

# **Russia as a key player on the world energy market**

**Elena Telegina**

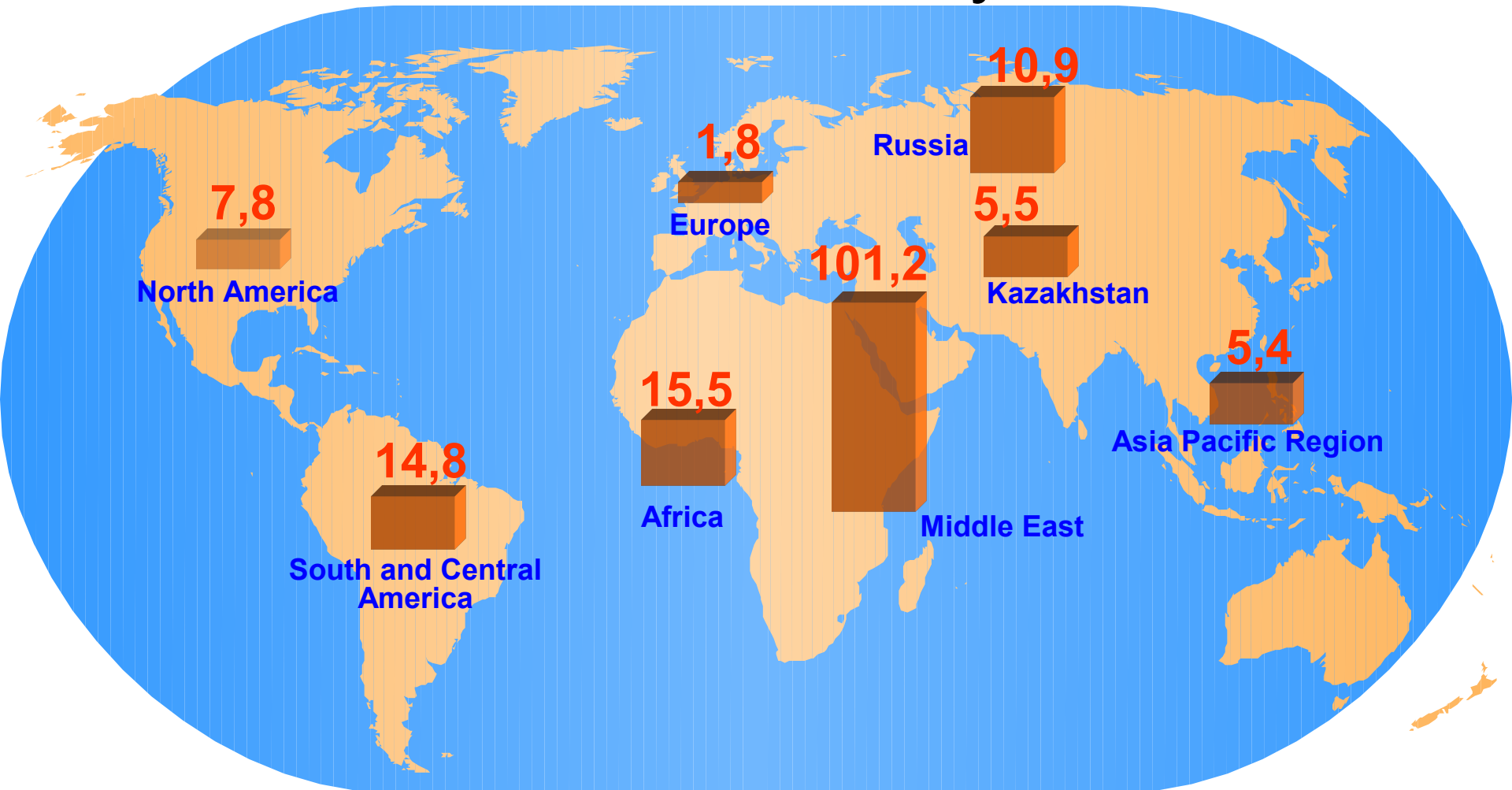
**Director of the Institute of Geopolitics and Energy  
Security of Russia**

**Member of the Board, Russian Union of Oil  
Exporters**

**Doctor of Economics, Professor**

**Zagreb, October 2007**

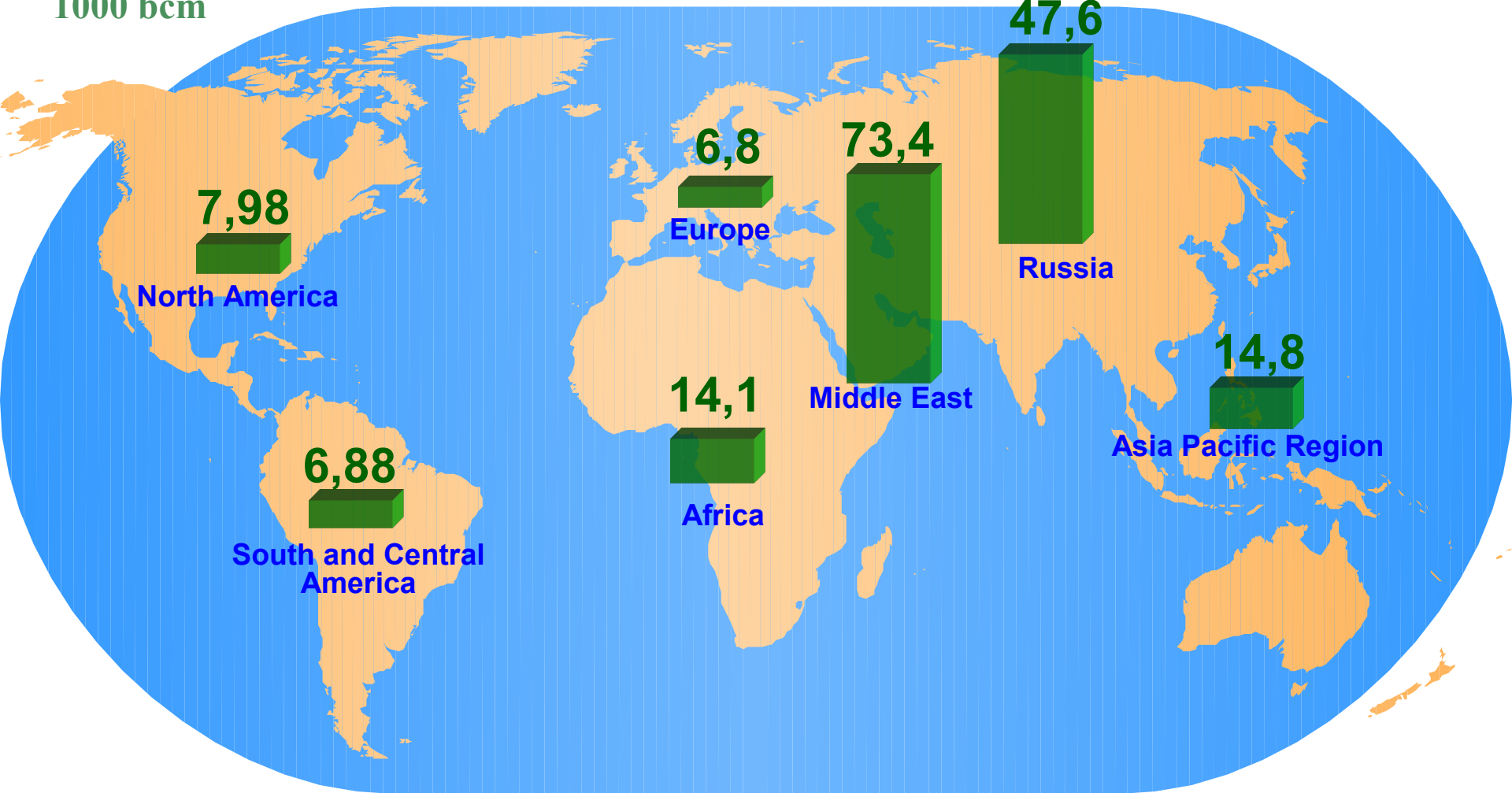
# Proven world oil reserves 164,5 bln t R/P ratio ~40,5 years



Data: BP Statistical Review of World Energy 2007

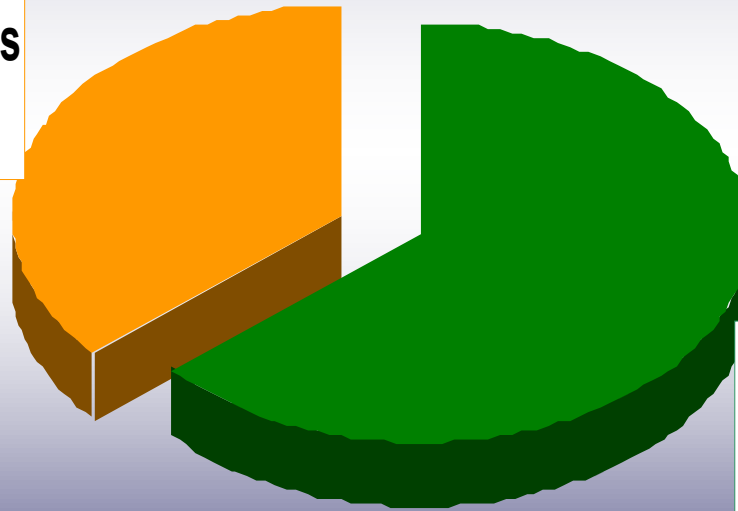
# Proven World Gas Reserves 181,46 Trillion m<sup>3</sup> R/P ratio ~63,3 years

1000 bcm



# CONTROL OVER PRODUCTION OF REMAINING COMMERCIAL RESERVES NATURAL GAS

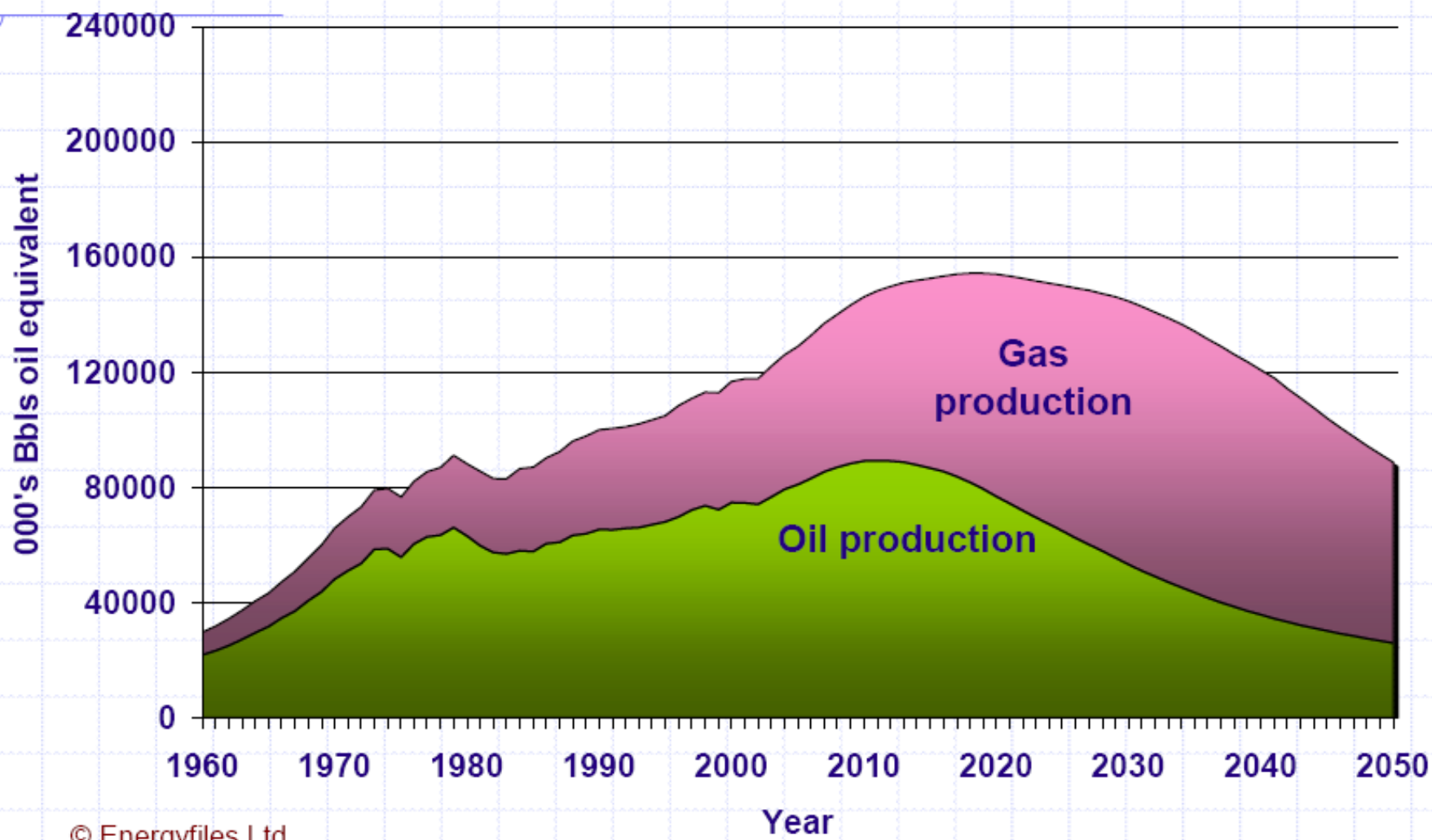
Private companies  
36%



State controlled  
companies  
64%

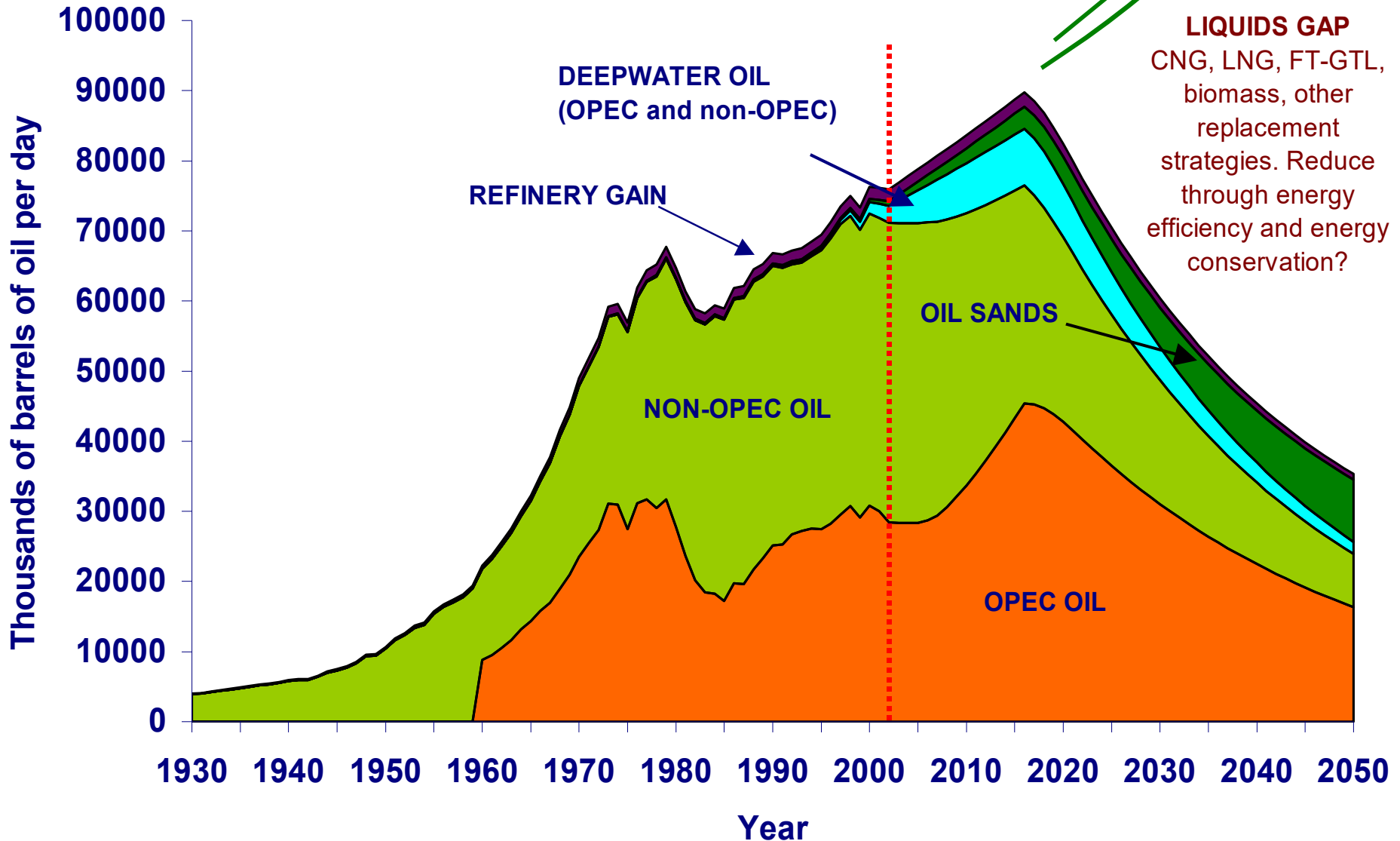
OIL: ~ 50/50

## GLOBAL: Oil and gas forecast

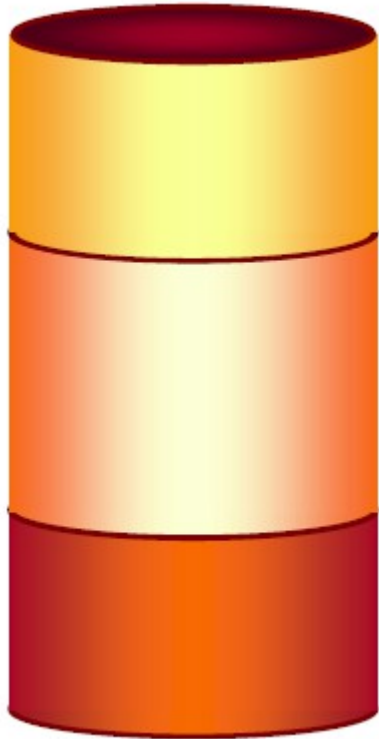


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# GLOBAL: All oil supplies, 1930-2050



# Enhancing oil recovery leads to necessity to invest in research and development



**Now oil recovery rate is in average 35%**

**With new technologies it can be raised from 40 to 70%**

**Unrecoverable oil under modern technologies**

**At modern rate of reserves enhancing oil recovery for 1%,  
adds 1 year of production**

## **Annual R&D expenditures of leading oil and gas companies**

**ExxonMobil - approximately US\$ 600 mln**

**Royal Dutch/Shell – approximately US\$ 500 mln**

**Gazprom – approximately US\$ 100 mln**

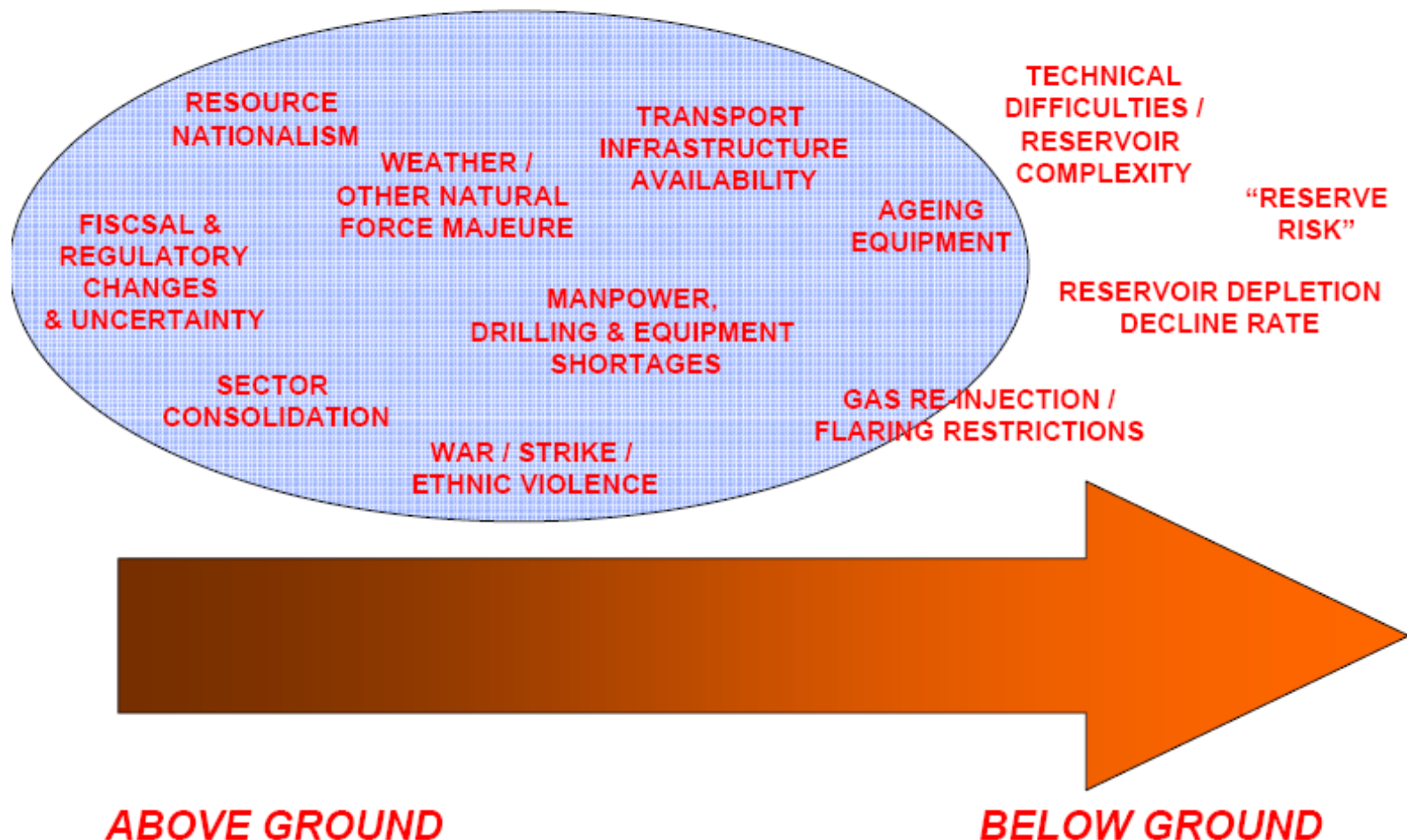
**LUKOIL – US\$ 24 млн.**

*For innovation development Russian oil companies  
will need more than US\$ 1 bln in the coming 10 years.*



# Upstream Supply Risks Predominate

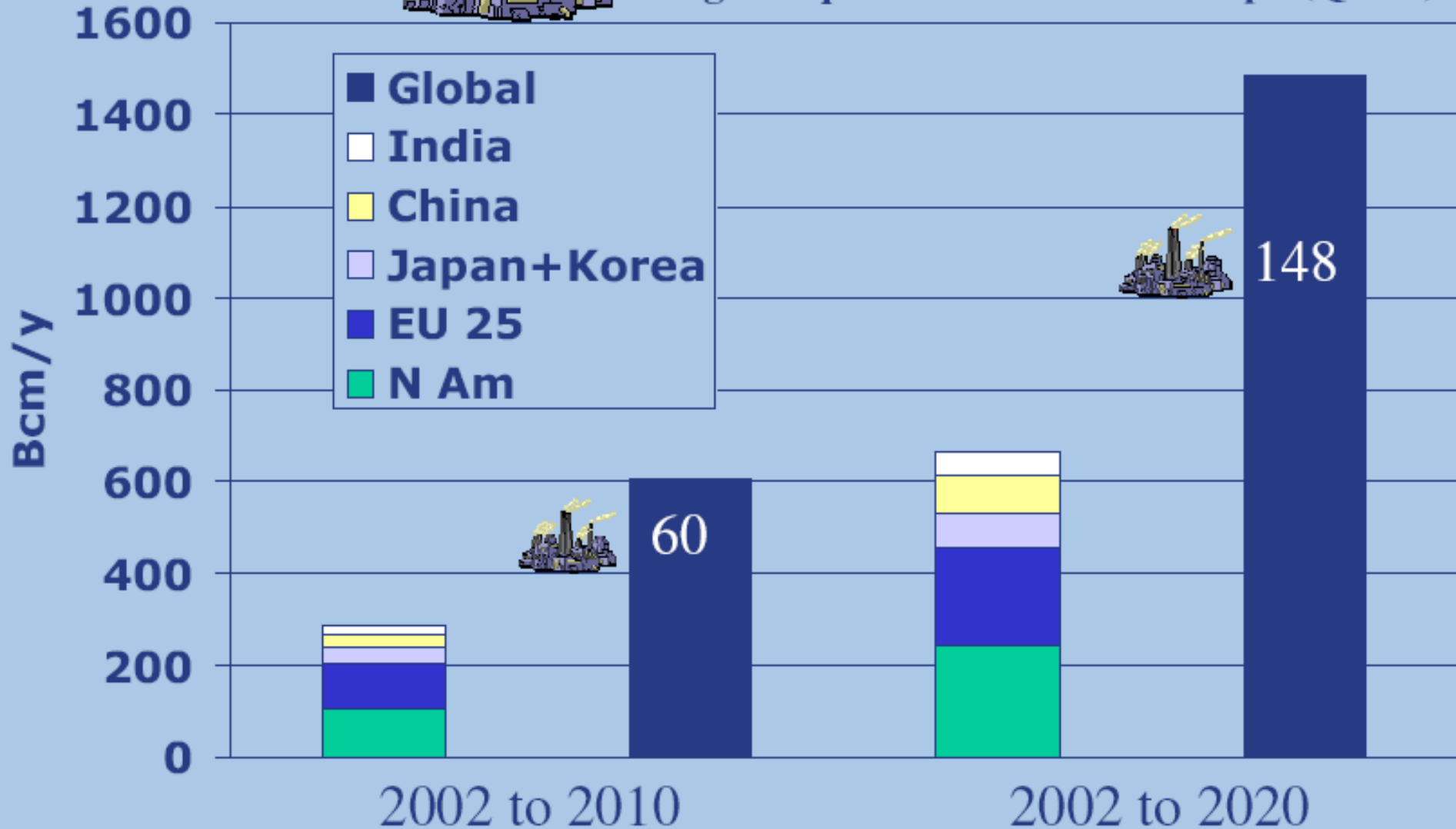
MTOMR forecast sees above ground risks exceeding below ground risks



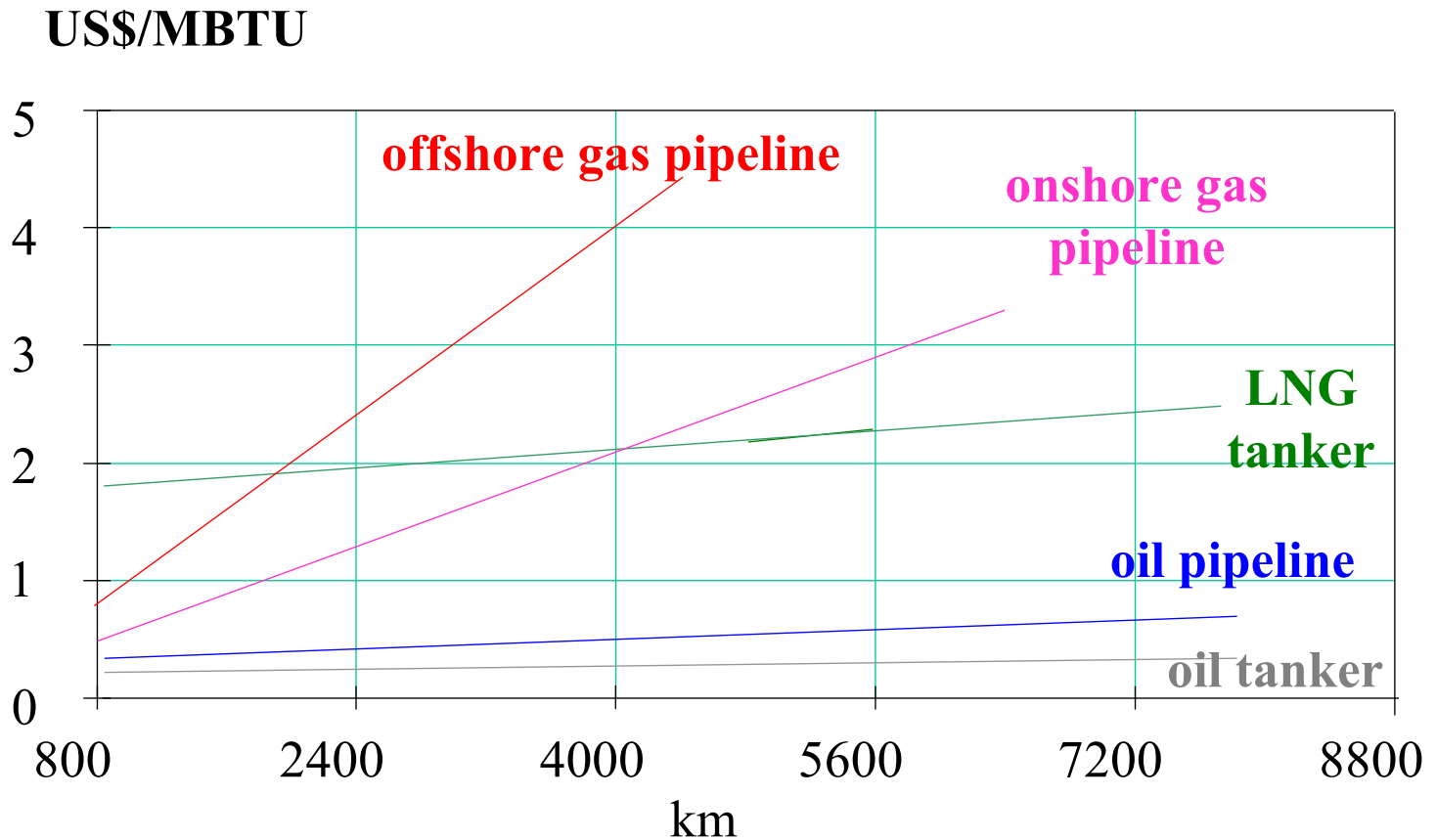
# Incremental demand of natural gas till 2010 and 2020



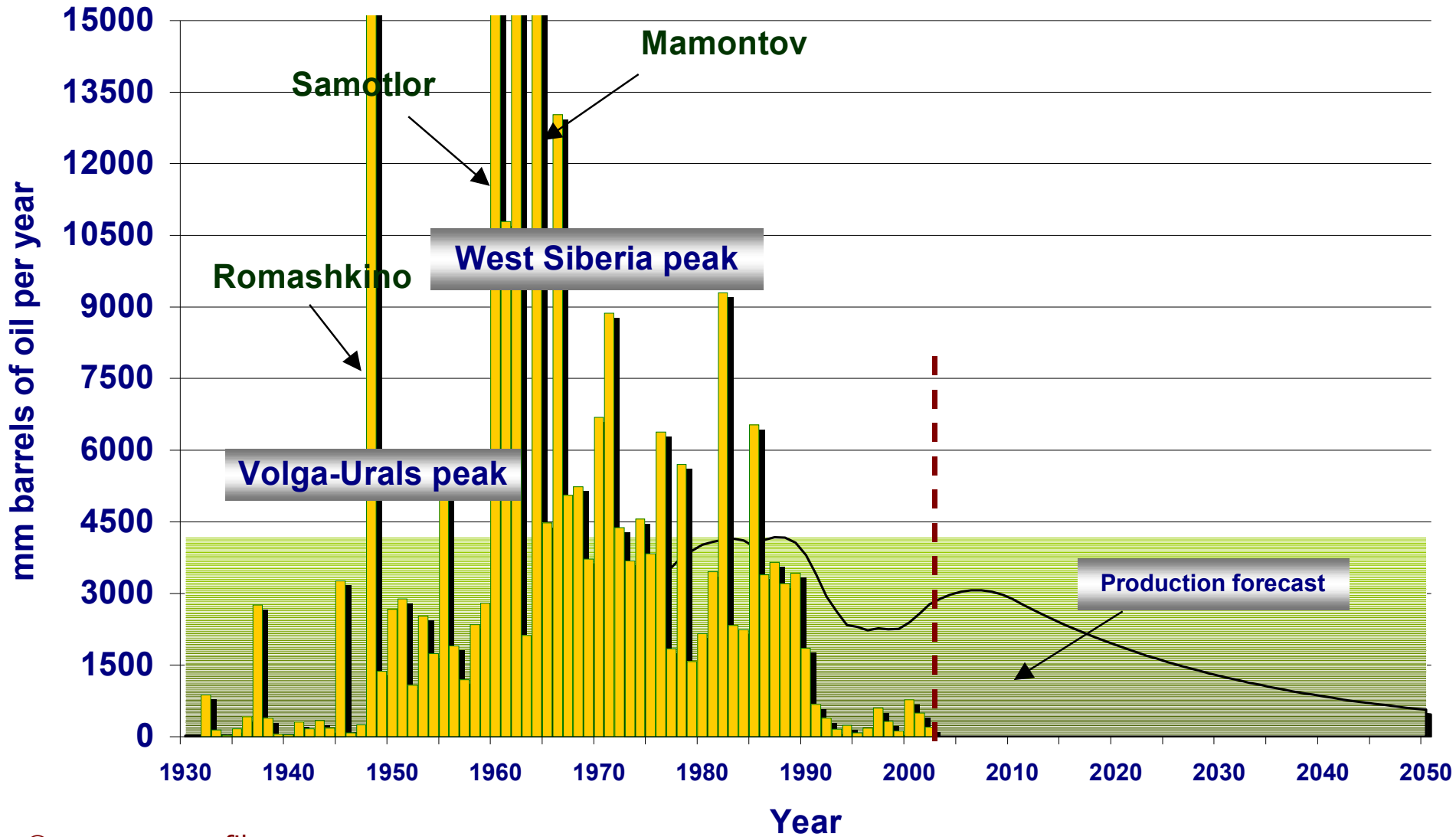
largest liquefaction train: 7.8 mtpa (Qatar)



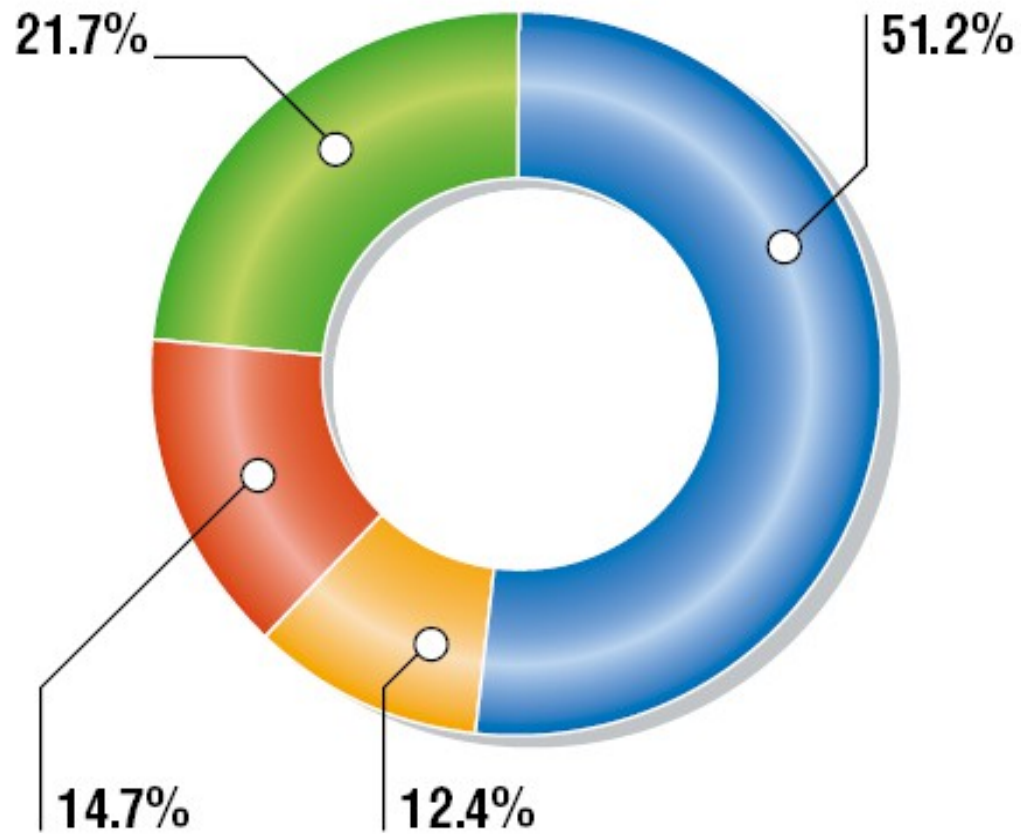
# Indicative Costs of Oil and Gas Transportation







# RUSSIA: Oil discoveries 1930 to present day



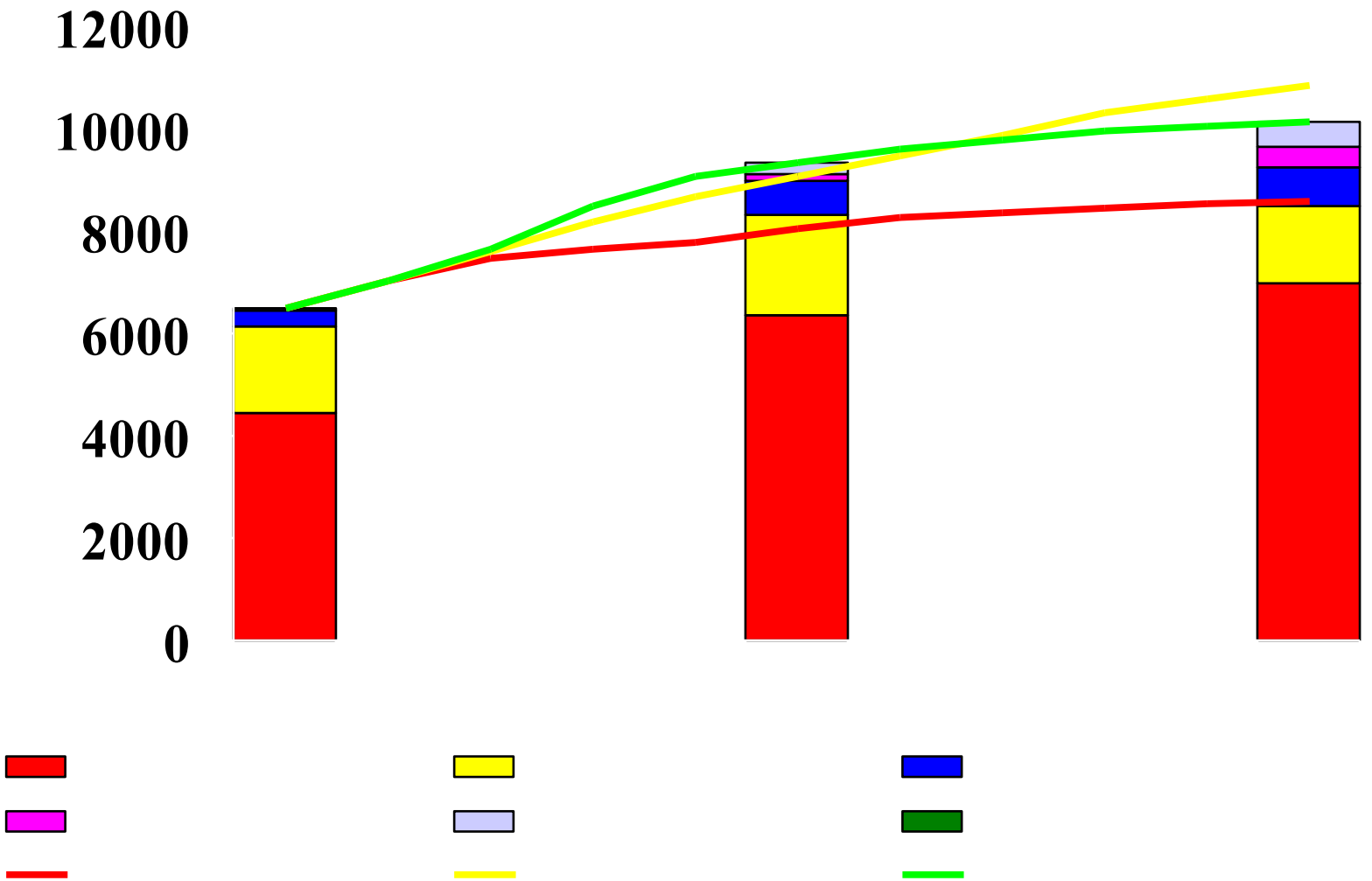
## Russia's fuel balance, 2006



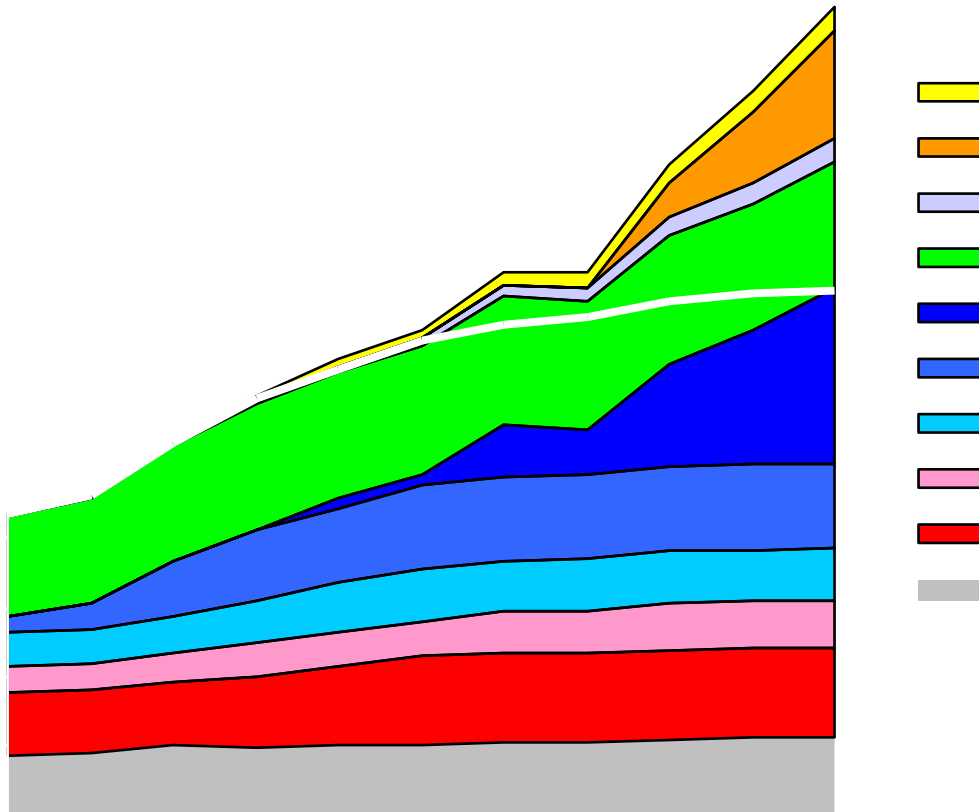
-  – Gas
-  – Fuel oil
-  – Coal
-  – Other energy sources

# Russian Production through 2010

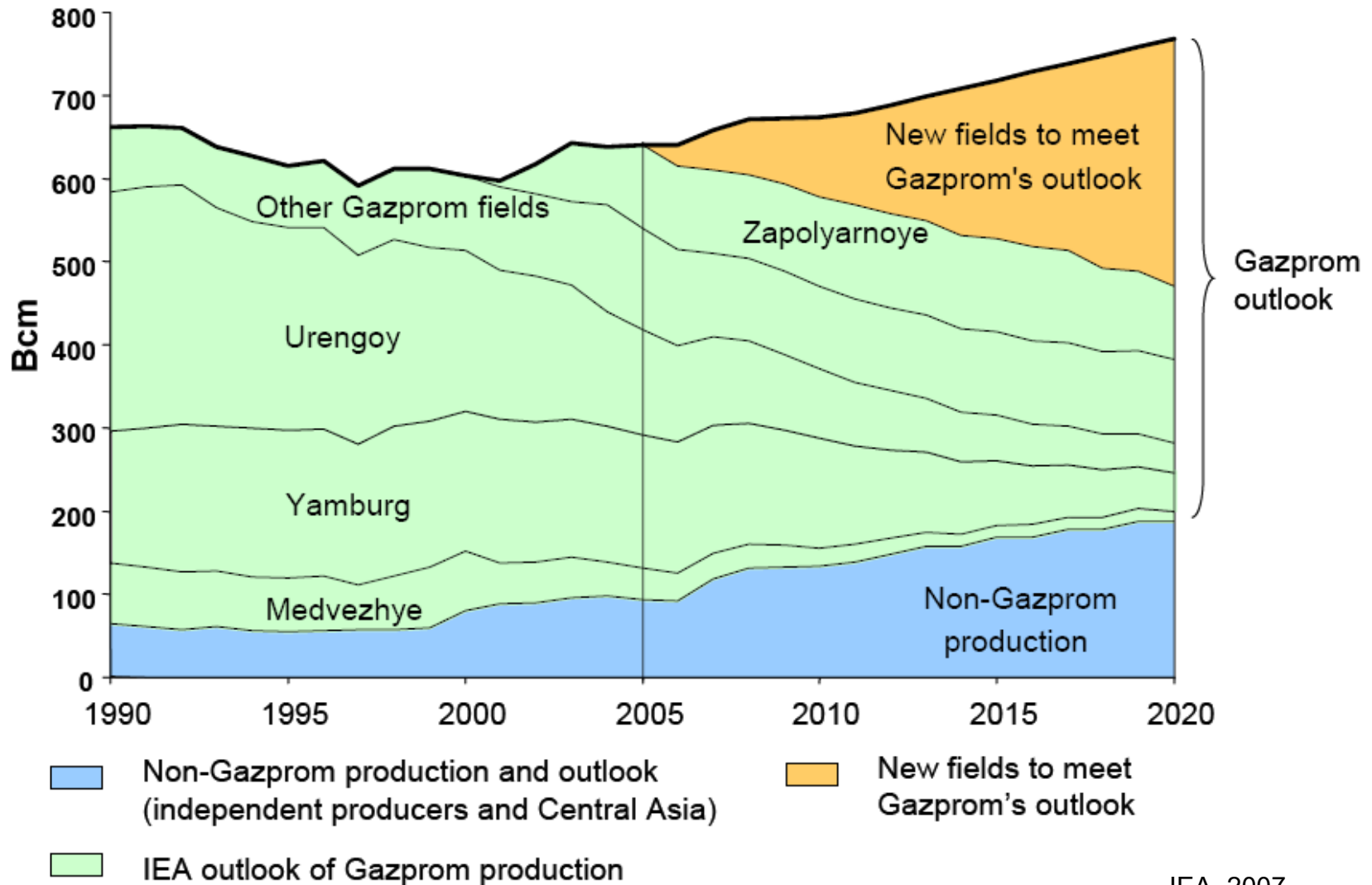
## Western Siberia Still the Key



# Development of Russian Crude Export Capacity

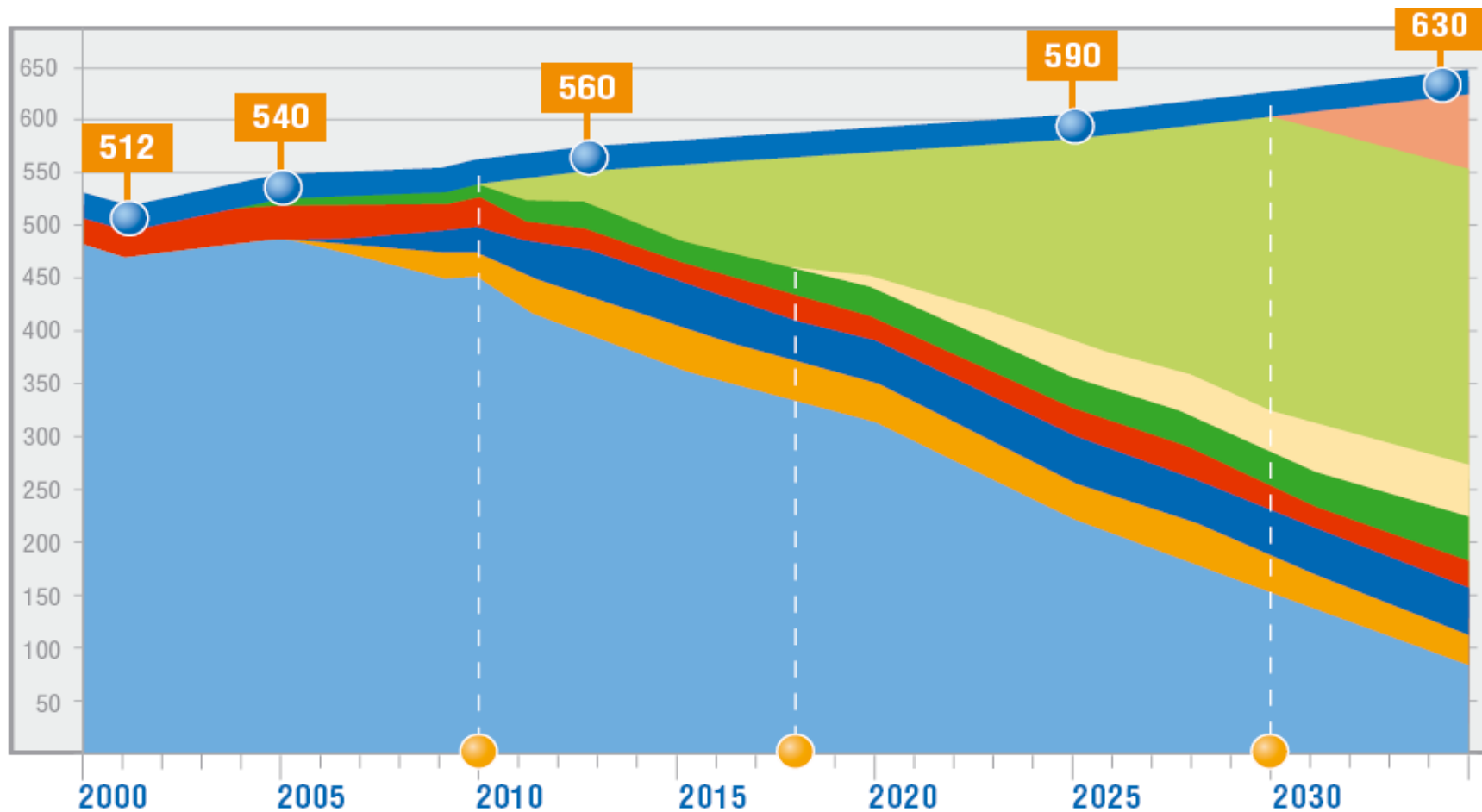


# Russian Gas Supply Outlook



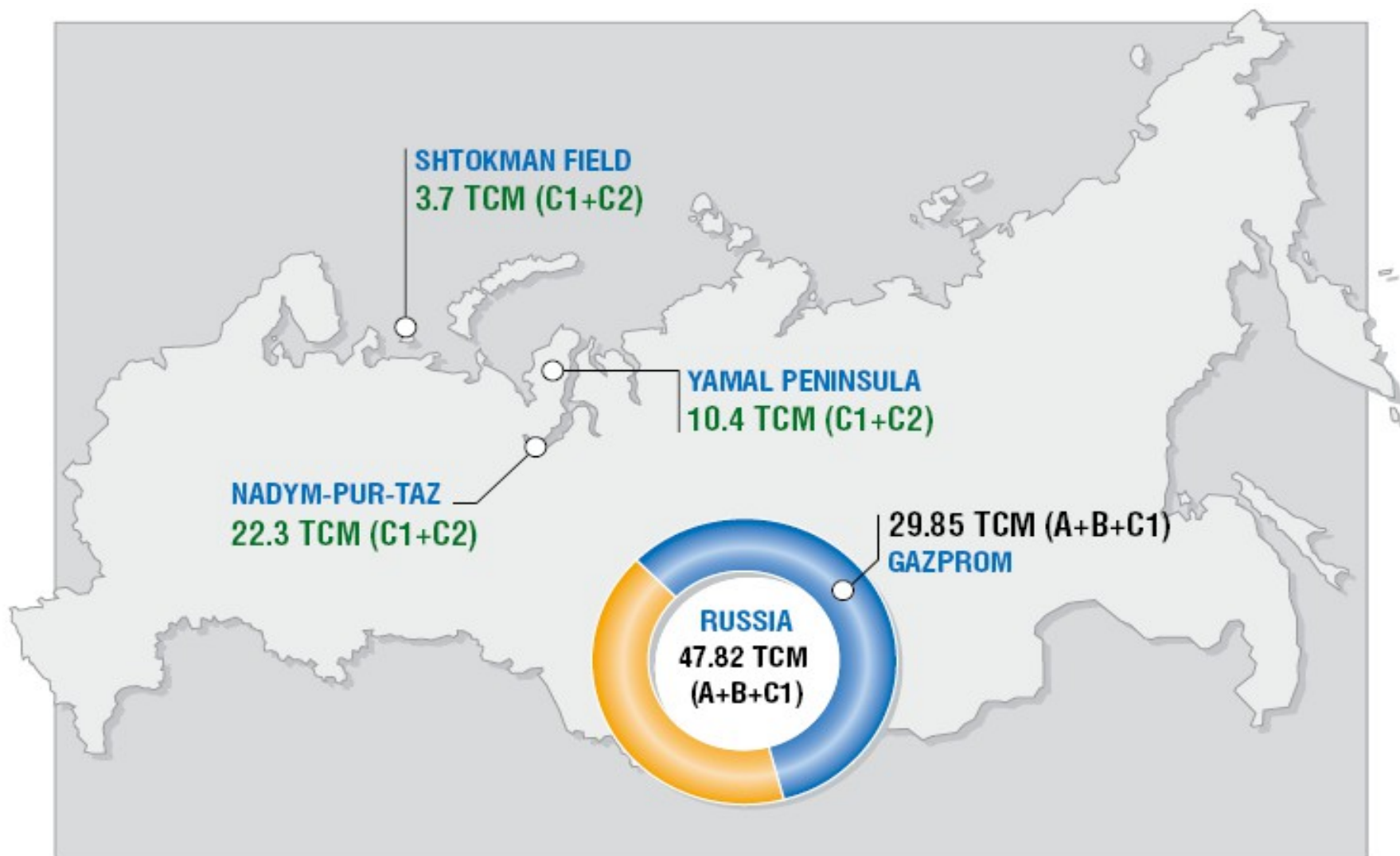


# Increasing role of Yamal's gas in Russia's production up to 2030

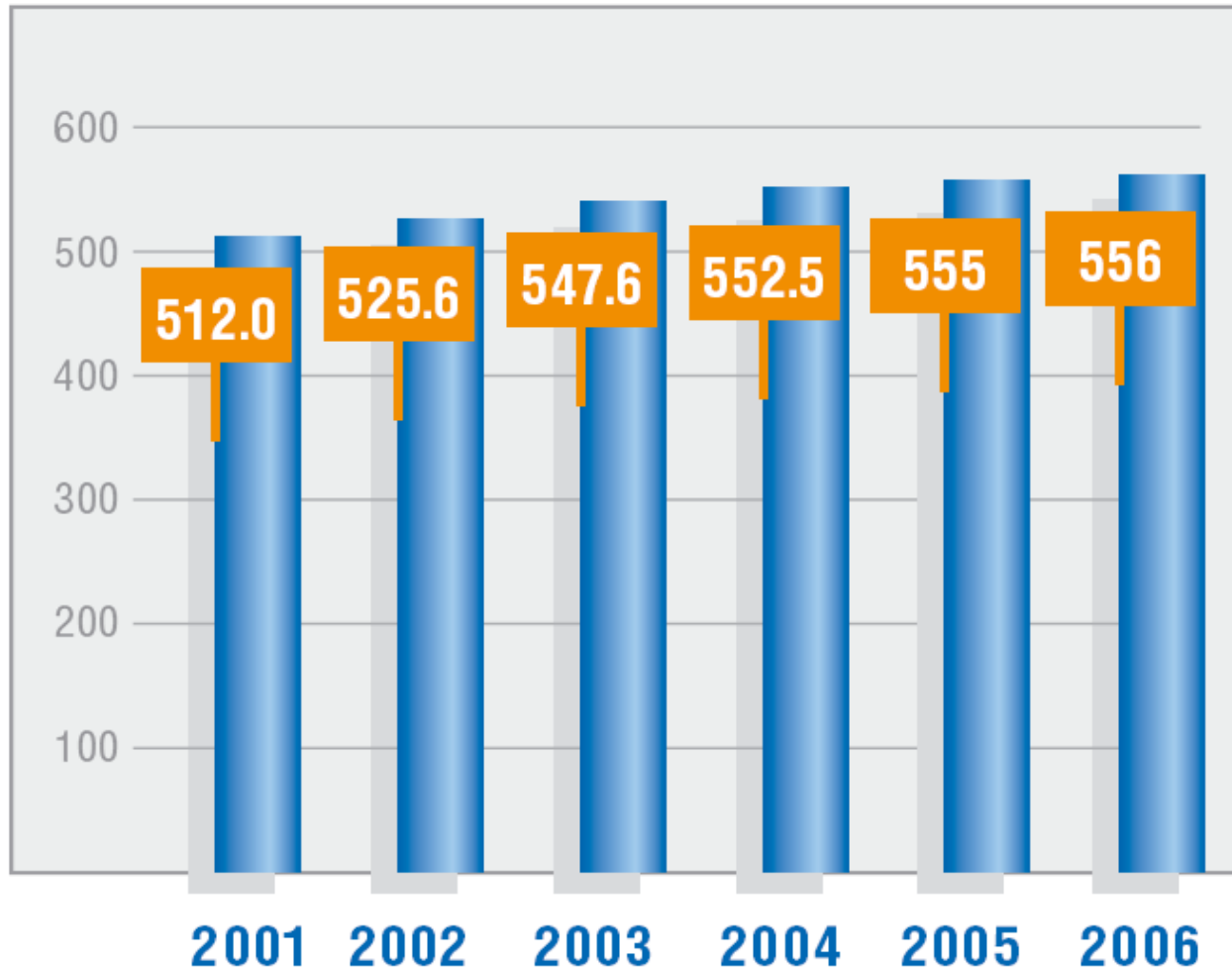


- Fields in operation Nadym-Pur-Taz region (NPTR)
- New sites of fields in operation
- New fields in NPTR
- Other regions
- Production with equity participation
- Ob and Taz Bay region
- Yamal Peninsula (land)
- Yamal Peninsula (offshore)

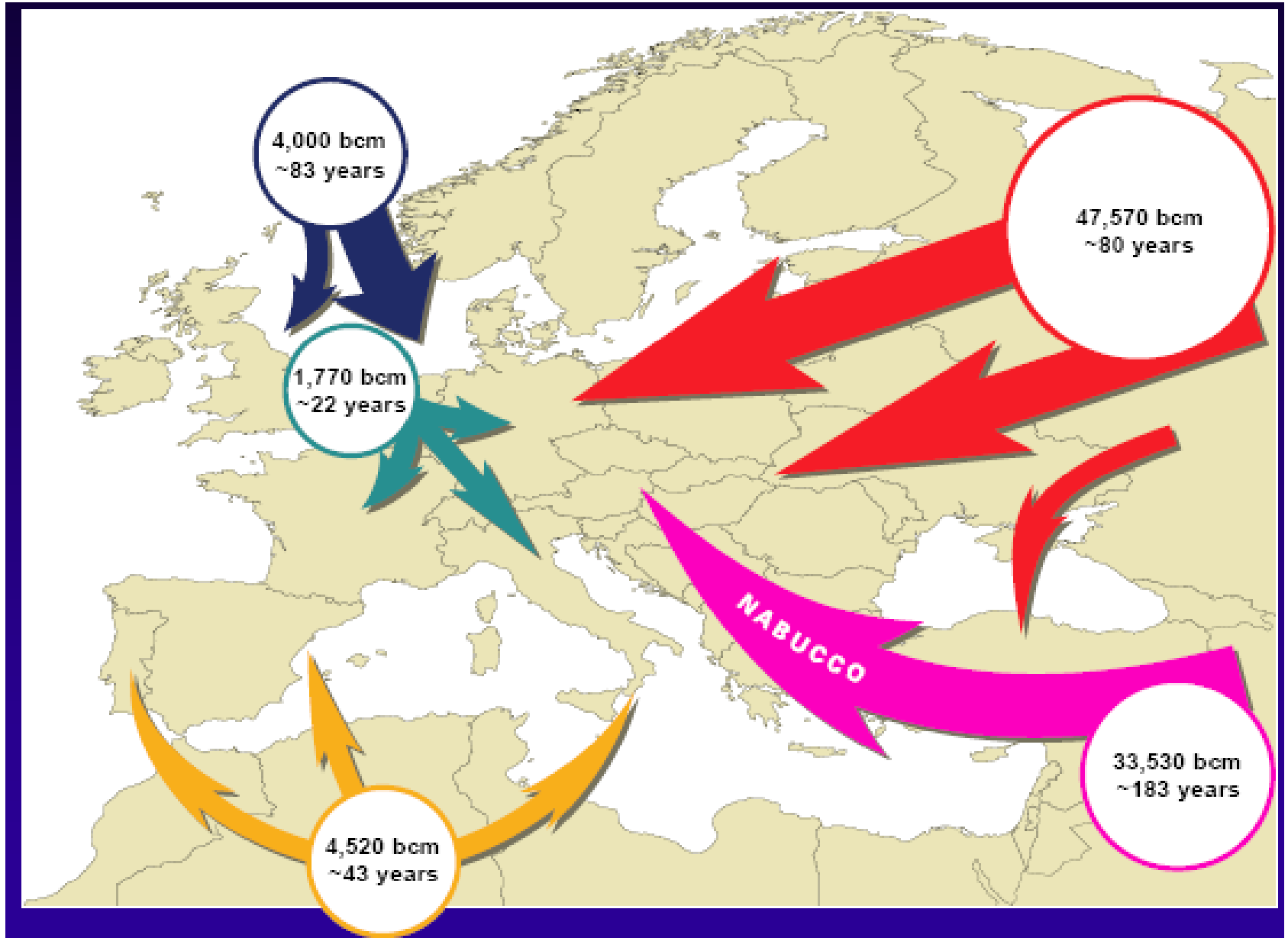
## Reserves in promising natural gas production regions



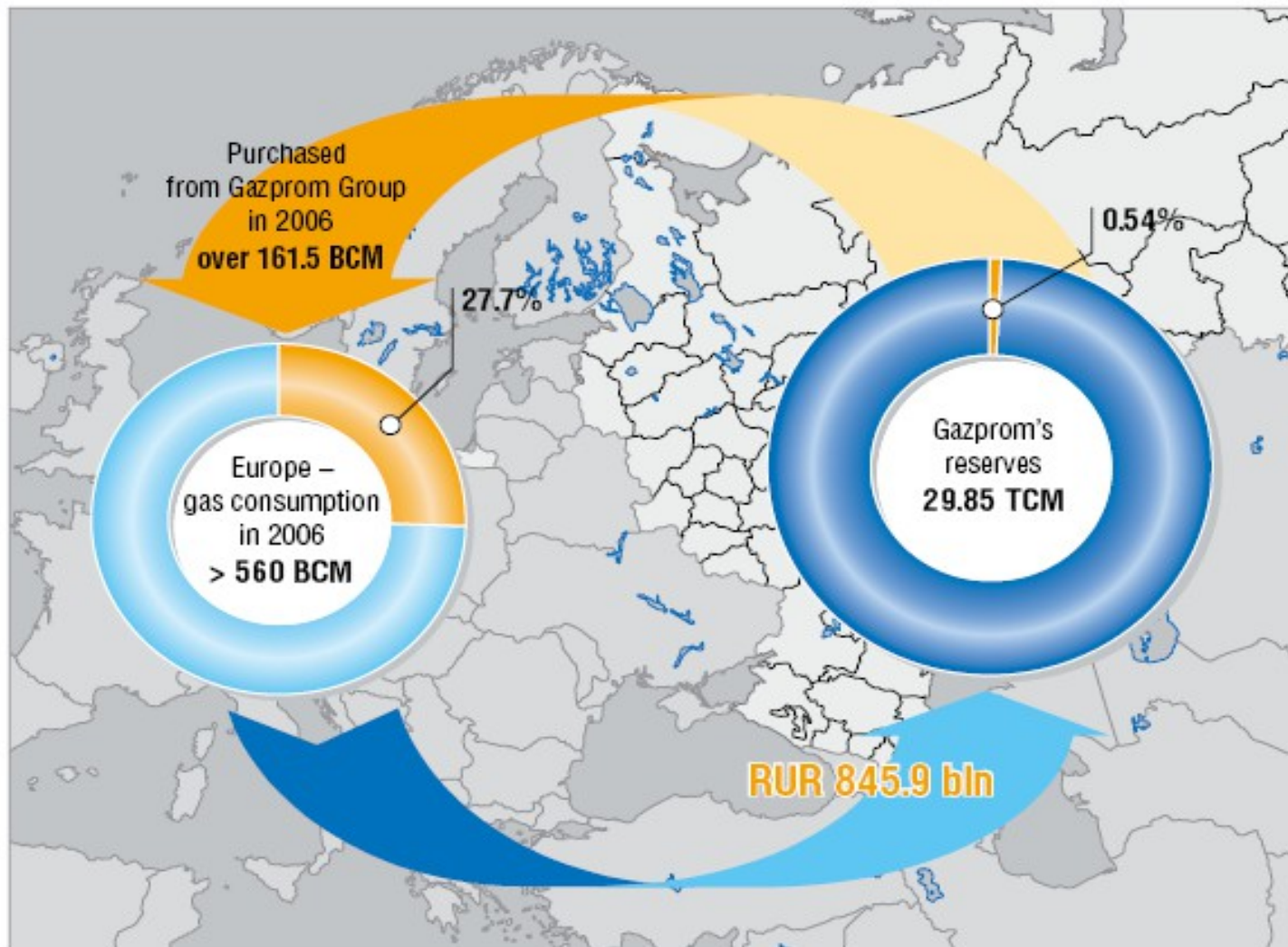
# Gas production



# Europe's gas Encirclement



# Gazprom's share in the European gas market, 2006





## Natural Gas: Consumption and Prices

	2002	2005
<b>World natural gas consumption, bcm</b>	<b>2 614.6</b>	<b>2 865.3</b>
including		
OECD North America	785.3	765.6
OECD Europe	488.1	548.0
OECD Pacific	137.2	136.1
Non-OECD countries (estimated)	1 202.0	1 413.6

Sources: IEA, IRTs Gazprom

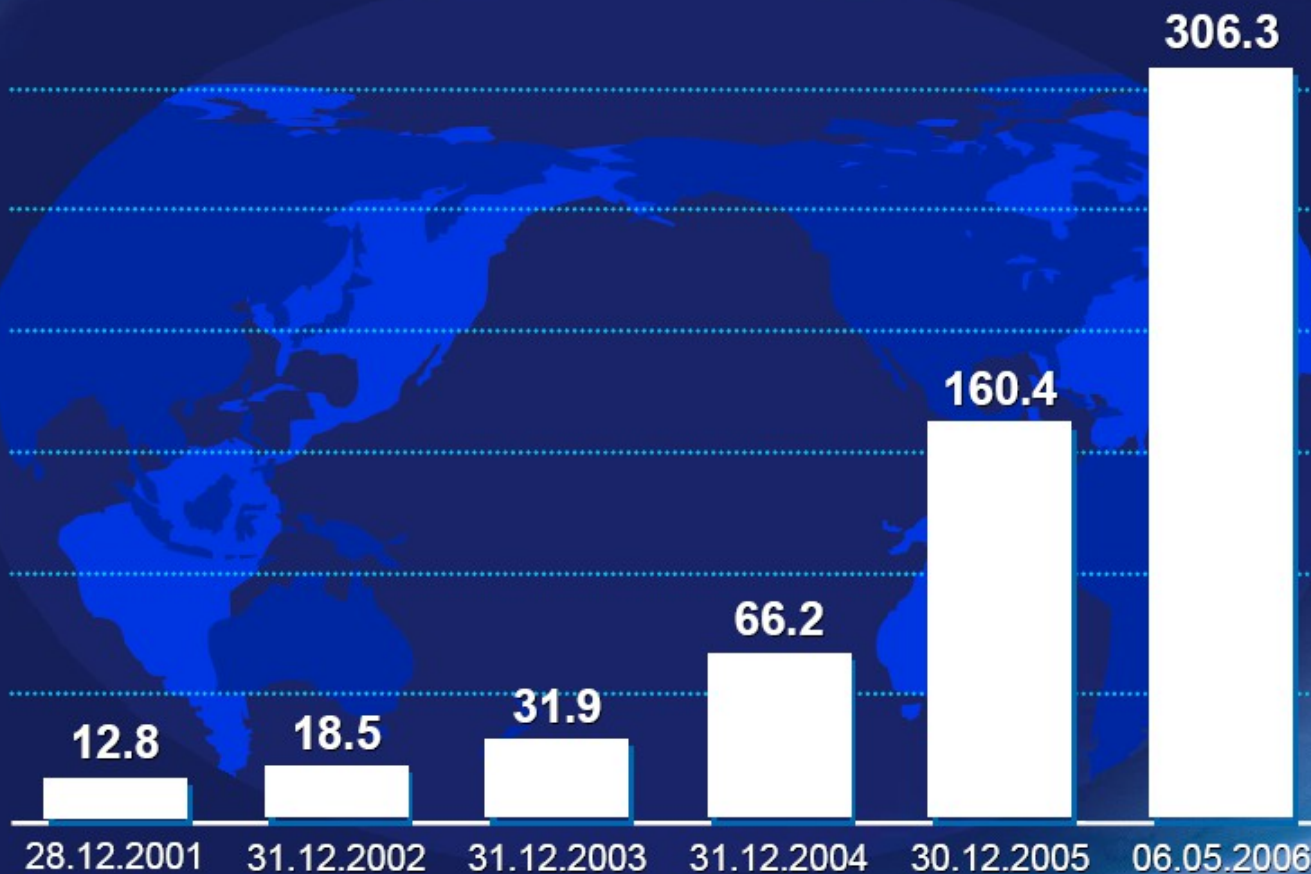
	December 2002	December 2005
<b>World gas prices</b>		
Russian natural gas border price in Germany, US\$ per 1,000 m <sup>3</sup> of NG	101.29	250.56
Indonesian LNG price in Japan, \$ per volume equal to 1,000 m <sup>3</sup> of NG	177.36	266.99
Spot price per 1,000 m <sup>3</sup> of NG at Henry Hub, Louisiana	170.91	469.77

Source: International Monetary Fund Primary Commodity Prices

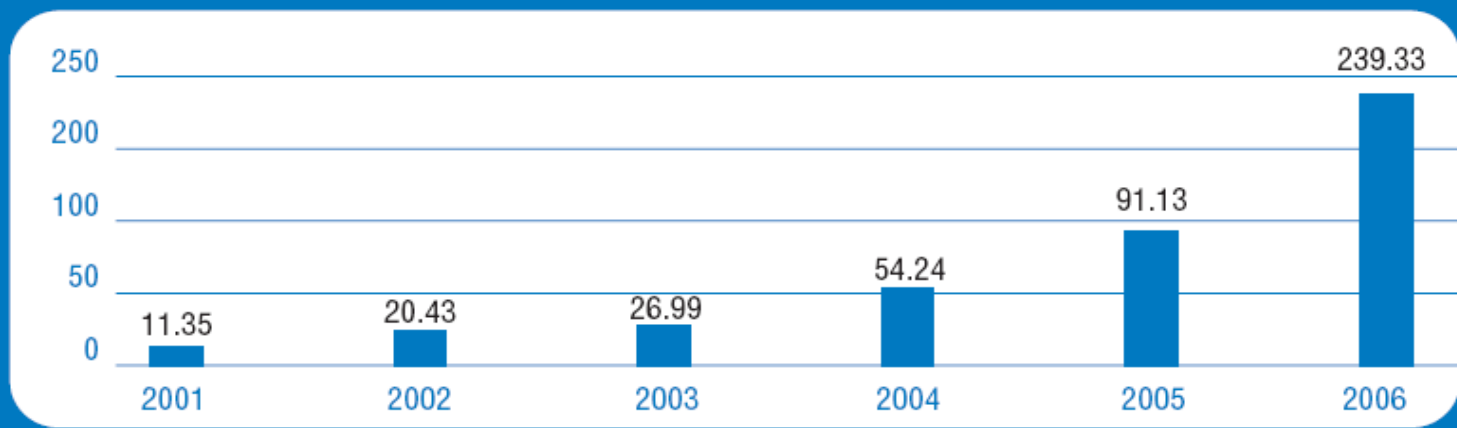


## Market Capitalization

US\$ bln

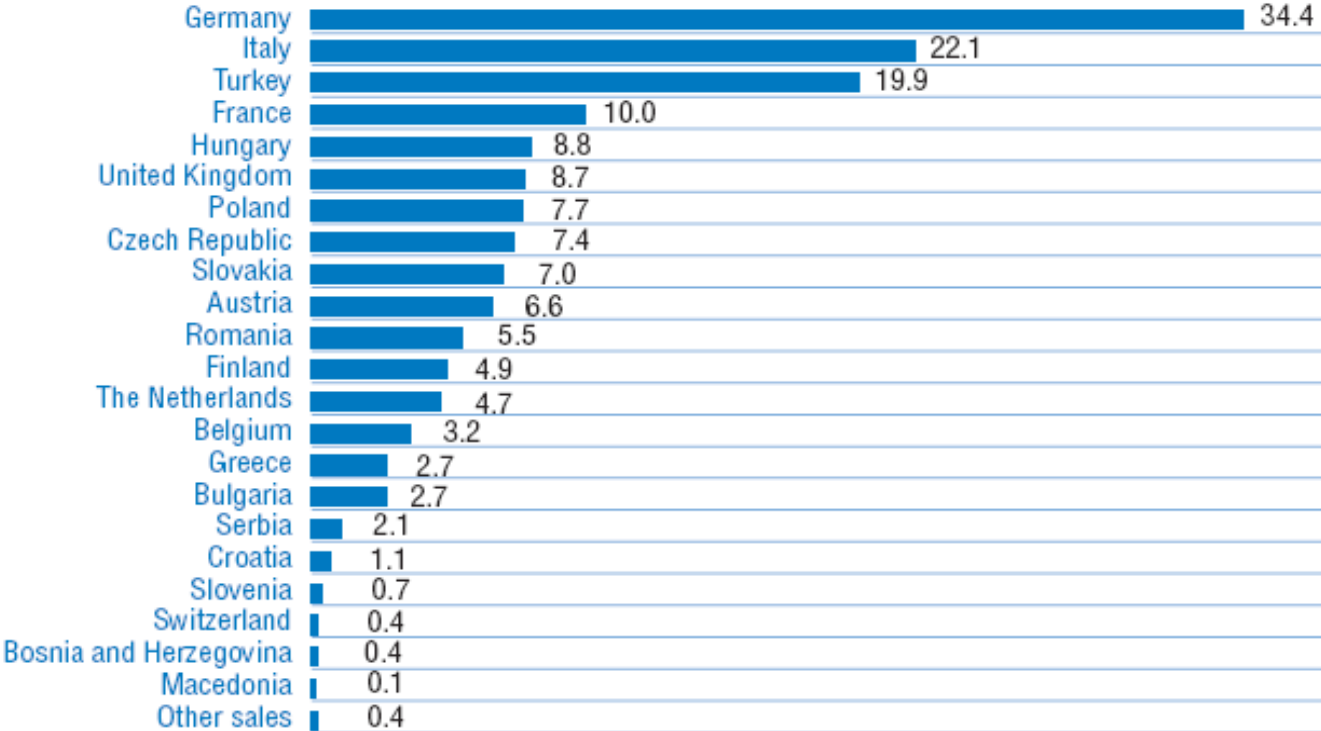


**OAO "GAZPROM" AVERAGE MARKET CAPITALIZATION, BILLION US \$**

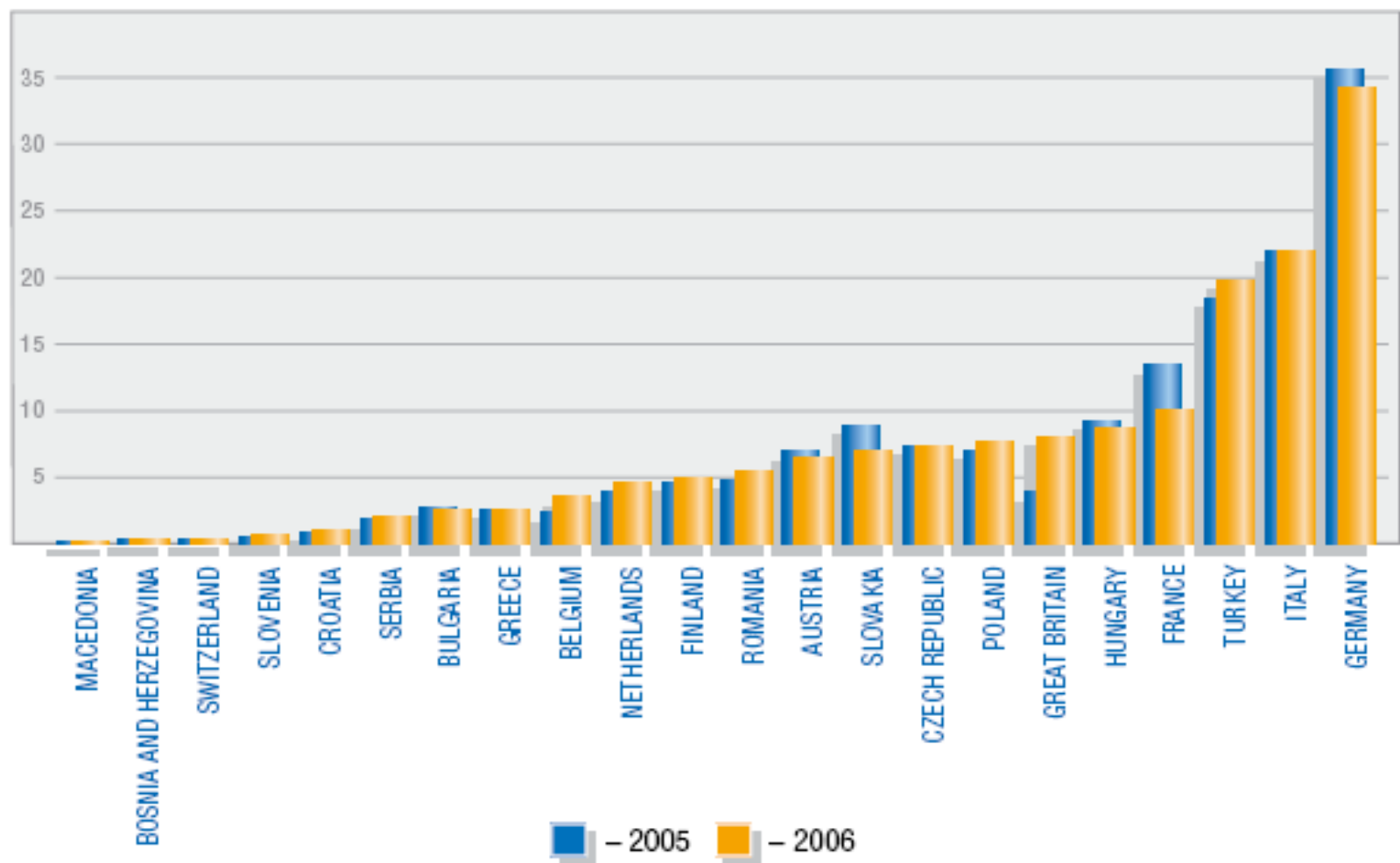




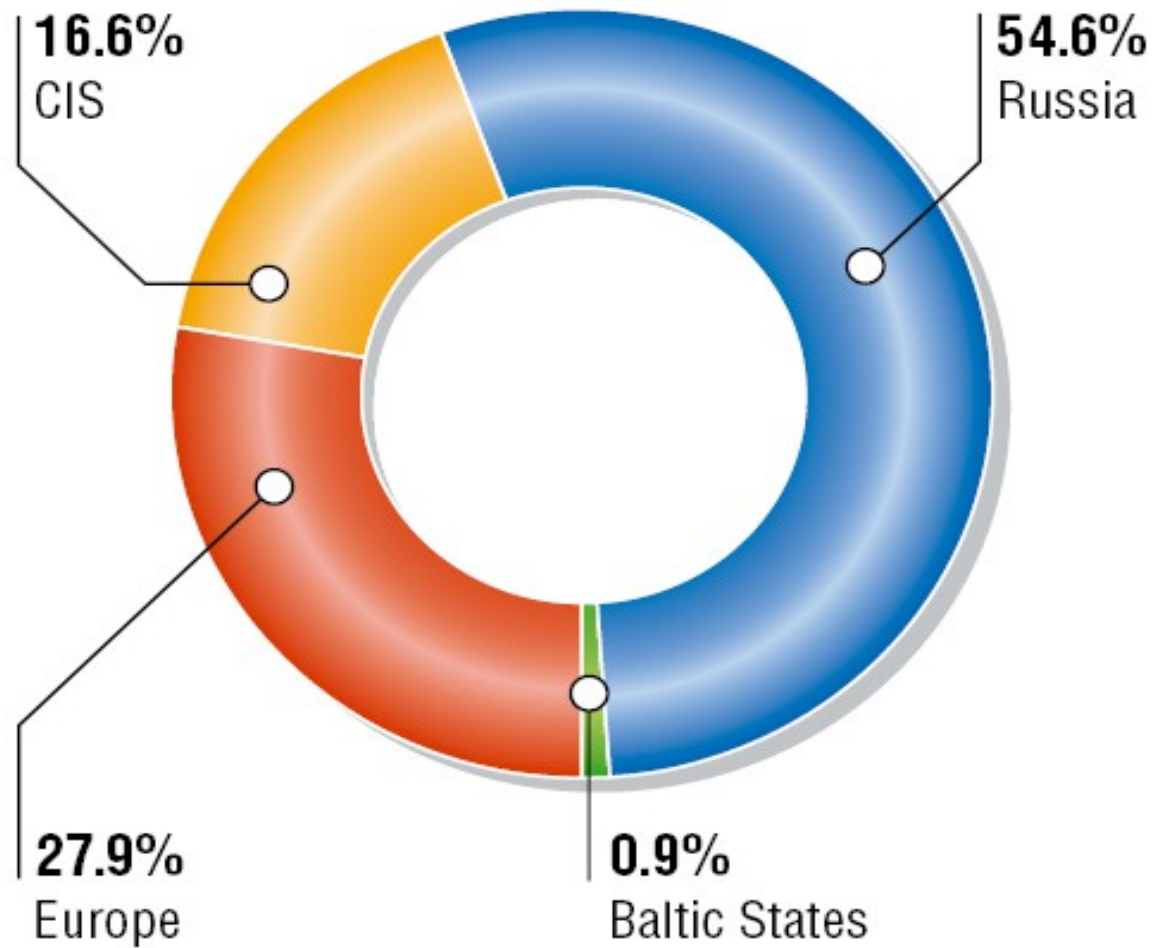
Gazprom Group's  
gas sales in the  
European countries  
in 2006, bcm



Gas sales to Europe in 2006, bcm



## Gazprom Group's gas marketing structure in 2006

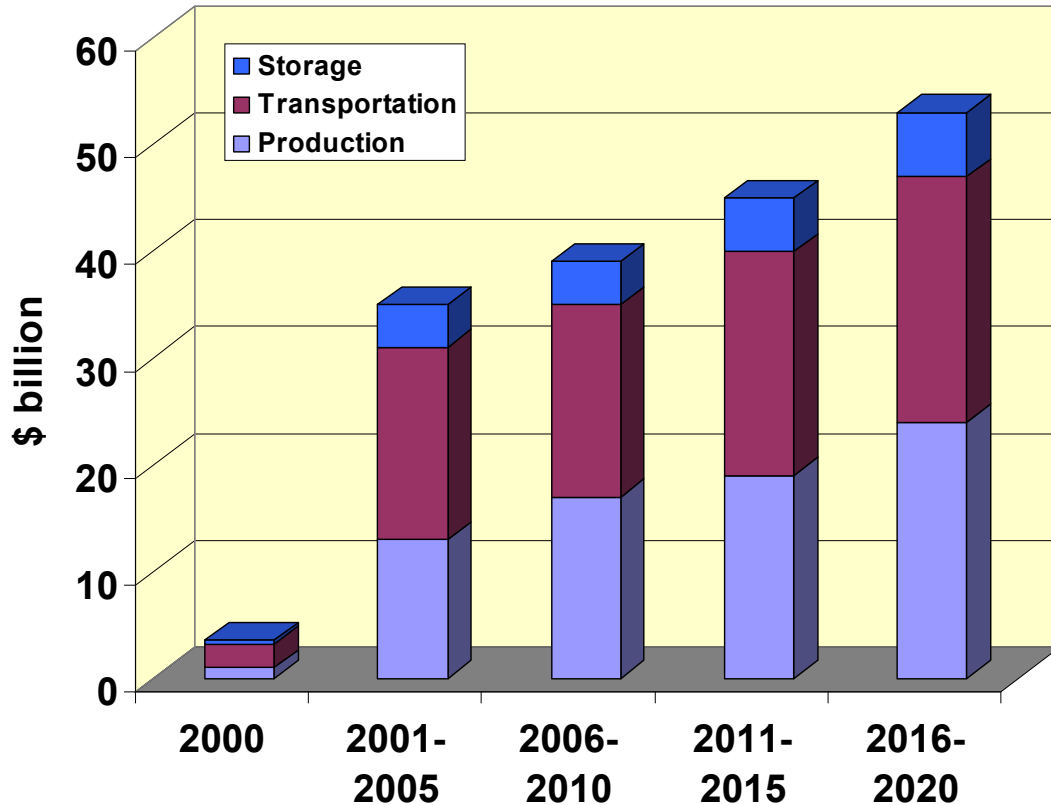


**Gas sales structure for the CIS and Baltic States  
in 2006, bcm**

**TOTAL: 101 BCM**



# Russian Gas Outlook: Production & Investments

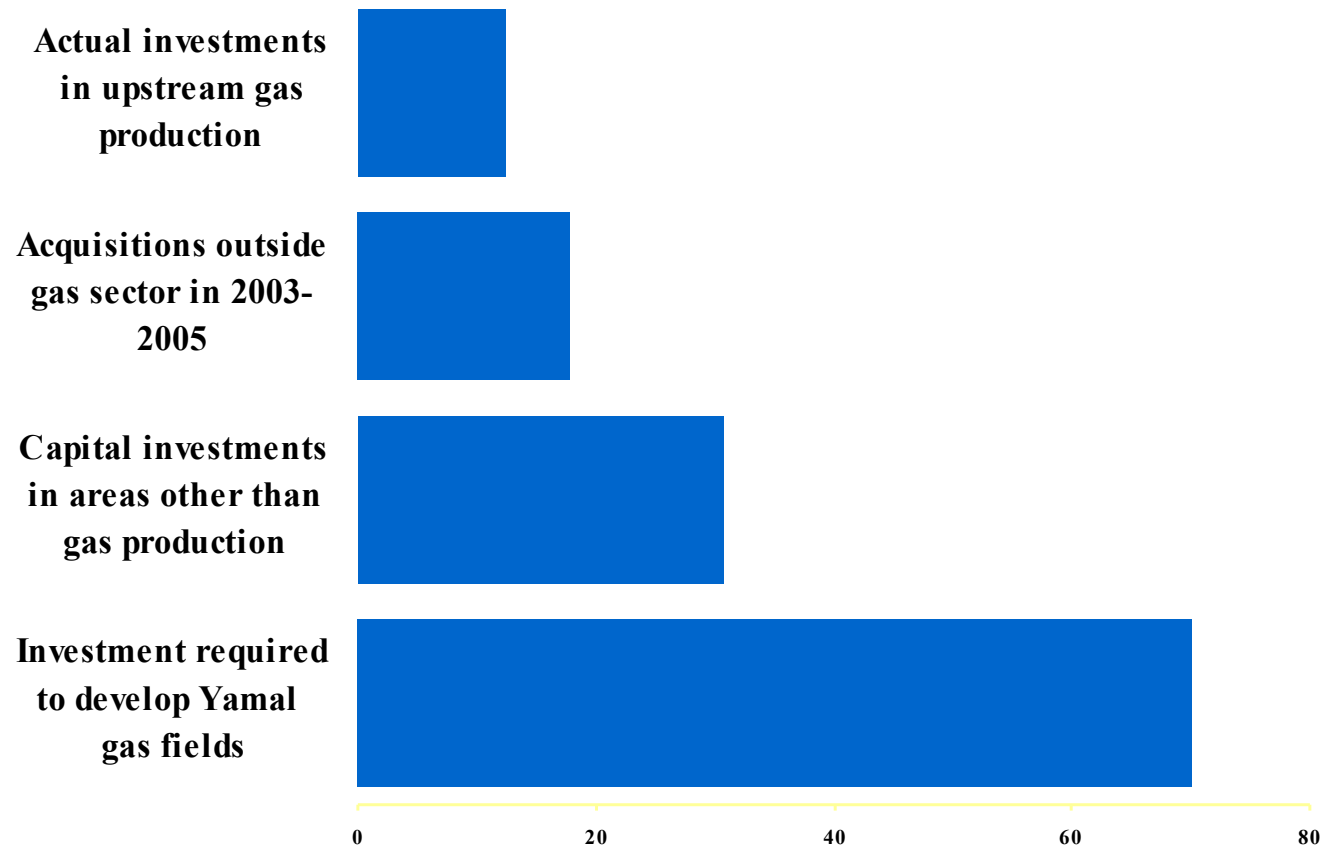


Source: Ministry of Energy of the Russian Federation

- Highlights importance of gas sector restructuring to:
  - Attract necessary investments
  - Ensure production meets domestic and export needs
- Investment needs: \$7-10 Billion/year
- Role of Independent Gas Producers
- Third party access

# Gazprom's investment strategy

Cumulative investment by Gazprom 2000 to 2006 (current \$bn)



# Security of supply

**Giant investments are necessary from now until 2030**

- **Electricity:**
  - **4800 GW capacity**
  - **\$4600 bln in generation**
  - **\$5200 bln in transmission & distribution**
  - **45/55 developed/developing economies**
- **Gas:**
  - **\$2700 bln**
  - **50/50 upstream (exploration & production) and downstream (transmission, distribution, storage, LNG-chains)**
- **Coal:**
  - **\$400 bln (mines, shipping, ports)**

# **Security of demand**

- Huge investments are required to build a new pipeline infrastructure**
- Growing “gas-to-gas” competition on regional markets**
- Long-term gas contracts will guarantee return of investments for producers**



# Main Gas Pipeline Projects

<b>Projects</b>	<b>Investment required</b>
<b>Yamal-Europe Pipeline</b>	\$14 billion Estimated \$2 billion to construct Yamal II
<b>Kovykta Gas Pipeline</b>	More than \$ 12 billion
<b>Shtokman Field (Barents Sea)</b>	Investment estimated between \$15 and \$25 billion
<b>Nord Stream</b>	Total cost - \$ 6 billion
<b>Sakhalin II</b>	\$1.1 billion for Phase I; \$8.9 billion for Phase II

# Conclusions

- **Russia will continue to play a central role in global energy supply and trade. However, huge investment is required.**
- **Russia has become the engine of Non-OPEC supply growth and will continue to play a central role in global energy supply and trade.**
- **Developing Russia's vast energy resources calls for huge investments.**
- **Russian economy increasingly dependent on oil and gas.**
- **Progress in market reforms and more stability in investment climate is required.**