

# The Role Of Natural Gas In The NEA Energy Security

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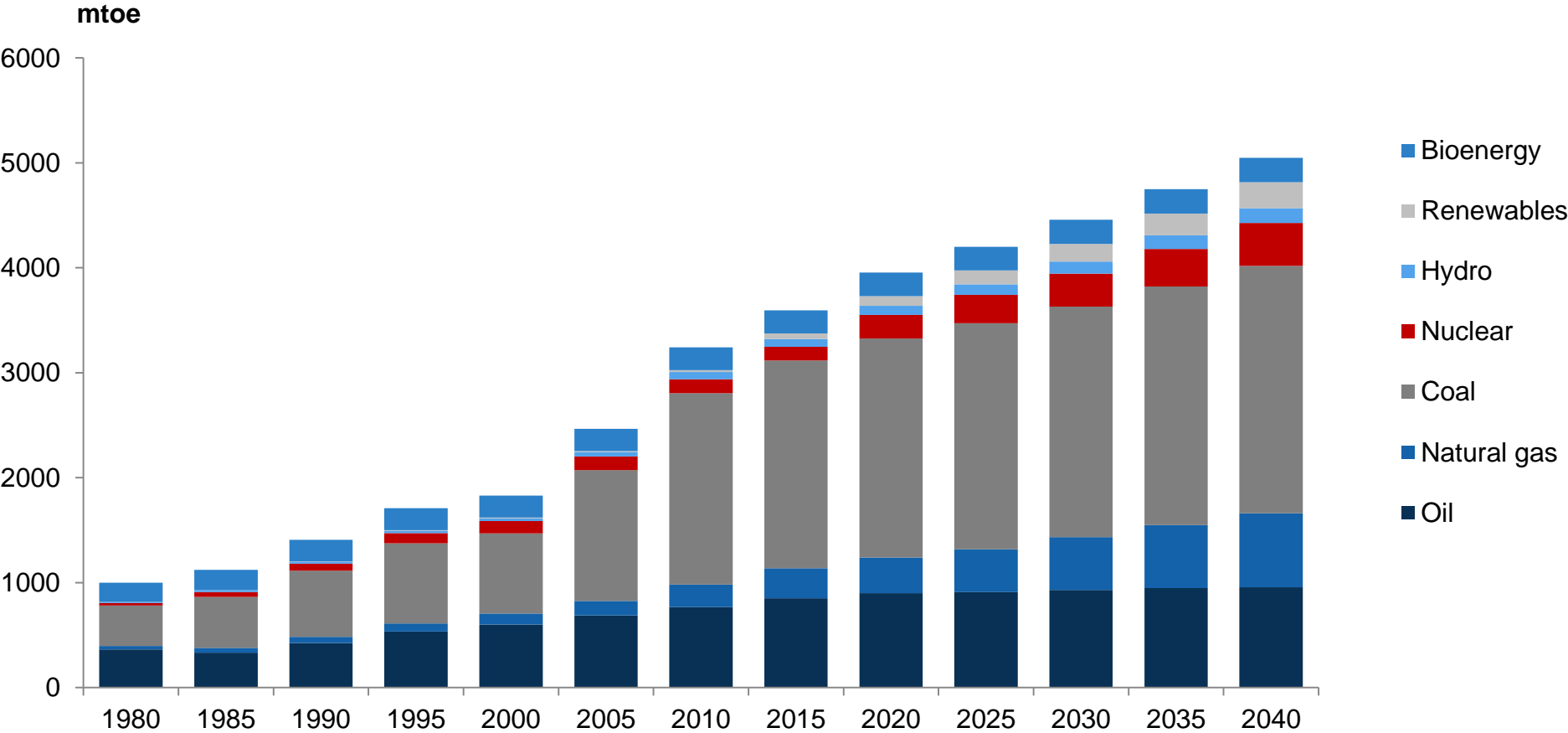
# Energy Security Threats in NEA

- Economic development and growing level of life lead to endless growth of the regional energy consumption
- Supply of indigenous resources lags far behind the demand growth
- North-East Asia is highly import dependent region, and this dependence tends to increase
- Highest prices for hydrocarbon imports in the world is a hard pressure for the economies
- Most of energy resources imports are delivered through chokepoints
- Fuel mix is dominated by fossil fuels (mainly coal and oil), which are negatively affecting air quality
- CO2 emissions are increasing rapidly due to this dominance

***THIS SITUATION DOES NOT SEEM TO BE SUSTAINABLE IN THE LONG TERM FOR ECONOMIC, SECURITY AND ENVIRONMENTAL REASONS***

# NEA fuel mix is dominated by coal and oil

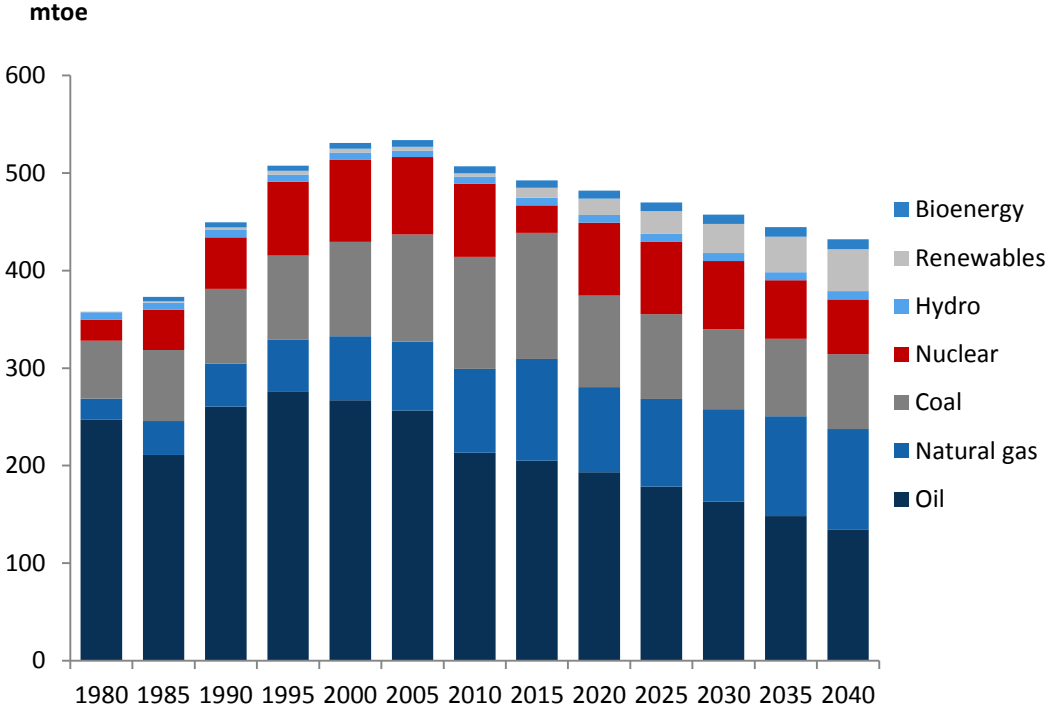
## Total primary energy consumption in North-East Asia (China, Japan, South Korea)



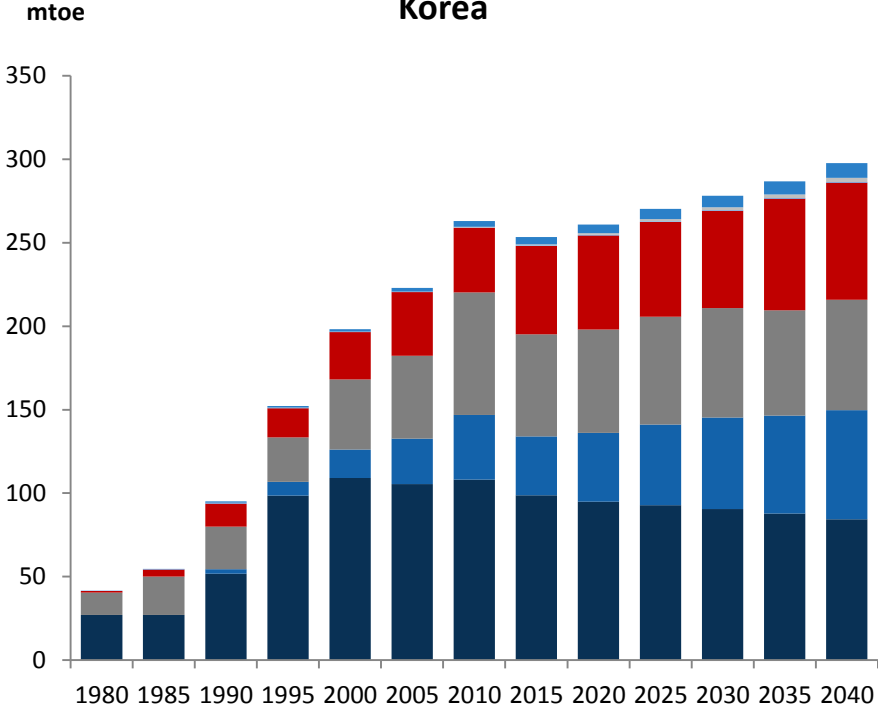
Source: Global and Russian Energy Outlook Up To 2040, ERI RAS, April 2013

# Energy mix in Japan and South Korea is quite balanced...

Total primary energy consumption in Japan



Total primary energy consumption in South Korea

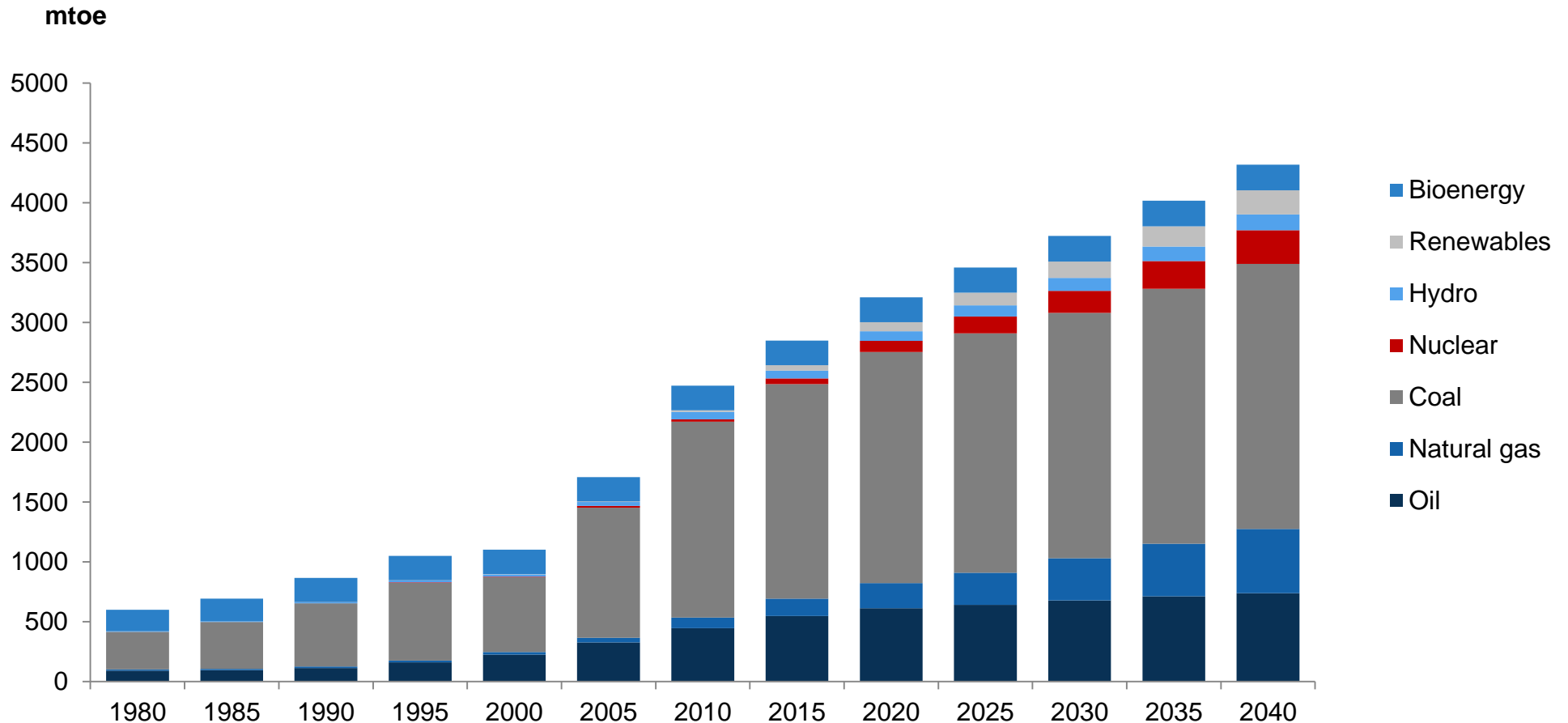


Source: Global and Russian Energy Outlook Up To 2040, ERI RAS , April 2013

**JAPAN AND SOUTH KOREA DEMONSTRATE LOW ENERGY DEMAND GROWTH, BUT THE SHARE OF COAL AND OIL IS STILL REMAINING COMPARATIVELY HIGH**

# ...but Chinese energy balance structure with huge share of coal overweighs everything in the region

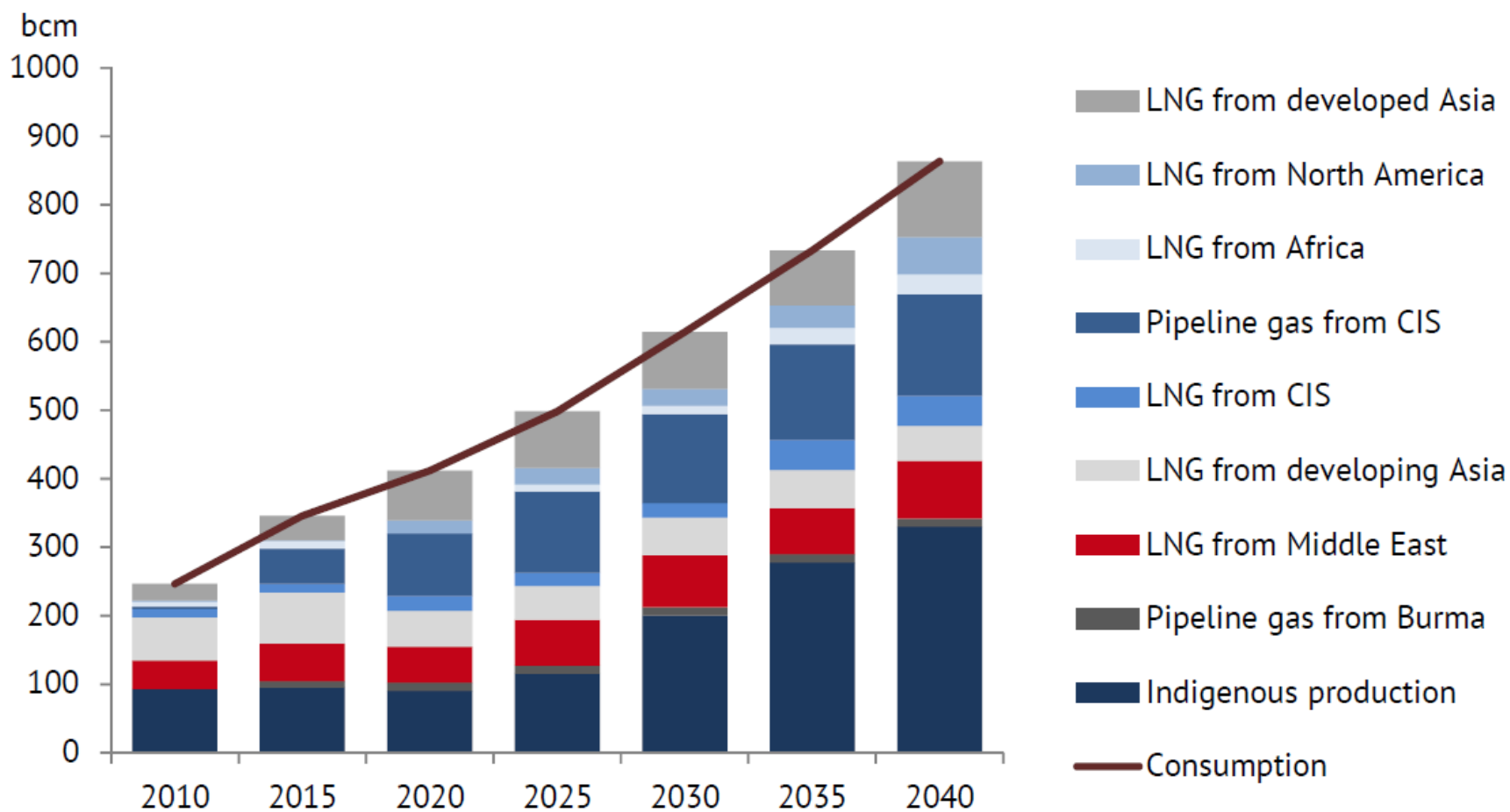
Total primary energy consumption in China



Source: Global and Russian Energy Outlook Up To 2040, ERI RAS , April 2013

# Gas market is growing in NEA, but...

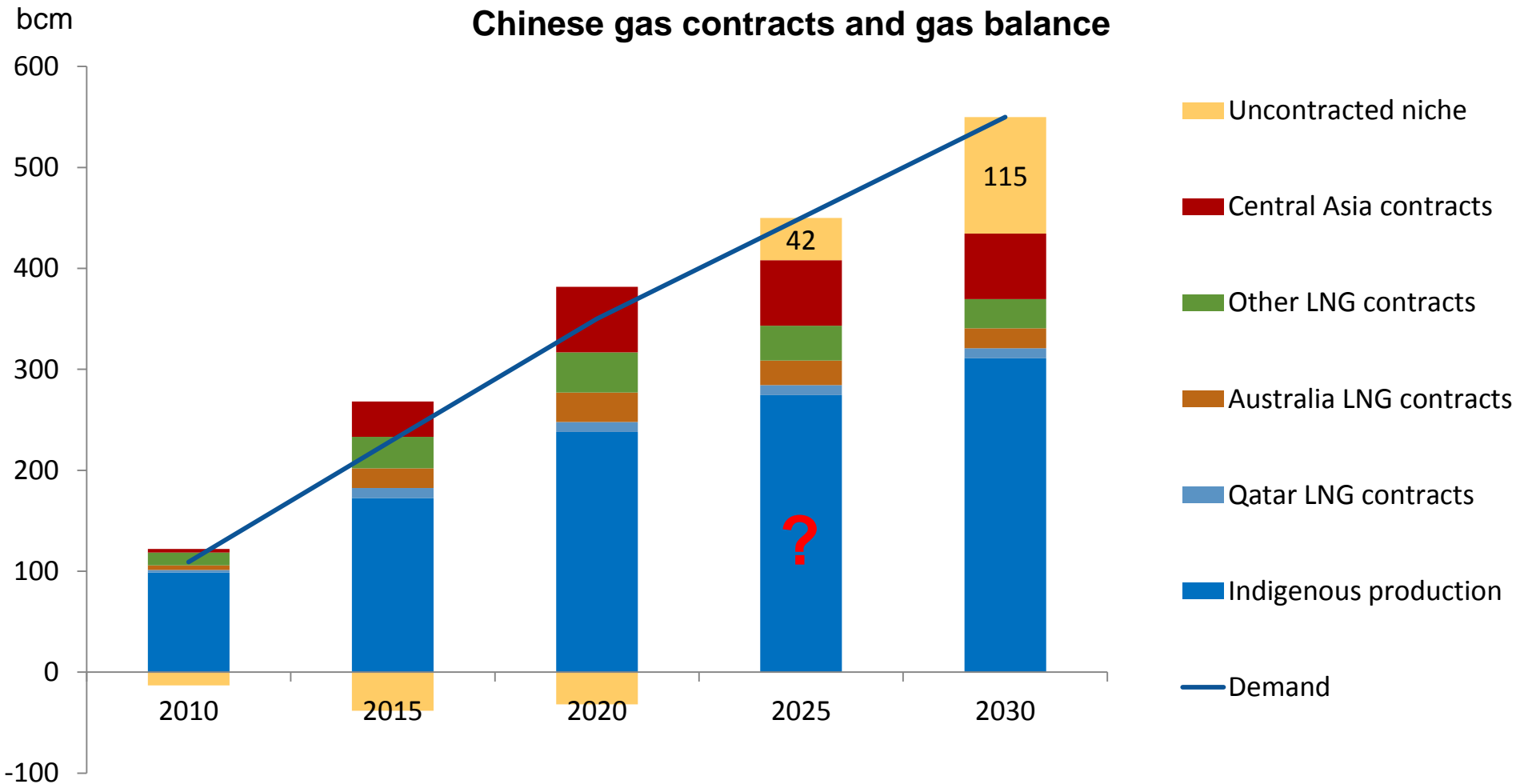
## Gas balance in North-East Asia



## ...there is a number of factors limiting gas use in the region

- Geographic location: very long supply routes either through the whole continent by pipelines or by sea for LNG, which demands extremely capital-intensive infrastructure construction
- Limited development of the national gas infrastructure (especially in distribution)
- Gas is losing in the interfuel competition in power generation: lack of CO<sub>2</sub> prices and high or regulated gas prices do not provide necessary signals for the market
- Optimistic expectations concerning future supply (the expansion of shale gas production in China and North American LNG) disorient the market

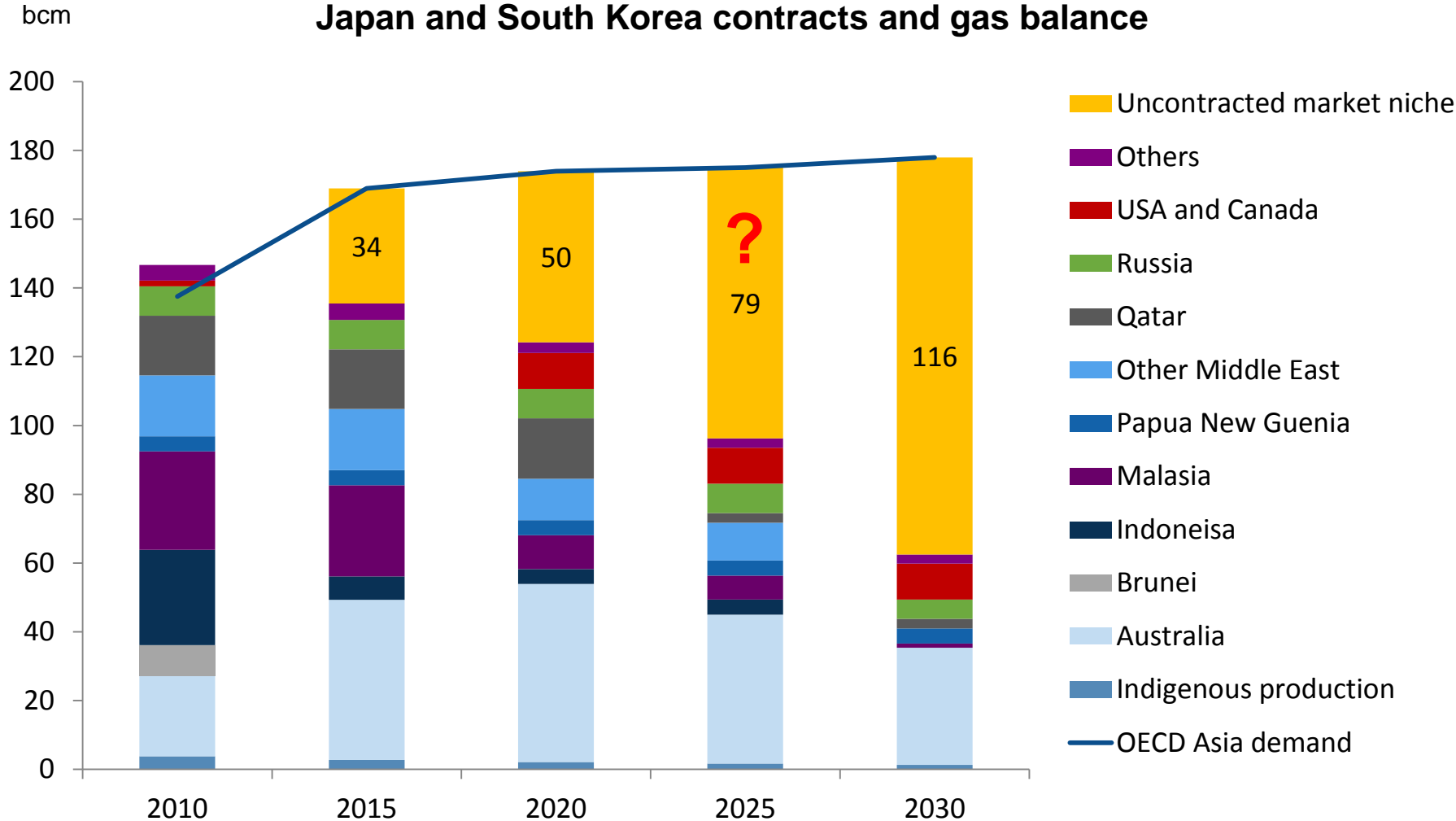
# Increasing market niche uncertainty: shale gas in China is regarded as a potential game changer



Source: ERI RAS

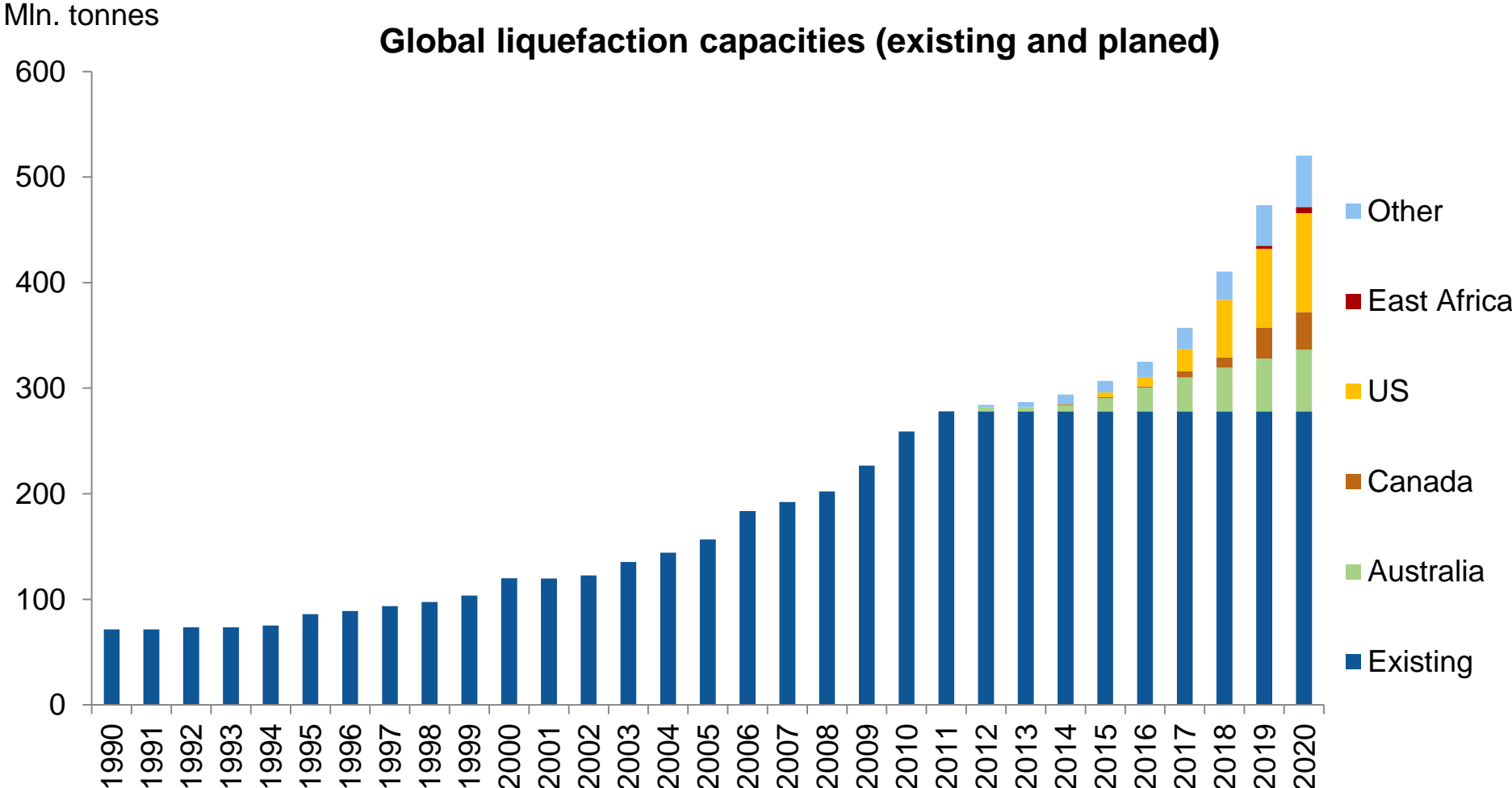


# OECD Asia is contracting the North American LNG



Source: ERI RAS

# Global LNG supply is expected to boom during the next decade: what will be the implications for gas consumption in NEA?



Source: ERI RAS

## Theory: aspects of energy security in gas trade

- Security of supply (investment threats)
- Security of demand (price and volumes risks)
- Vulnerability of the critical energy infrastructure due to natural disasters, industrial catastrophes and terrorist attacks (physical security)
- Transit reliability (transit security)
- Political conflicts in producing, transit and consuming countries (geopolitical threats)

# Tools to mitigate security threats in the gas trade in NEA

- Due to high underinvestment threat, long term relationships, guarantying these investments and their return, are still extremely important in gas markets. Tools ensuring sufficient investments:
  - Energy dialogues at the international level
  - Long term contracts at company level
  - Vertical integration is one of the possible approaches. Another form of market adaptation to high “security costs” is development of joint projects including many participants from different countries which provides a sort of balance and mutual guarantees
  - Development of joint projects involving multiple participants from different countries
  - Bilateral long term contracts
- Diversification of supply sources and markets
- Resilience (technological security buffers, including storage)
- Further gas market evolution will demand more unified institutional framework to decrease threats to energy security. New multilateral international agreements become critical for the further development of gas markets, especially with the growing number of transit countries and market participants involved in each transaction.

# Regional gas infrastructure and gas market development should be supported by joint efforts



# Contacts

## Energy Research Institute of the Russian Academy of Sciences

"Global and Russian Energy Outlook up to 2040"

[http://www.eriras.ru/files/Global\\_and\\_Russian\\_energy\\_outlook\\_up\\_to\\_2040.pdf](http://www.eriras.ru/files/Global_and_Russian_energy_outlook_up_to_2040.pdf)

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