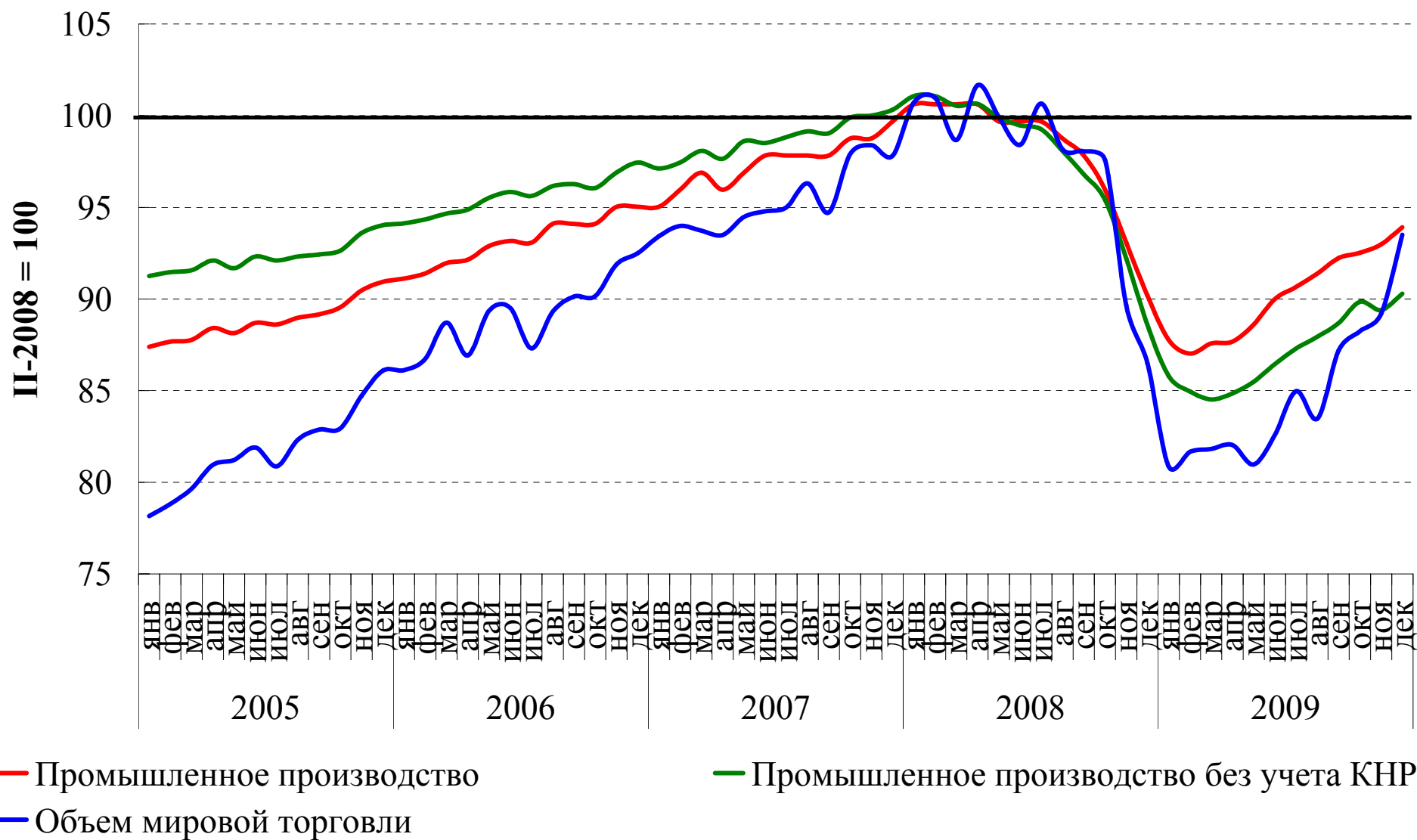




Energy Security – recycling of issues

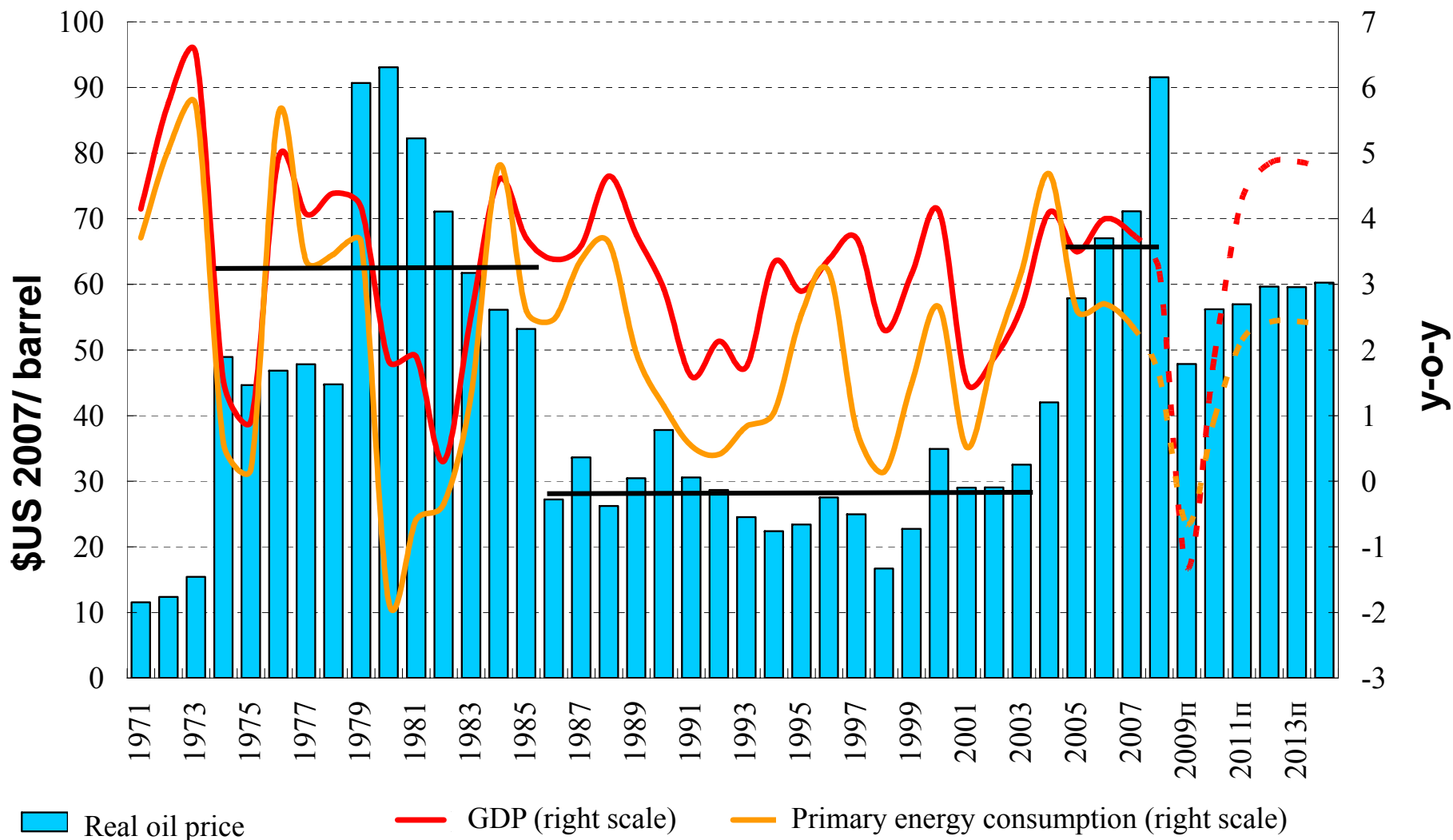
Leonid Grigoriev
Institute for Energy and Finance



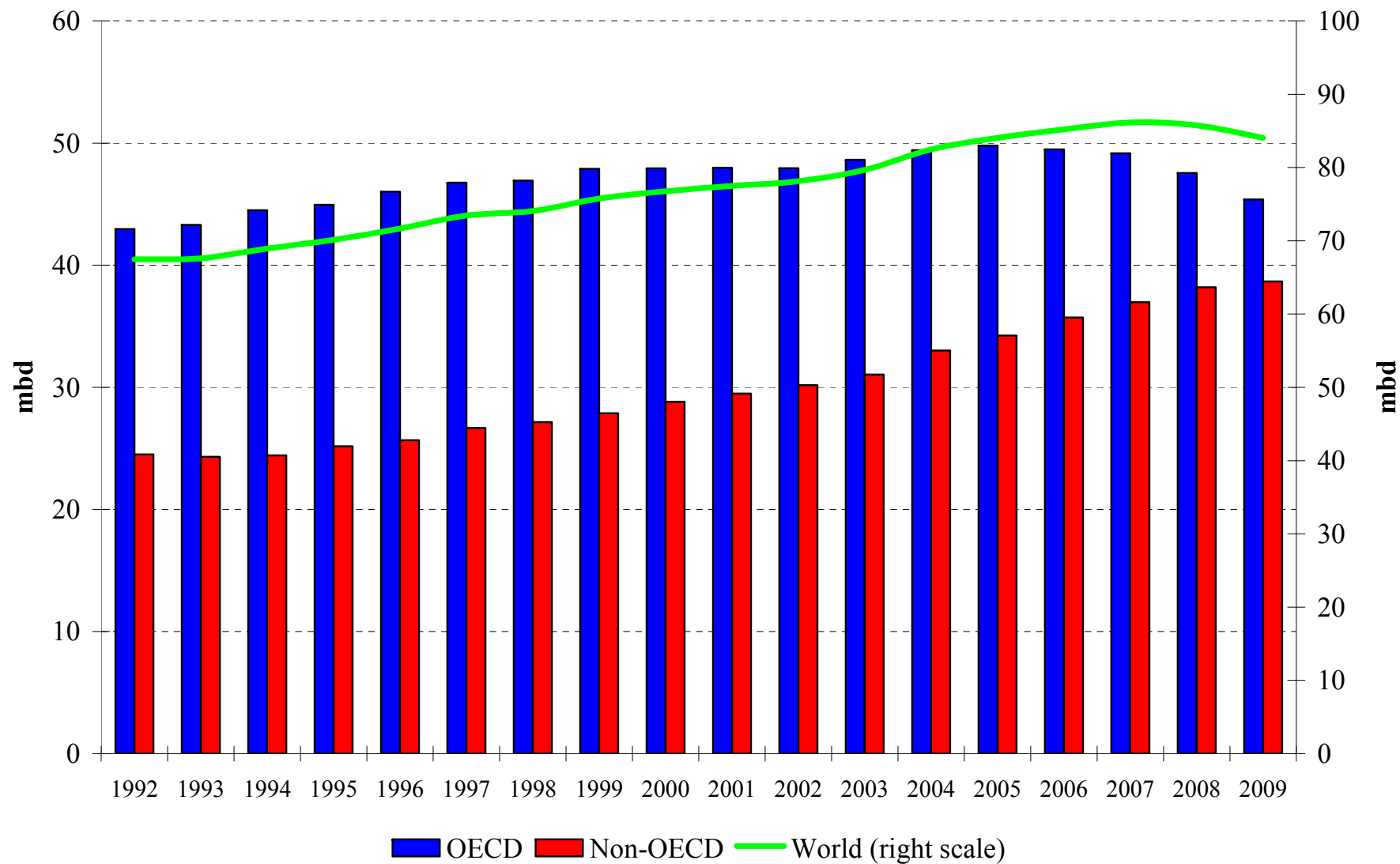
Dynamics of Energy Consumption and GDP, annual rates, 1986 - 2008

	GDP		Primary Energy Consumption		Oil Consumption	
	1986-2002	2003-2008	1986-2002	2003-2008	1986-2002	2003-2008
<i>World</i>	2,9	3,5	1,7	2,9	1,6	1,4
<i>OECD</i>	2,7	2,2	1,5	0,5	1,5	-0,1
USA	3,0	2,5	1,5	0,1	1,4	-0,3
EU-27	2,4	2,3	0,4	0,1	0,7	0,0
Japan	2,2	1,7	1,9	0,1	1,1	-1,6
<i>Developing Countries</i>	3,8	6,7	1,9	5,7	1,8	3,6
Brazil	2,3	4,0	3,1	3,7	2,9	2,5
Russia (GDP since 1990)	-2,5	7,0	-1,4	1,3	-3,8	1,2
India	5,5	8,7	5,1	5,9	5,9	3,3
China	9,5	10,7	4,1	11,2	6,5	7,1
Average oil price in \$2008 per barrel	28,7	63,2				

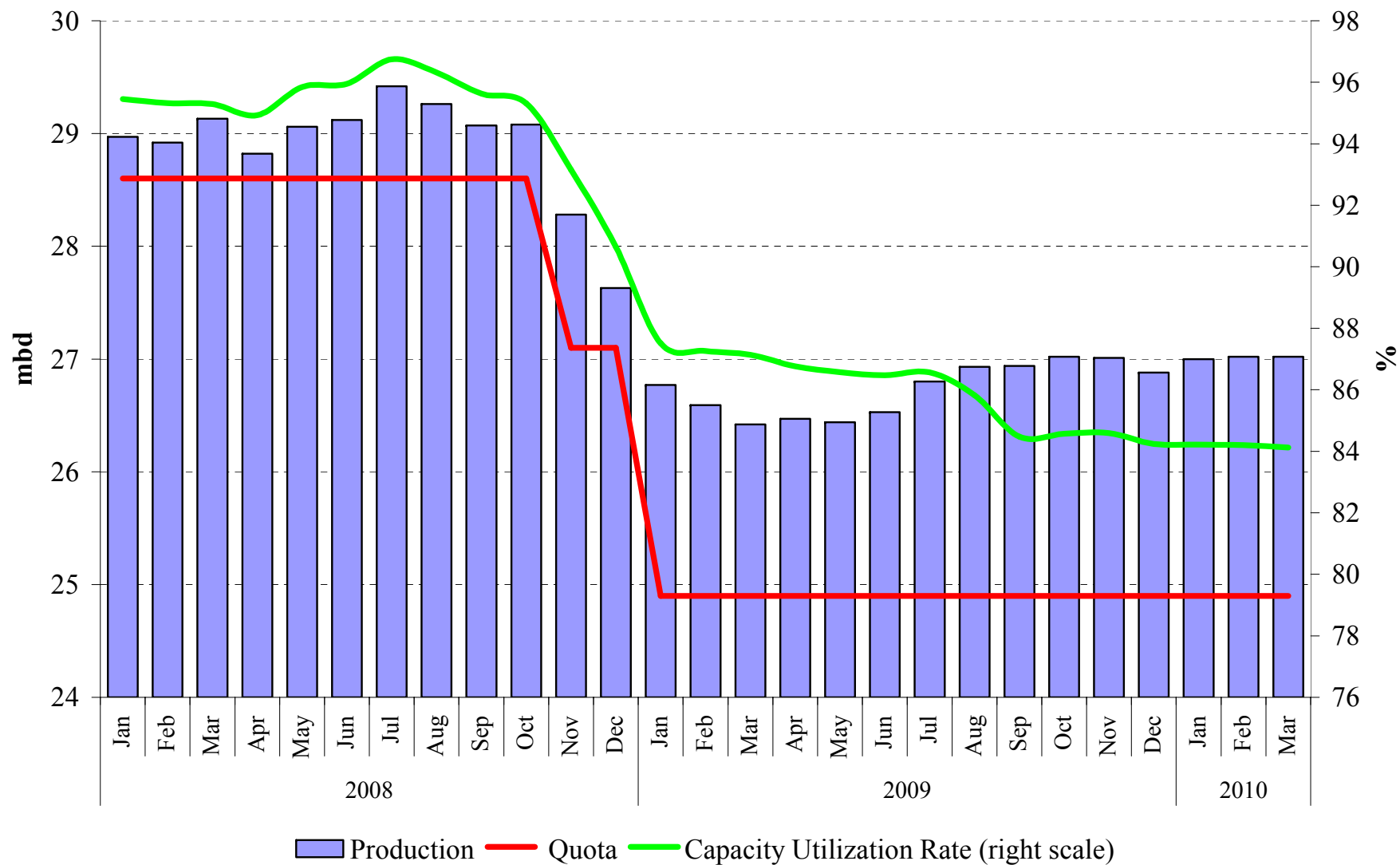
World: Long-term Trends and Cycles



Liquid Fuels Consumption, 1991 - 2009

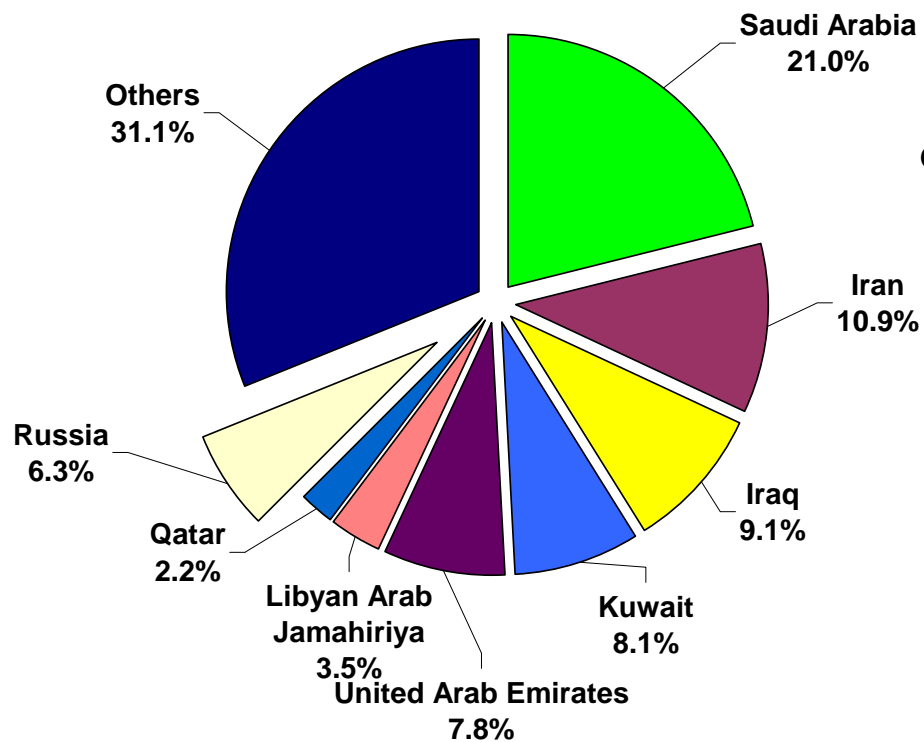


OPEC-11 Quota and Production, 2008 - 2010

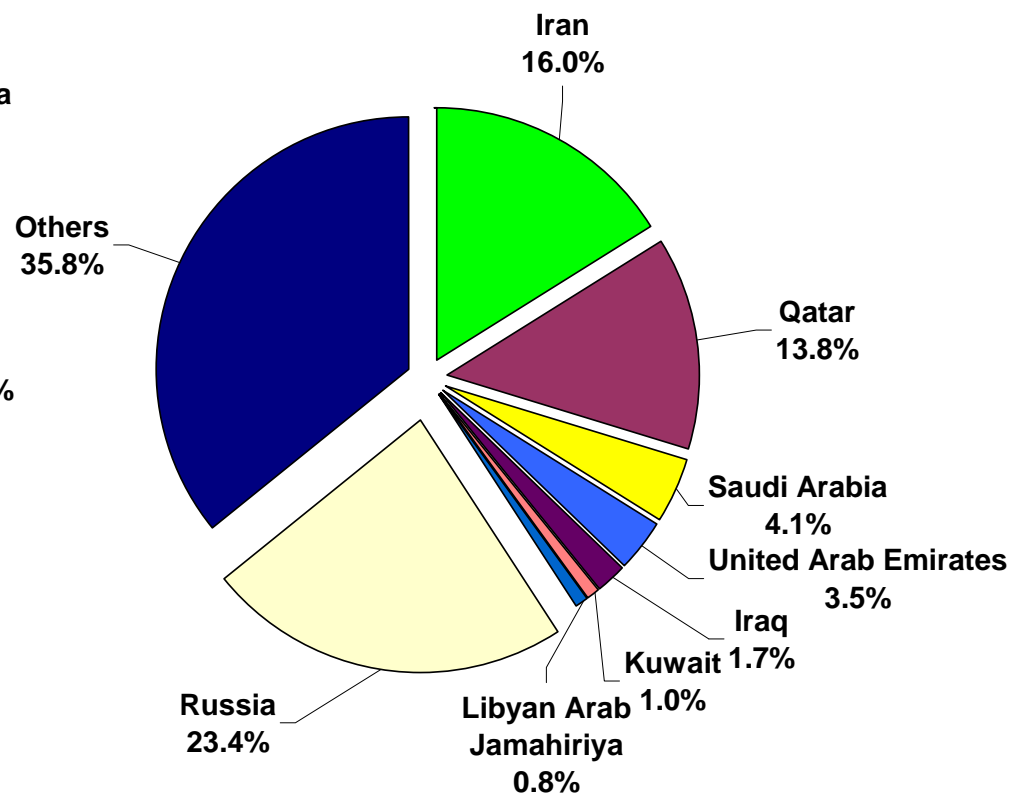


Oil and natural gas proved reserves, % of the world total

Crude oil reserves



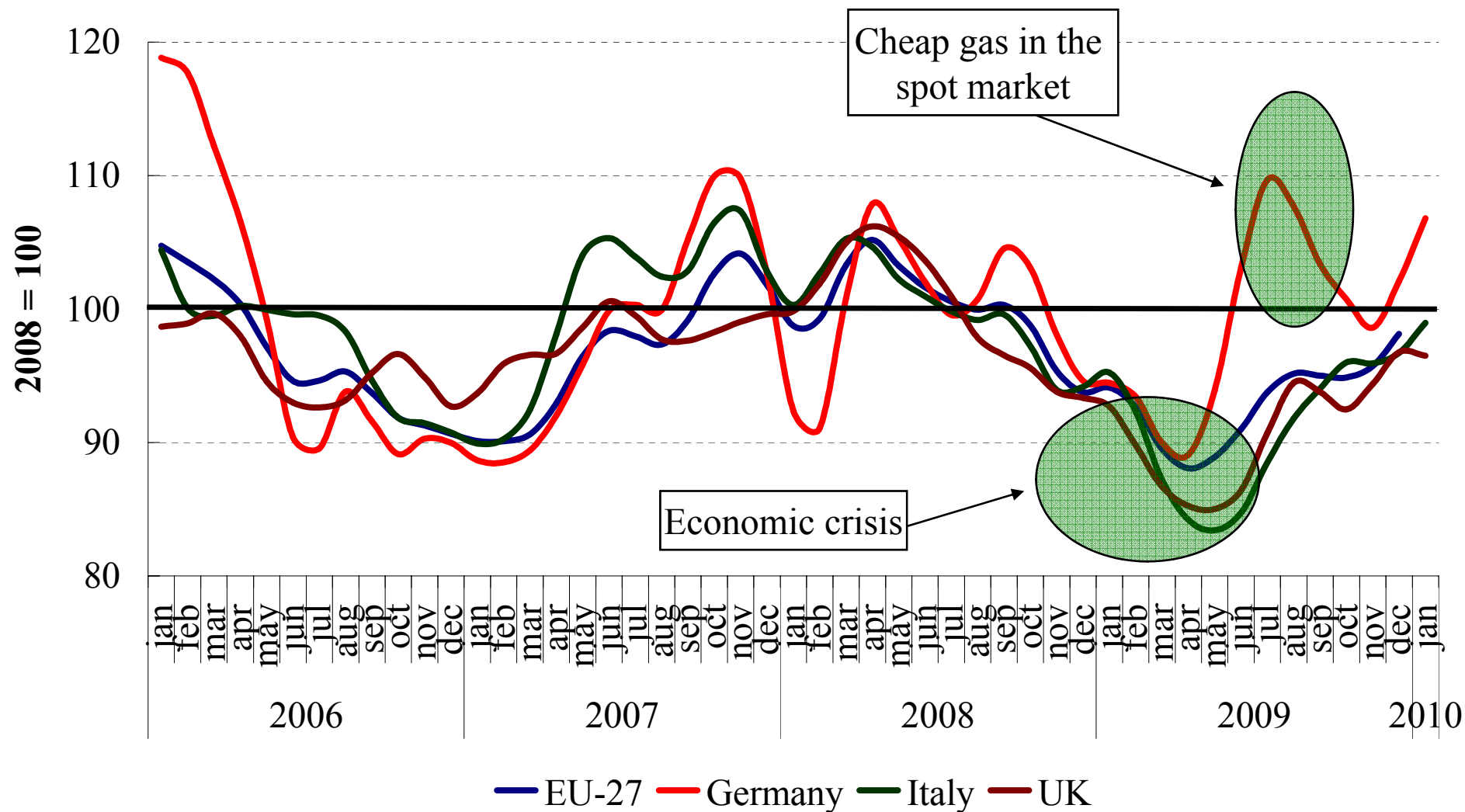
Natural gas reserves



Russia – Energy and Economy

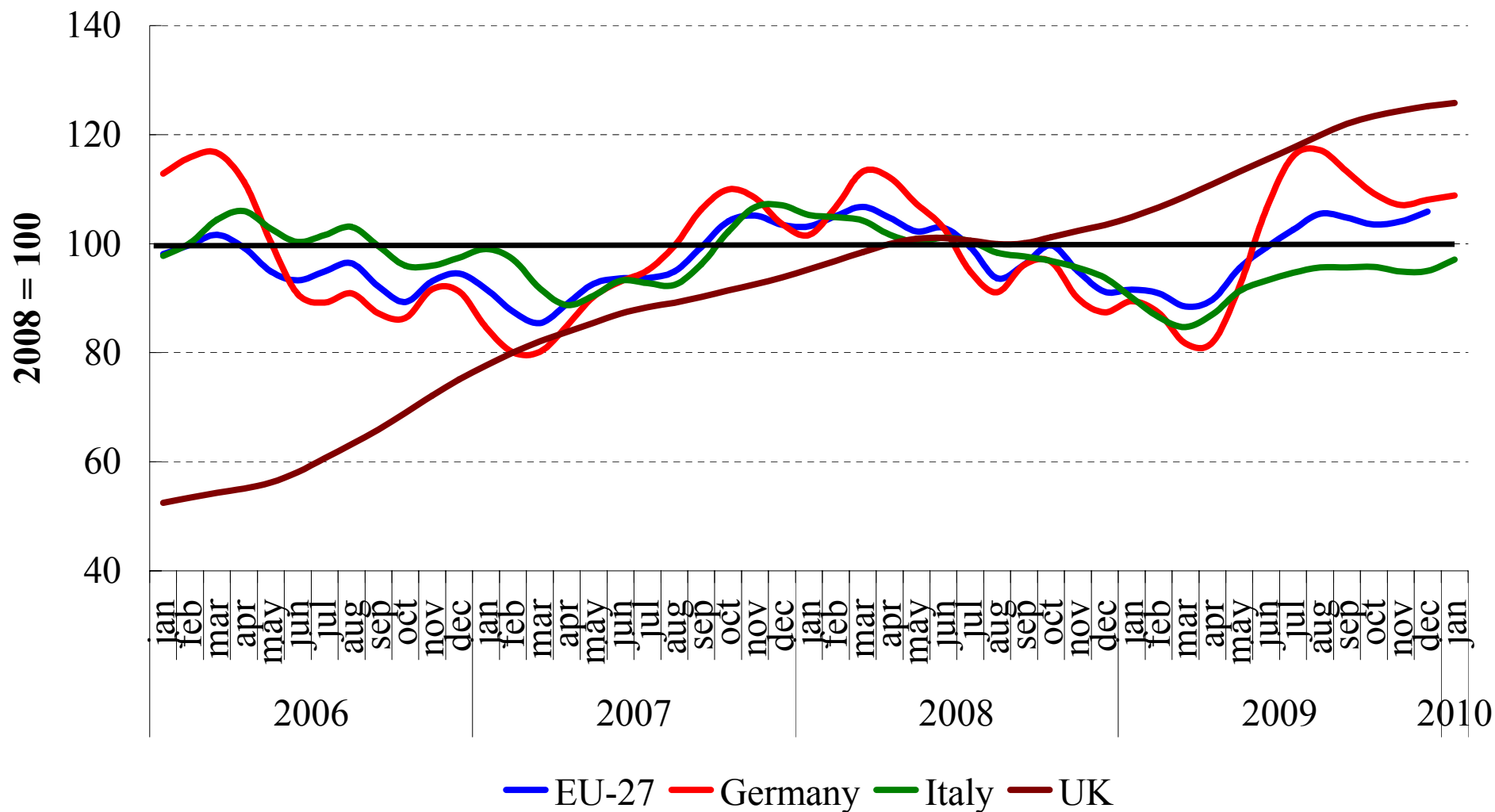
- Russia with 2.3% of World Population and GDP produces roughly 11.5% of Global Primary Energy.
- Russia Exports: 2/3 of produced Oil, 1/3 of Coal, 1/3 of Gas + Export of Aluminum, Fertilizers. Equal to two annual Germany volumes of energy consumptions.
- Russia invests about 4.5% of GDP in Energy Sector.
- 45% potential saving of Energy goes with a price tag of \$320-340 billion.
- Russia is the Global supplier with domestic agenda – Modernization in both Energy and non Energy sectors
- Russia: 2007 Emission level = minus 34% from 1990.

EU Gas consumption, 2006-2010, 2008 = 100, (seasonally adjusted, including temperature factor)

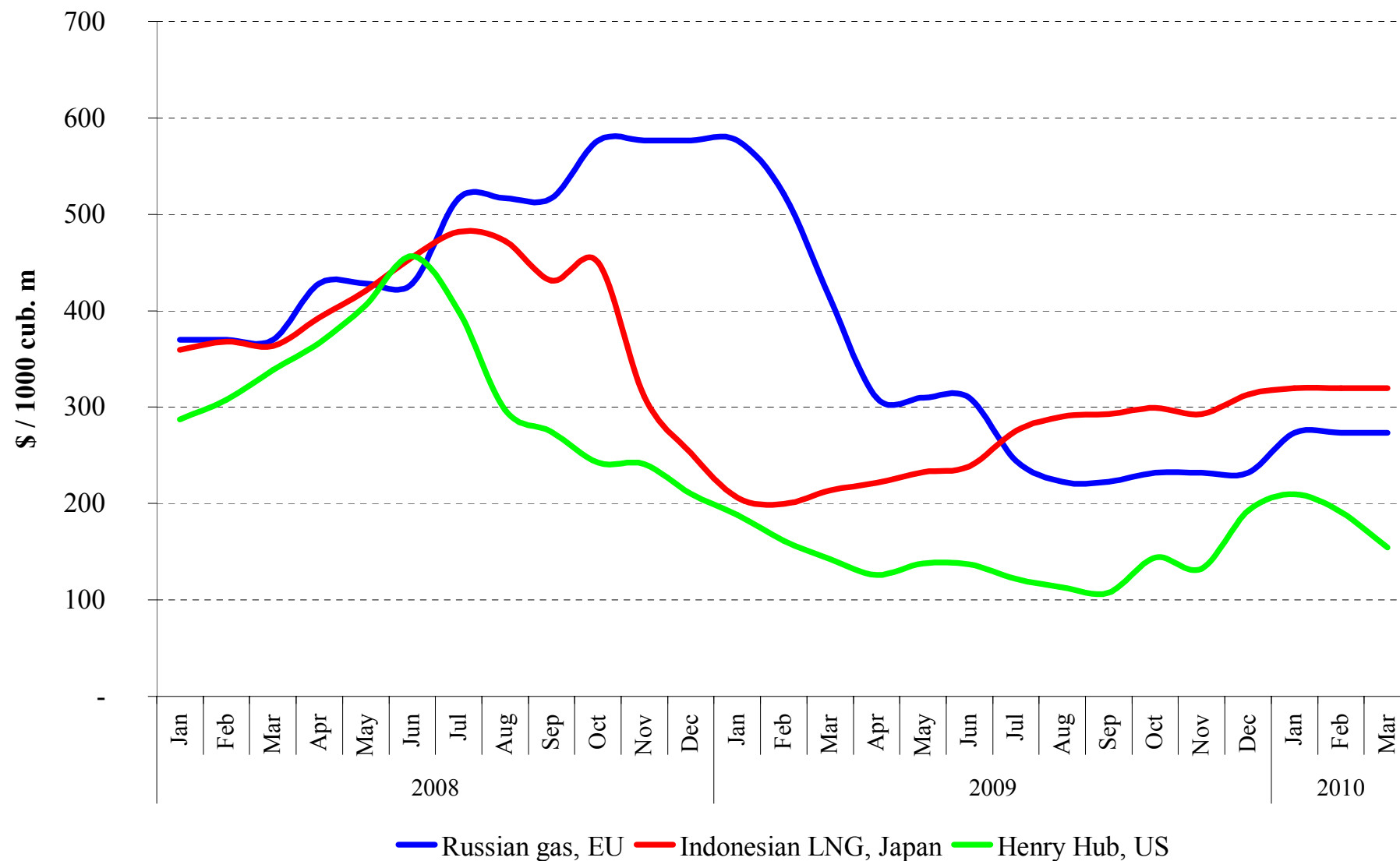


Gas import, 2008 = 100, 2006-2010

(seasonally adjusted, including temperature factor)

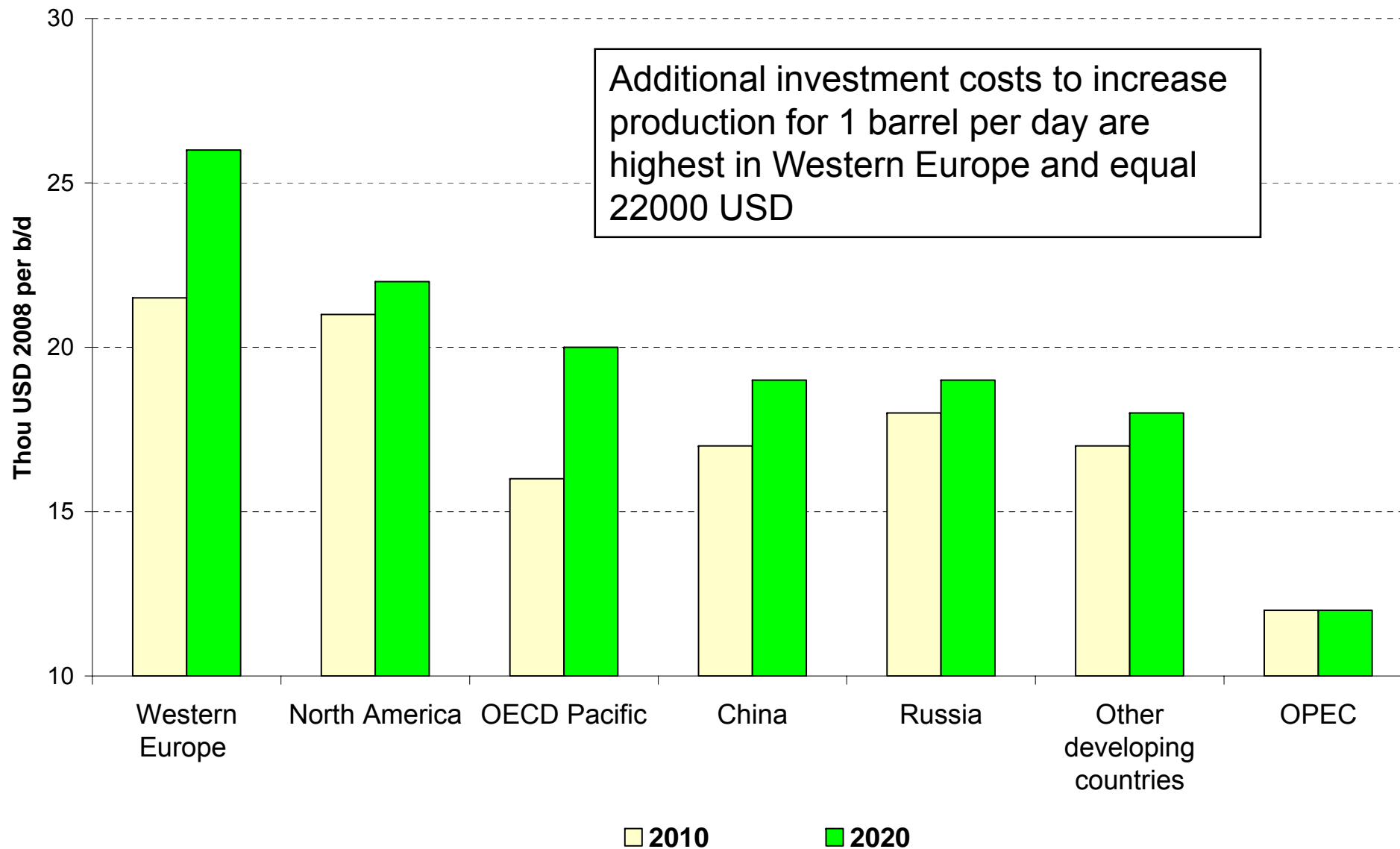


Natural Gas Prices, \$/1000 M3, 2008 - 2010

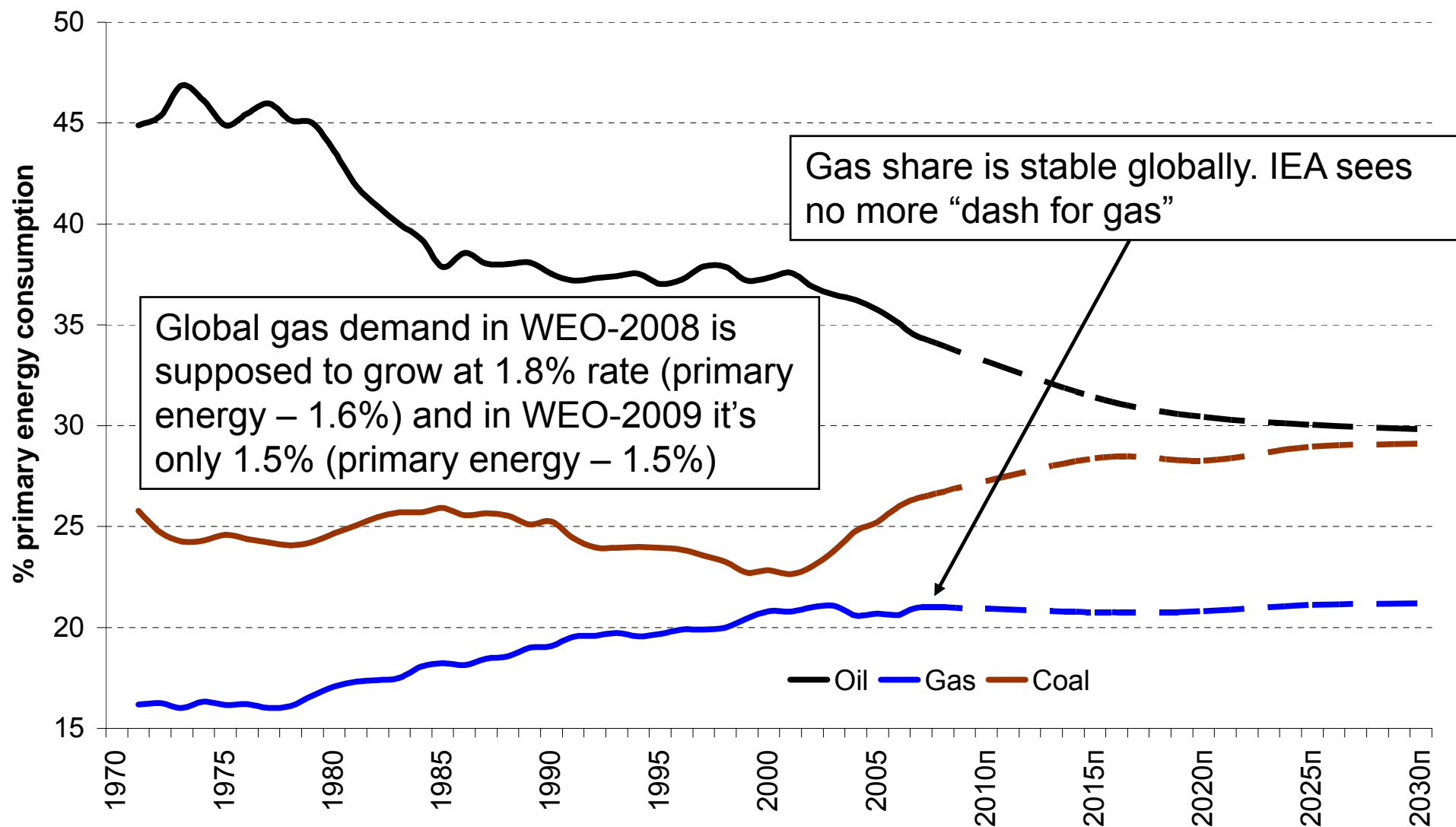




Costs per b/d of capacity, 1000 USD 2008, 2010 vs 2020



Global energy mix by fuel type, 1970-2030f



Global energy consumption: 450 vs Reference

