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GLOBAL ENERGY TRENDS

Short-, medium-, and long-term energy outlooks

Riyadh, Saudi Arabia,
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Why do we need outlooks?

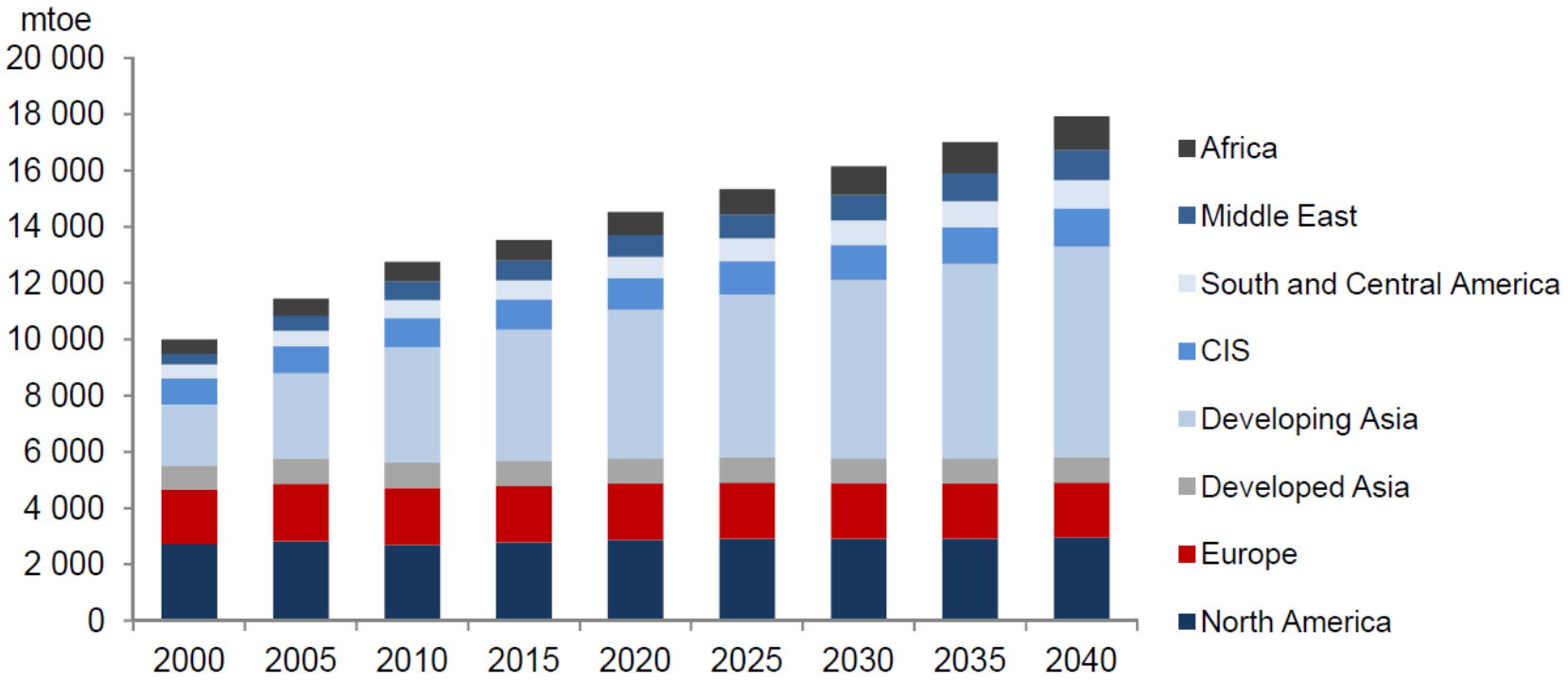
- Outlook is not a prediction, it just helps to narrow the range of uncertainty and serves as an instrument for analyses of the different alternatives for decision making
- “What if…?” questions help to estimate potential implications of different decisions
- Assumptions, data and methodology define the results

Main global energy trends

- Further (though slower) energy consumption growth – by nearly 50% by 2050
- Structural shifts:
  - Increasing share of non-OECD countries
  - Growing indigenous production of hydrocarbons in North America
  - Increasing focus on energy efficiency
  - Growing role of decentralized energy supply
  - Increasing impact of environmental considerations
  - Growing electrification
- Fossil fuels will remain dominant in the global fuel mix, though it will become more diversified and balanced
- Oil prices will remain at the high level

By 2040 global primary energy consumption will increase by 40%

Primary energy consumption by region



Source: ERI RAS

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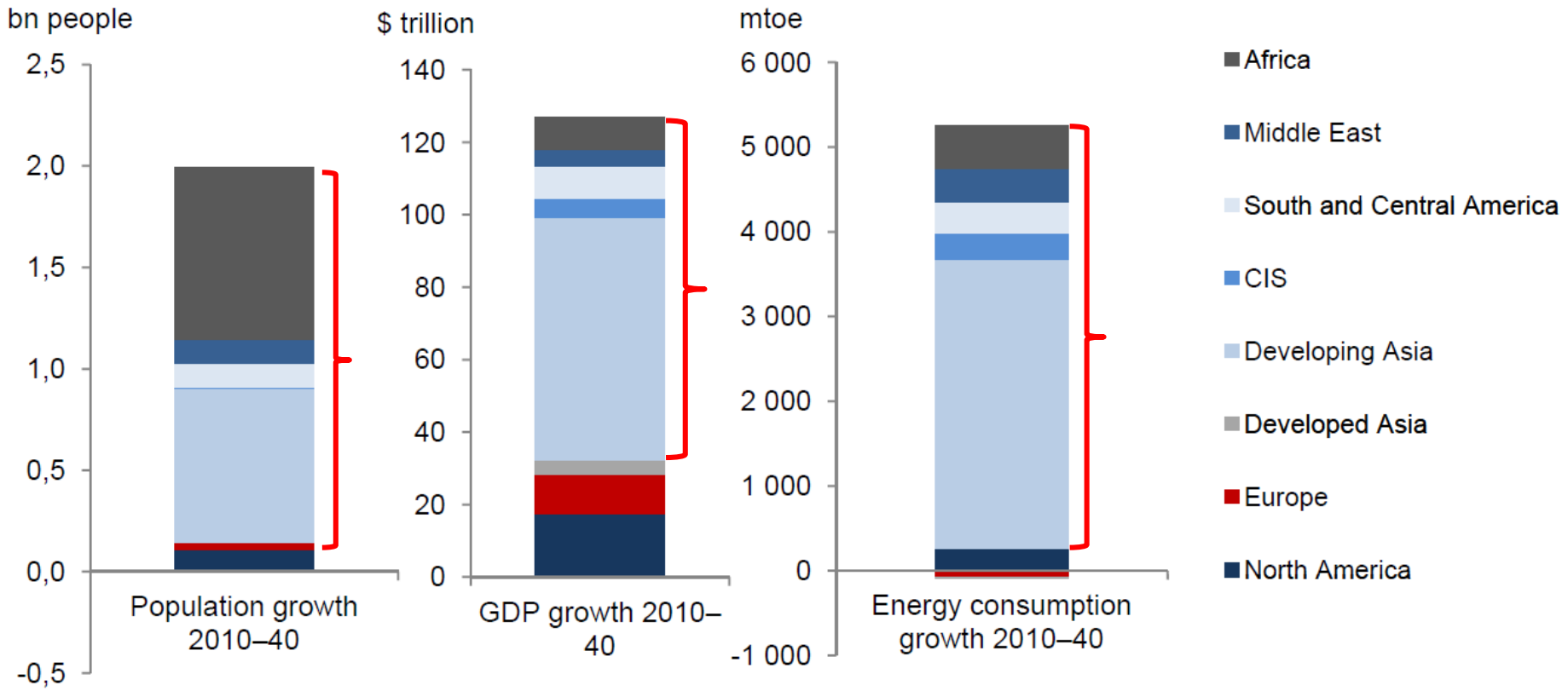
***In 2010-2040** global primary energy demand will increase by **40% (1,1%** per annum on average), which is **3** times lower than annual **GDP** growth rates and significantly lower than primary energy consumption growth rates during the last **30** years*

Growth will be mainly provided by the developing countries

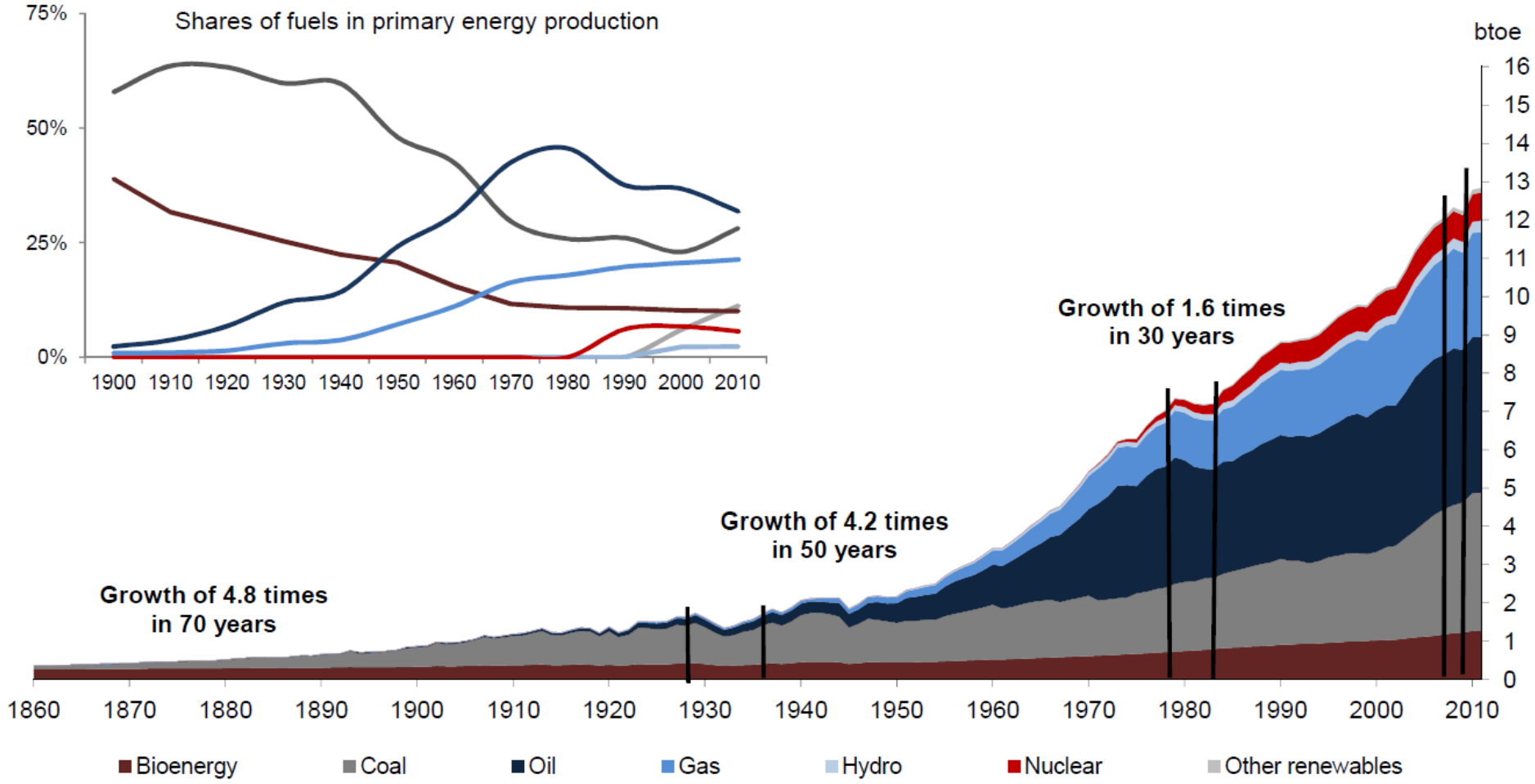
Population growth, GDP, and energy consumption by region



Source: ERI RAS

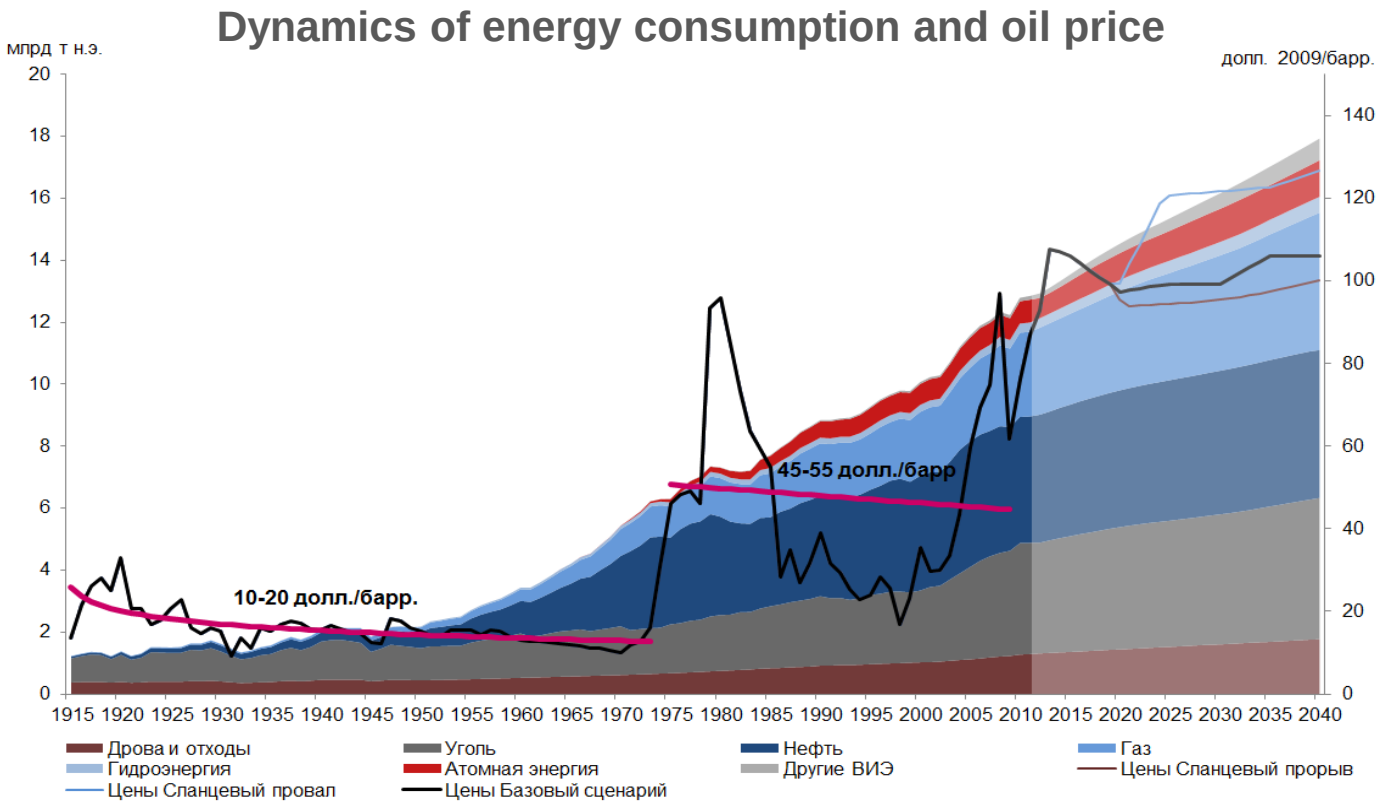
POPULATION GROWTH IN DEVELOPING COUNTRIES IS FOLLOWED BY AN INCREASING SHIFT IN THE CENTRE OF ECONOMIC AND ENERGY CONSUMPTION TOWARDS THESE COUNTRIES

Main trends in the development of anthropogenic energy



Source: ERI RAS

Major uncertainties: prices

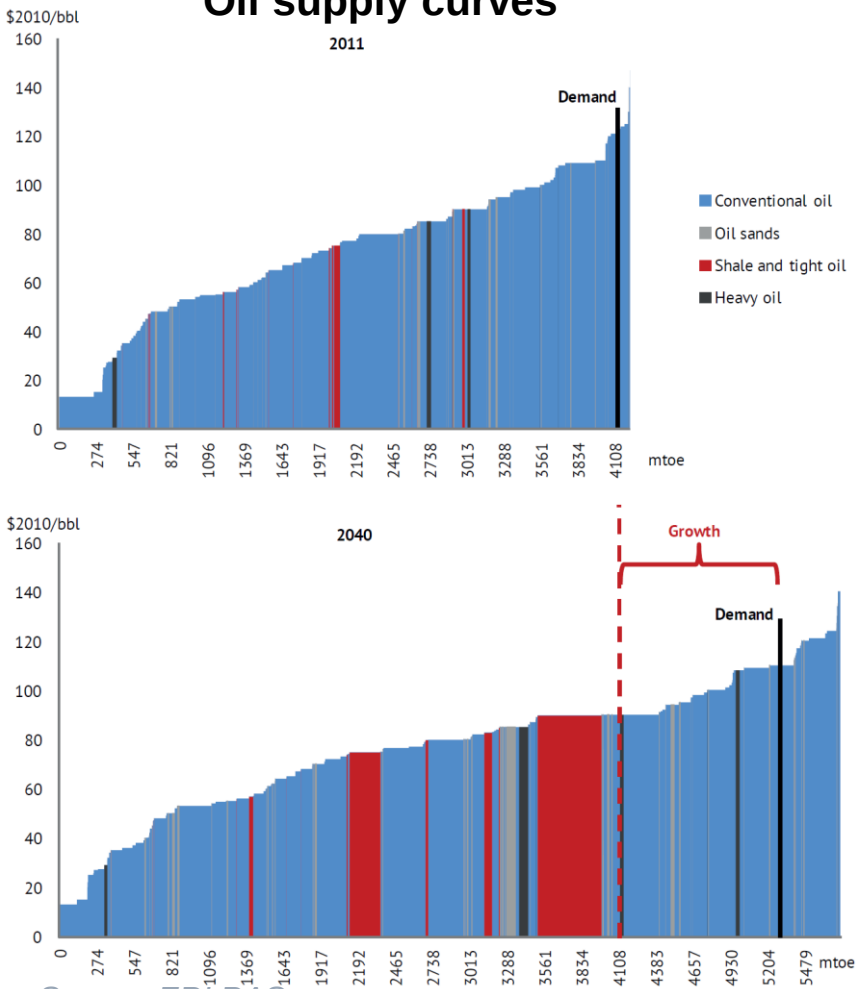


Source: ERI RAS

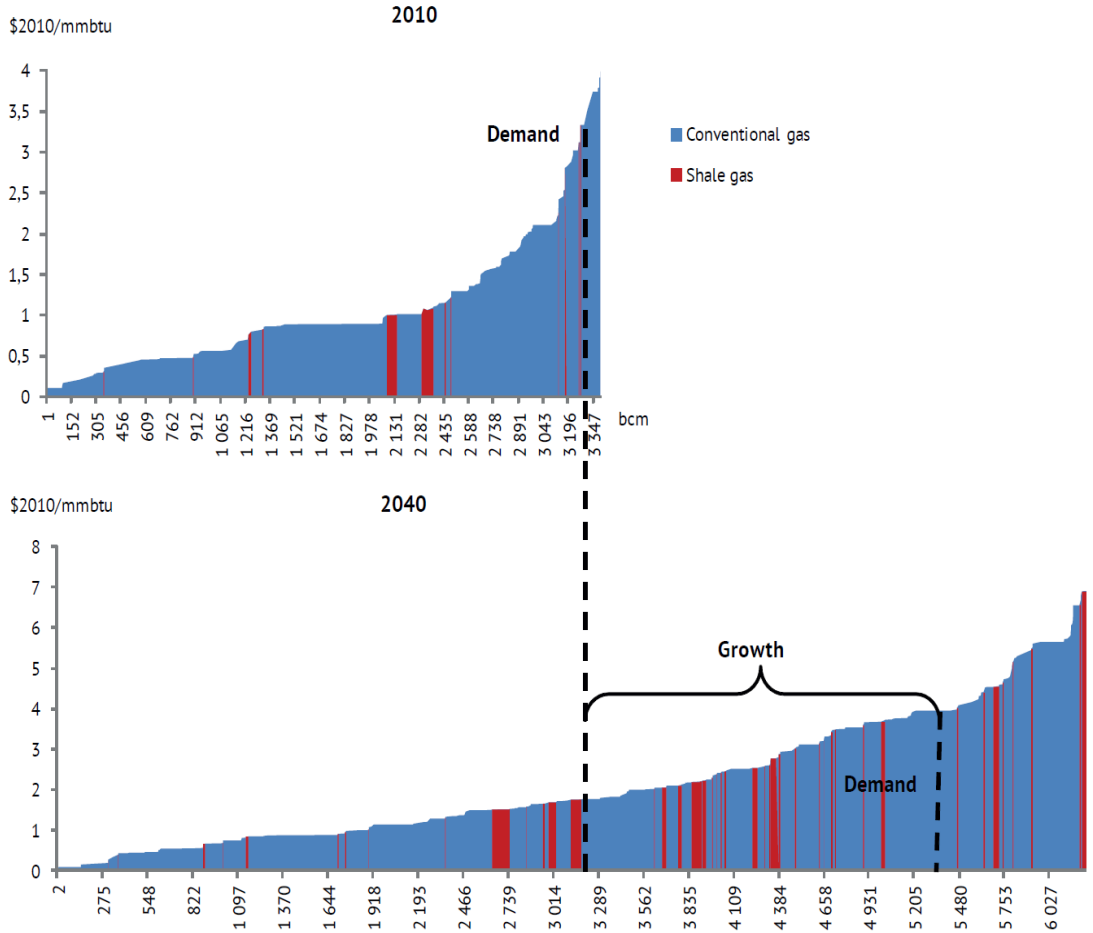
Energy efficiency and the development of unconventional sources of oil actually pulled down prices, from the expected $150 to $100–110 (2009)/bbl. However, even the appearance of technological breakthroughs are not be able to return world oil market prices to the levels they held at the previous stage, when they were $50/bbl (2009 prices).

Major uncertainties: unconventional oil and gas breakeven costs

Oil supply curves

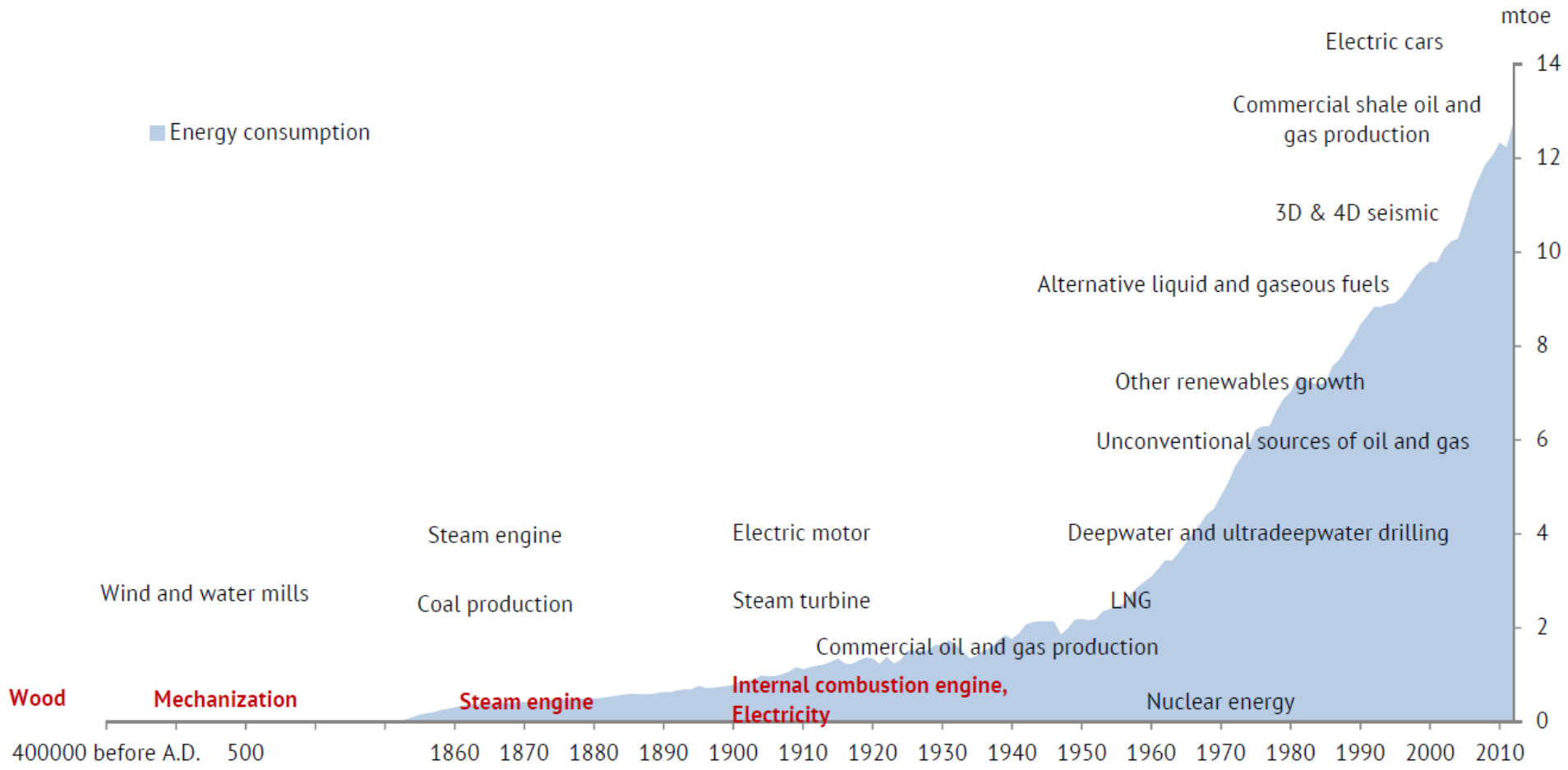


Gas supply curves



Source: ERI RAS

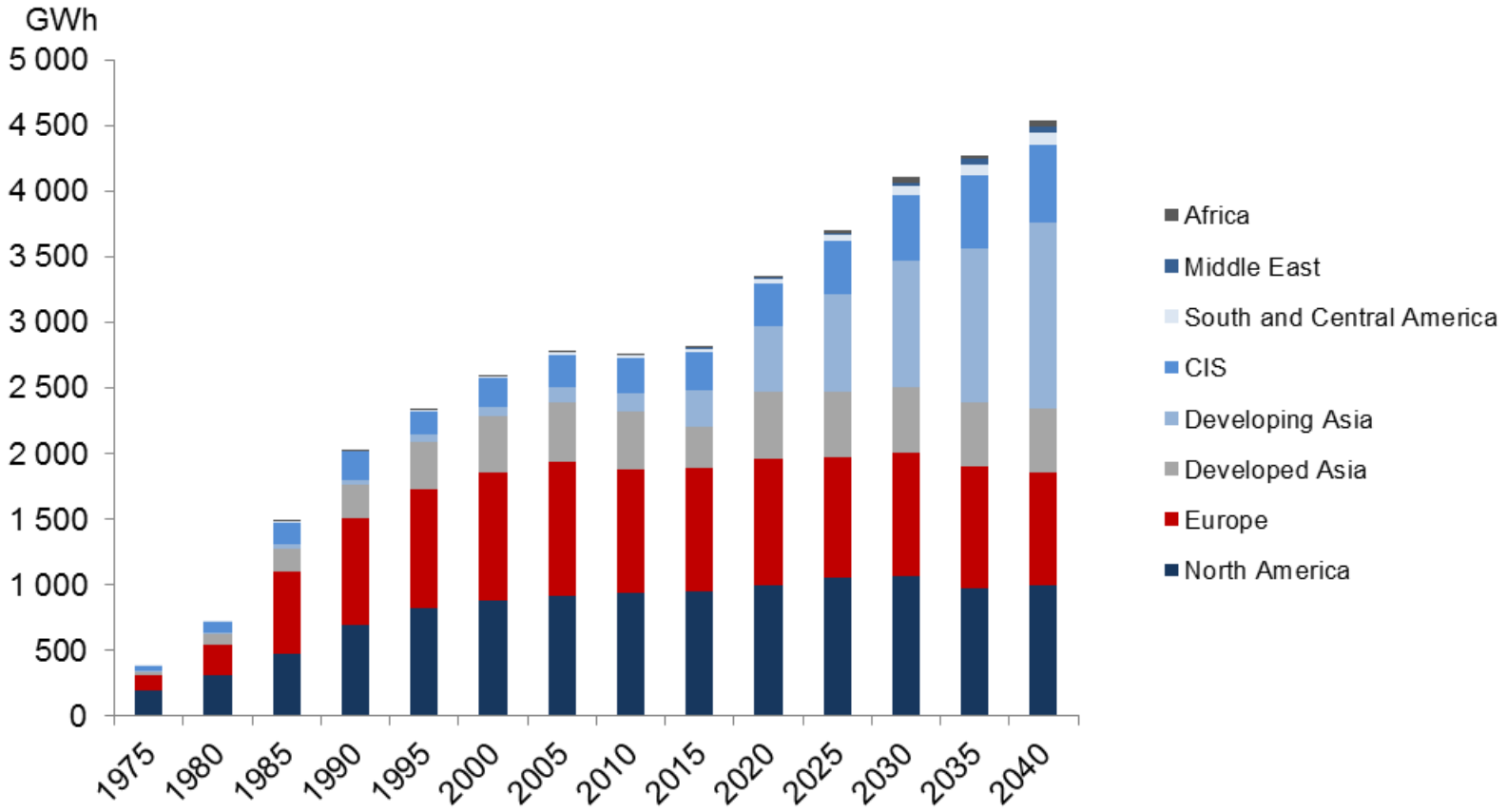
Major uncertainties: technological innovations



* *Technological revolutions are shown in red, breakthroughs – in black.*

Major uncertainties: energy policy priorities

Nuclear electricity generation by region



Source: ERI RAS

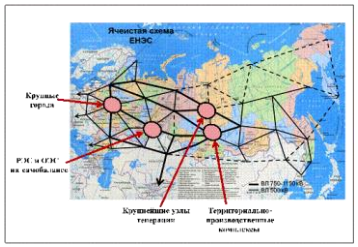
Evolution of the methodology

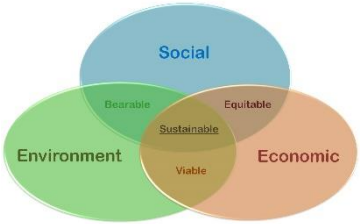
1 stage
1930-1960s
Extrapolation

2 stage
1960-1990s
Non-stochastic forecasting

3 stage
1990-2010s
Multicriterion problems, markets and energy in the economy and in the environment

4 stage
Post 2010s
Multicriterion problems, markets, energy in the economy and in the environment, social and geopolitical criteria and numerous interests of the different actors





Contacts

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“Global and Russian Energy Outlook up to 2040”

http://www.eriras.ru/files/Global_and_Russian_energy_outlook_up_to_2040.pdf

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