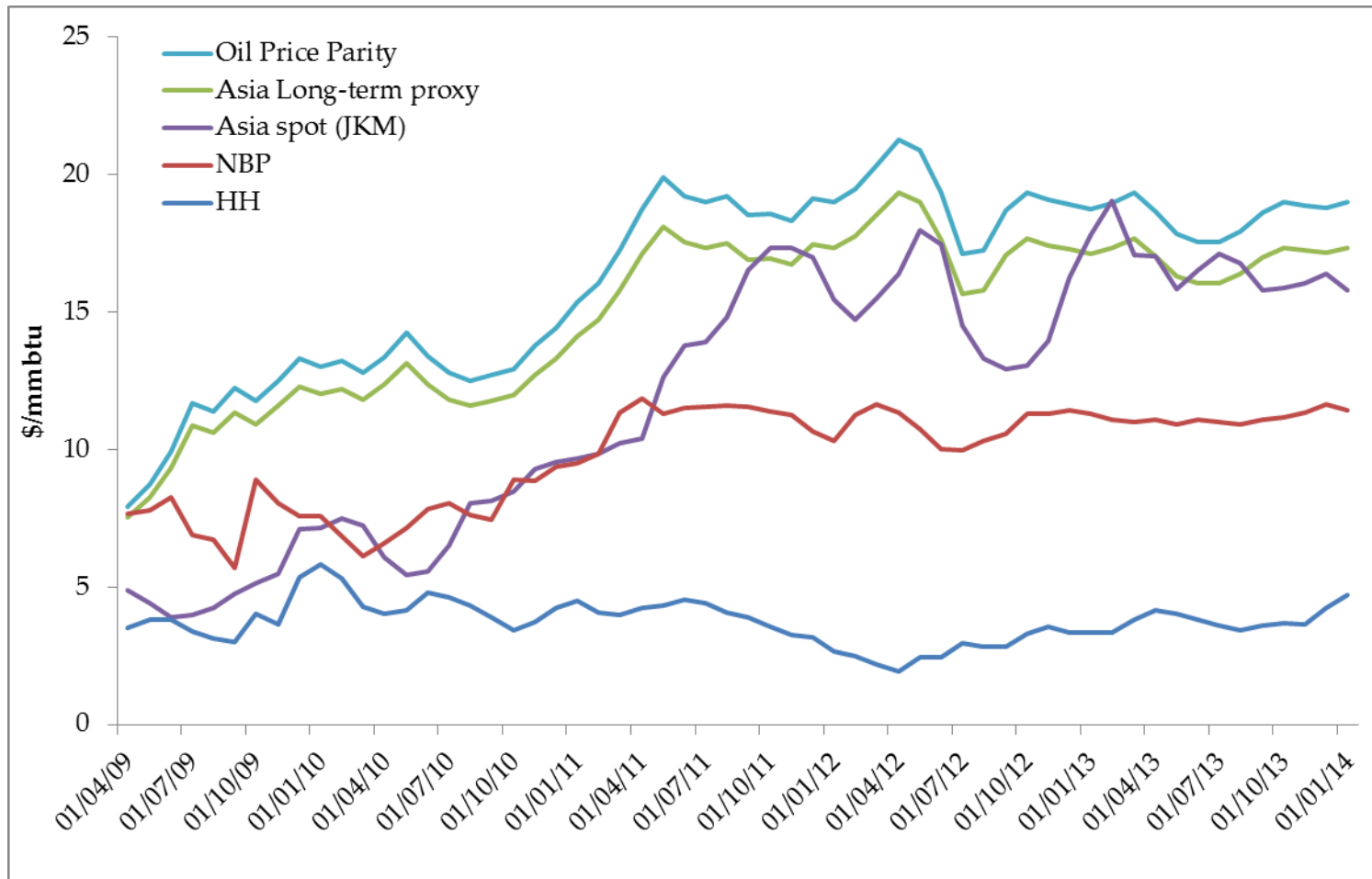
Japan's Power Generation Mix – before and after Fukushima



Source: METI

- Nuclear power dropped from 30% to zero,
- while LNG moved from 30% to nearly 50%
- and oil expanded from 8% to 16% by 2012

Can such a large price differential persist?



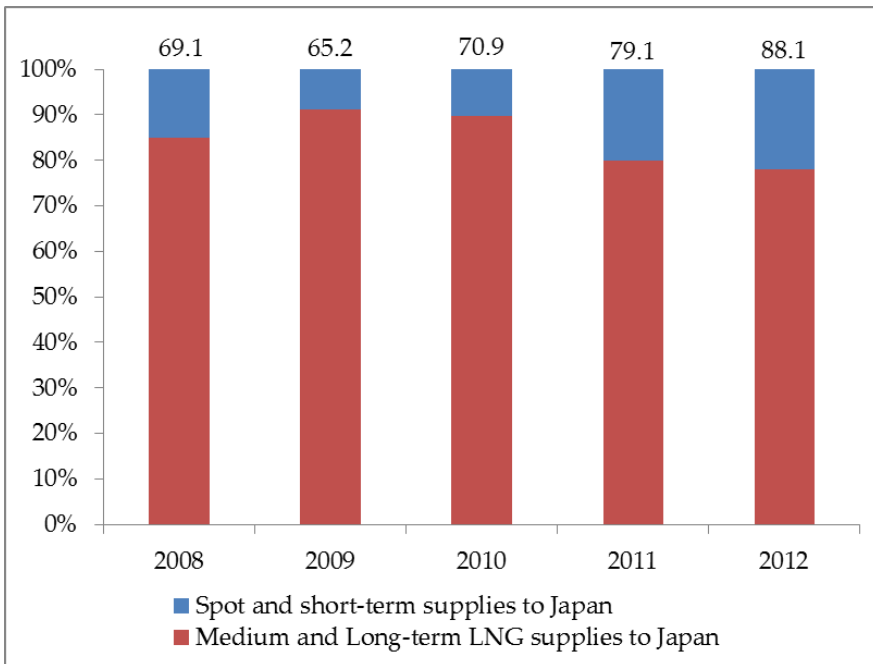
Source: author's calculations based on Bloomberg data

Note: Asia long-term proxy price = $14.85\%JCC + 0.5$

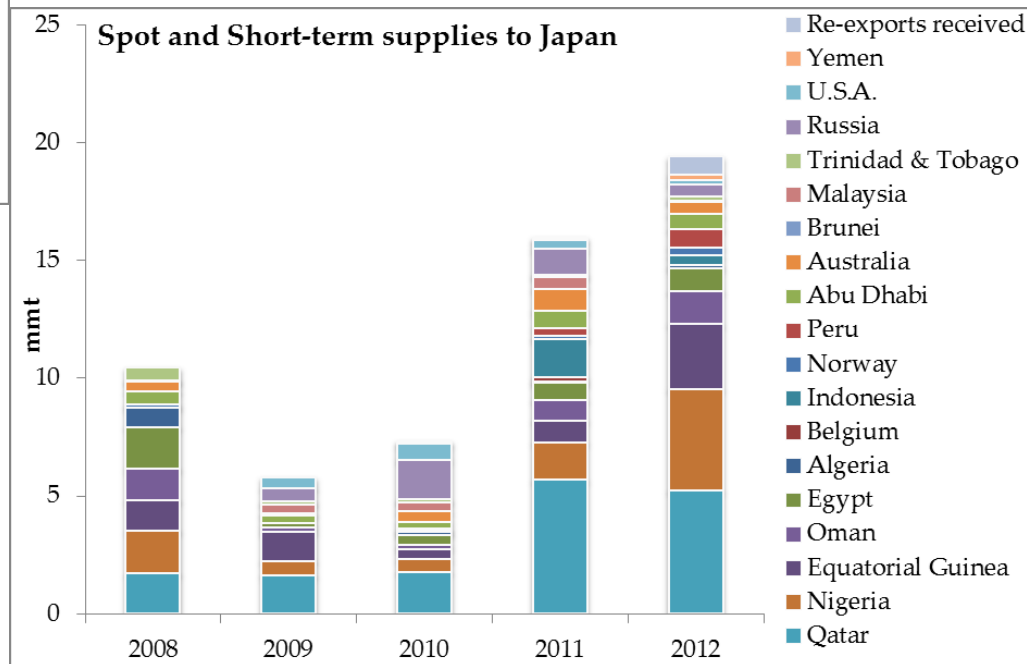
Oil Price Parity = $16.75\%JCC$;

JCC=Japanese average crude price

LNG Supplies to Japan

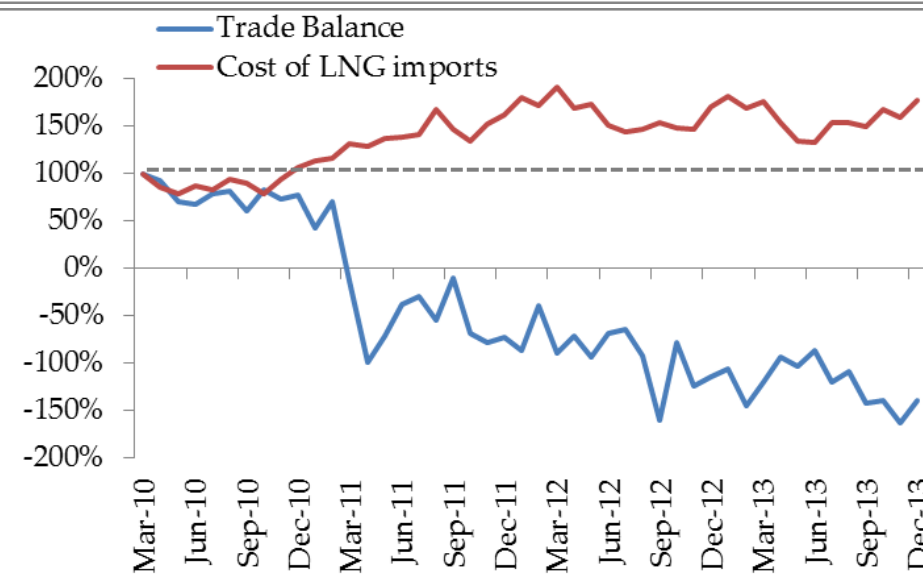
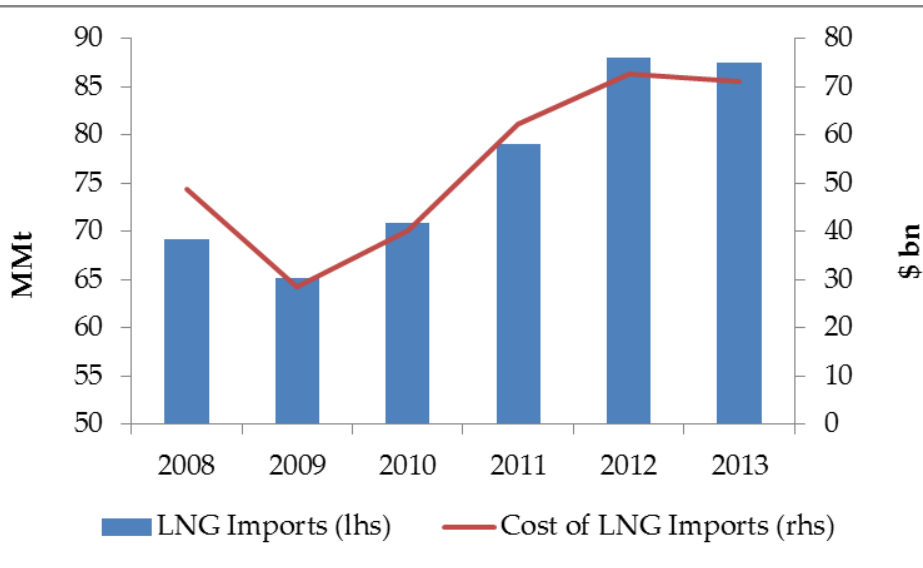


Source: GIIGNL



Source: GIIGNL

Implications for Japan's economy

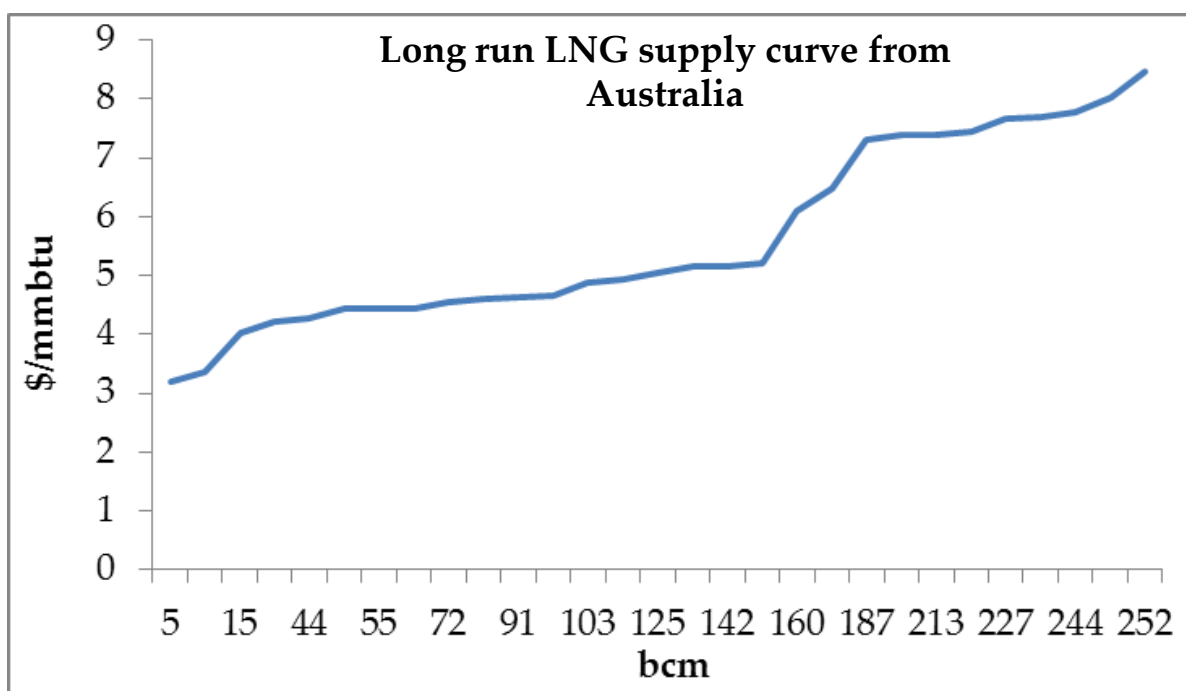


- LNG imports has increased by 27% compared to 2010
- The cost of LNG imports increased by 75% (\$70bn in 2013 vs \$40bn in 2010)
- This loss of nuclear generation is heavily impacting Japan's trade balance and competitiveness:
- the trade deficit (which has reached a record at 34 months in a row) increased by 22% in Dec-2013 (YoY)

Japan's Energy Policy Response

- In its 'Annual Report on Energy' (Aug 2013) METI proposed:
 - The government of Japan should directly engage with resource-rich nations to secure imports
 - Direct resource diplomacy with the USA, Russia, Australia, the UAE, African countries, and other countries
 - To increase financial support for securing supplies
 - To underwrite finance for development of projects that are 'expected to considerably reduce LNG prices'
 - Closer collaboration with other LNG purchasers
 - Support development of indigenous supplies (methane hydrates)
- Not formally proposed, the Top Runner is under active discussion amongst politicians and industry in Japan to apply to LNG pricing:
 - LNG import price cap @ \$13-15/mmbtu
 - Prices thereafter should improve i.e., lowered
 - Most probably applied to power utilities rather than gas distribution companies and to all contracts (both existing and new ones)

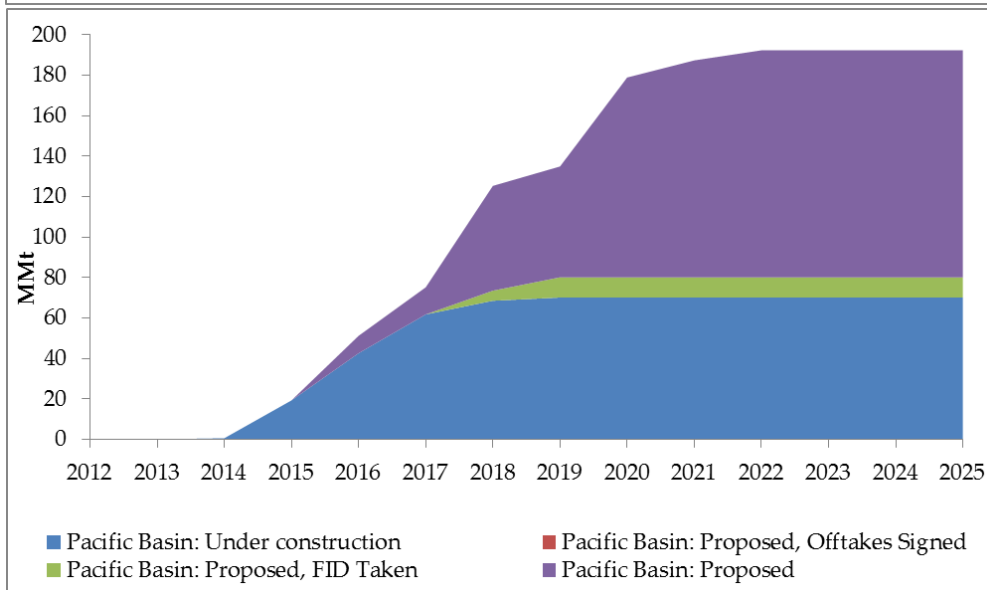
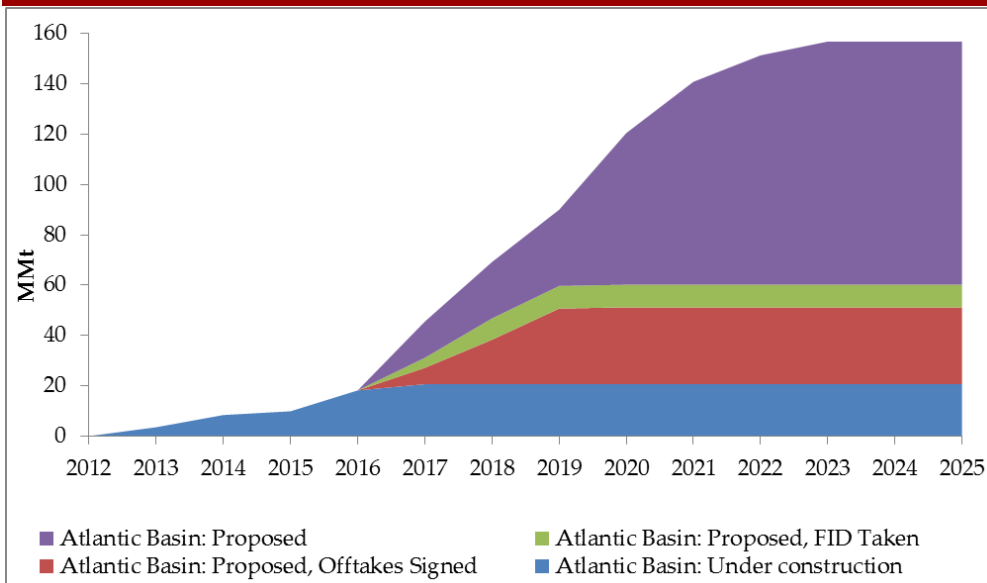
Supply response should be expected



Source: author's calculations based on publically available information

- a supply response to the current high price environment can be expected:
- 26 LNG projects have been proposed in Australia with a total capacity 160 MMt/a
- Important question is about timing and capabilities to develop some of these projects

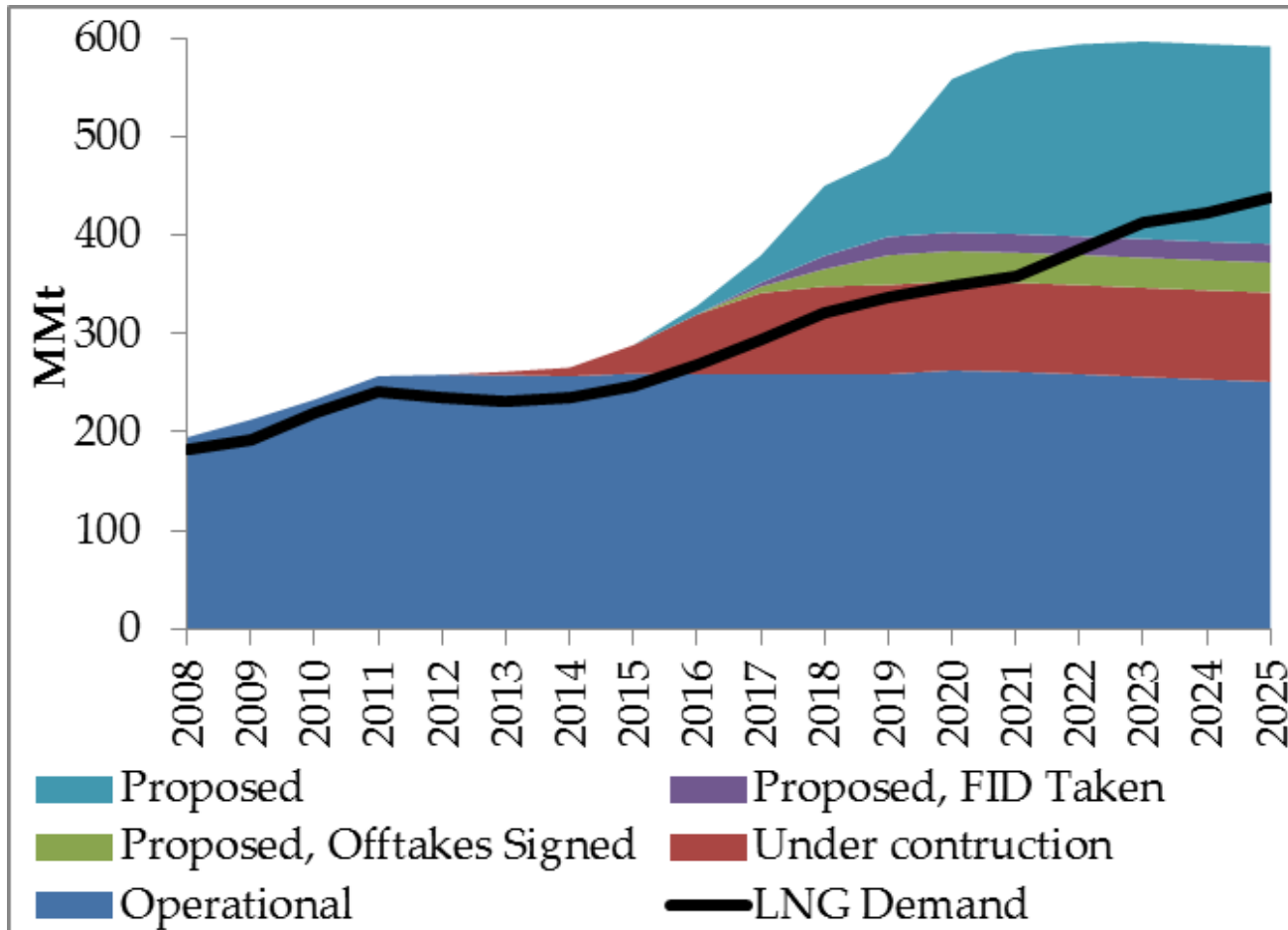
Liquidity is on the horizon



- Under construction:
 - Atlantic: 21 MMt/a
 - Pacific: 70 MMt/a
 - **Total: 91 MMt/a**
- Capacity with offtake agreements:
 - Atlantic (US projects): 31 MMt/a
- Proposed FID:
 - Atlantic (US): 9 MMt/a
 - Pacific (Vladivostok): 10 MMt/a
 - **Total: 19 MMt/a**
- Proposed:
 - Atlantic: 97 MMt/a
 - Pacific: 112 MMt/a
 - **Total: 209 MMt/a**

TOTAL: 91-305 MMt/a

Global LNG supply and demand



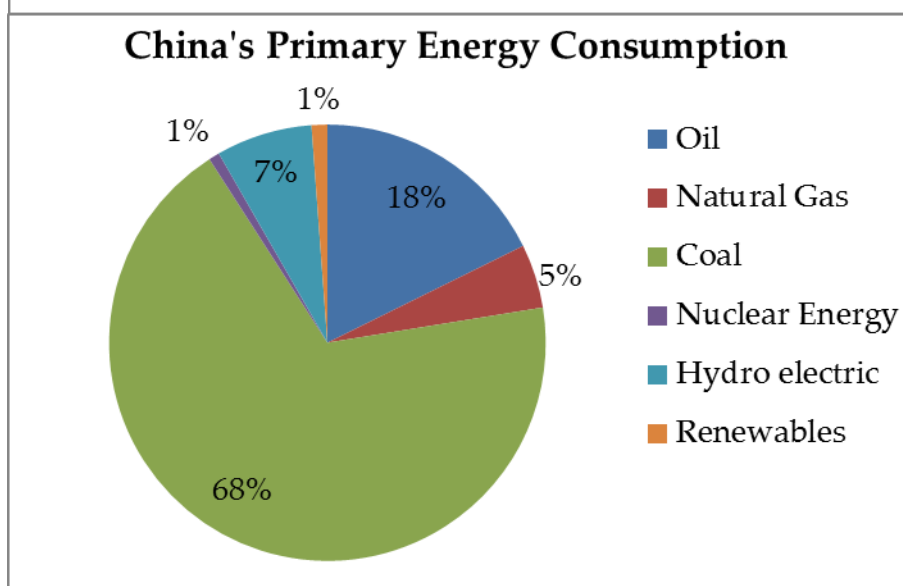
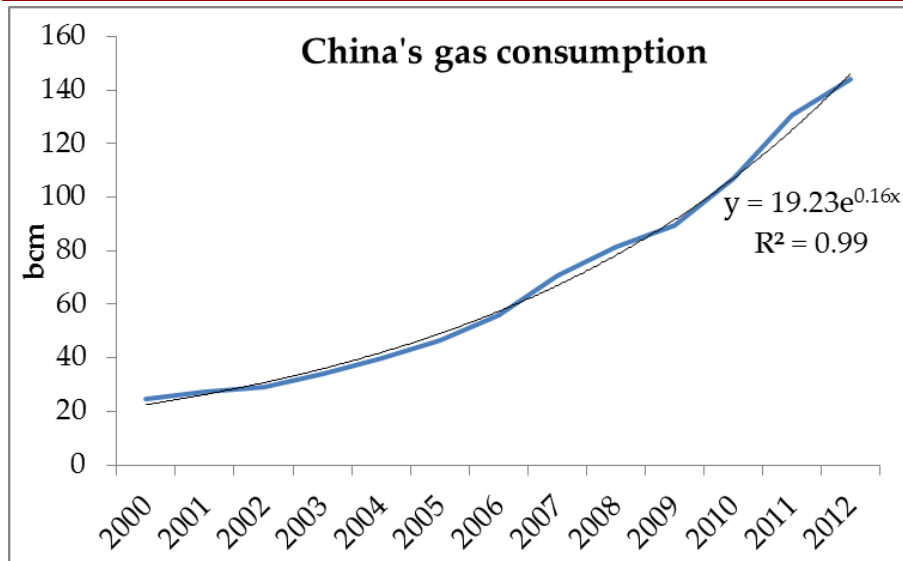
Source: Supply – Bloomberg; Demand – Deutsch Bank

Likelihood of hub-based pricing in Japan

- Buyers in Asia Pacific cannot afford oil-linked prices for a long time:
 - Serious discussion to liberalize electricity market in Japan
 - Downstream electricity prices are completely disconnected from upstream oil prices
- Liquidity is on the horizon:
 - shale resources in China; pipeline options from Russia, Central Asia, and South Asia; LNG supplies from Australia, East Africa, the Middle East, and North America
- Long-run supply curves to Asia seem quite elastic:
 - For example, Australia's cost curve indicates that it can deliver LNG at well under the current prices in Japan
- Growth in short-term and spot trade in Asia Pacific, pricing of which is increasingly based on JKM, together with ample and cheap LNG supplies on the horizon will foster market deepening and increased liquidity reinforcing the supply and demand balancing as a credible price discover mechanism.

RUSSIA'S PERSPECTIVE MARKETS

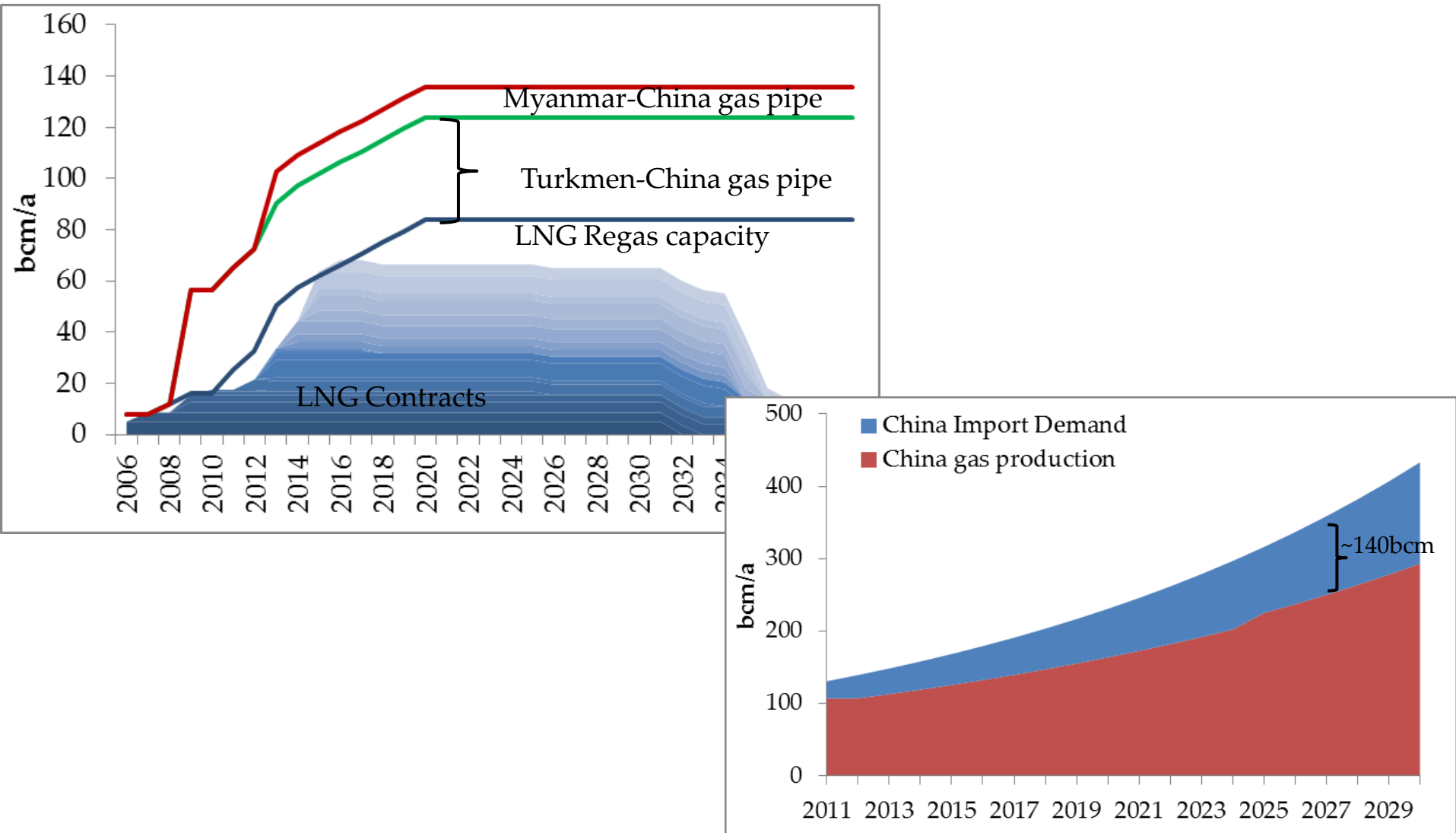
China - the most sought-after prize for Russia?



- Gas demand in China increased 6x during 2000-2012
- 2012 gas consumption in China totalled 144bcm, after posting a 10-year CAGR of 17.3%
- Russian pipeline gas to China seems difficult to realise in the short term:
 1. gas has a relatively small share in China's primary energy consumption (~5%)
 2. China's electricity sector is a game changer for a large-scale gas pipeline from Russia; However, it is economically infeasible for the electricity sector to buy gas for power generation due to lower power tariffs and high gas prices

China - the most sought-after prize for Russia?

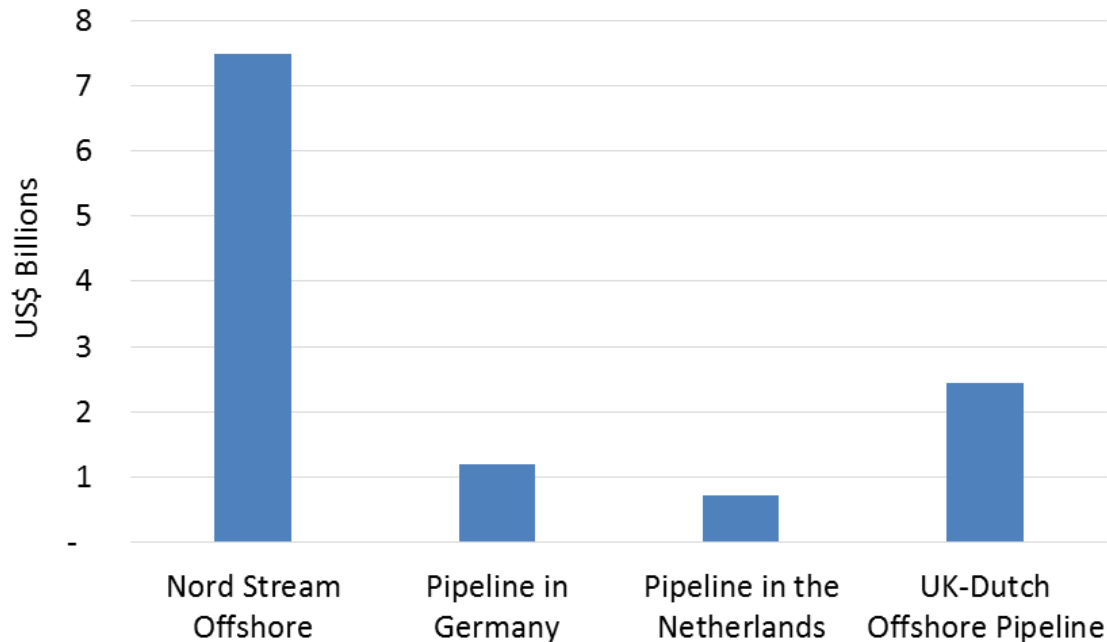
1. China has ample of supply options to meet its expected import requirements



Russian gas in the UK?

Extending and Upgrading Nord Stream to the UK

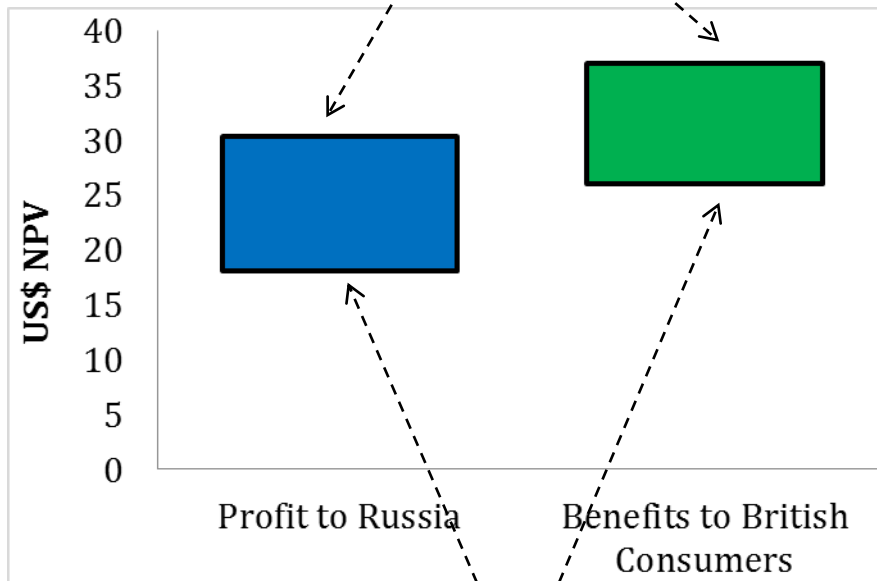
Capital Cost of the Nord Stream 3 to the UK



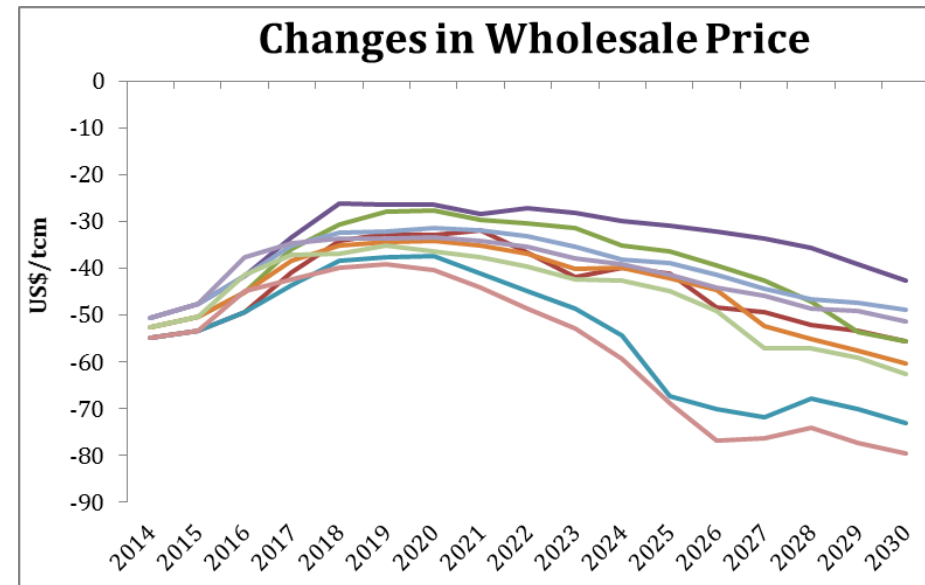
- Nord Stream III: offshore pipeline (27.5 bcm/a) underneath the Baltic Sea
- onshore pipelines connecting Nord Stream III with the UK-Dutch offshore pipeline through Germany and the Netherlands
- Offshore pipeline connecting the Netherlands with the UK
- Pipeline costing:
 - onshore pipelines: based on engineering model (WB, 2010)
 - offshore pipelines: based on econometric estimation

Benefits of Russian gas export to the UK

Global LNG market is tight eg Chinese gas demand is high & North America keeps gas for domestic consumption



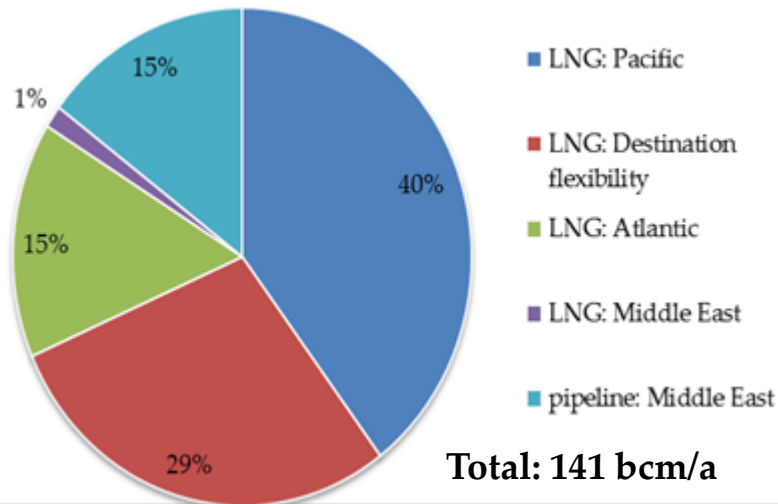
Oversupply in the global LNG market e.g. Chinese gas demand is low and North America becomes a major LNG exporter



Global LNG market?

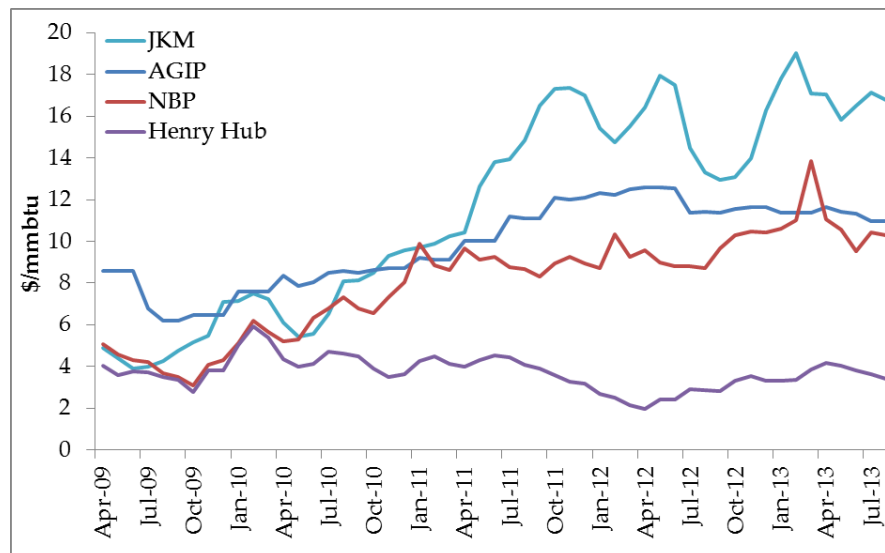
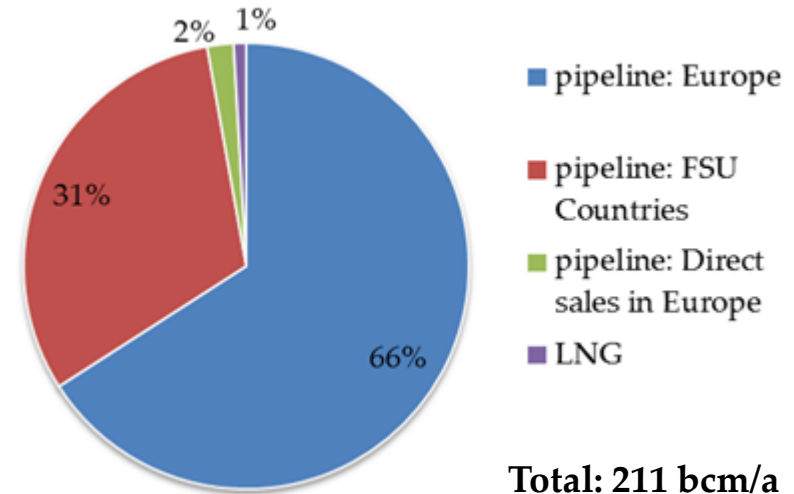
Qatar

Export Portfolio



Russia

export portfolio



Thank you

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