



Scenarios of EU energy system development: a view of independent experts on assumptions and conclusions

Vladimir Feygin, Vitaly Protasov
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EU-Russia Energy Dialog

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- ❑ Thematic group - Strategies, scenarios and forecasts
- ❑ Russian Energy Ministry, Gazprombank, IEF
- ❑ Methodology of scenarios comparison
- ❑ 1 stage: EU scenarios of PRIMES model and of associates (GEM, PROMETHEUS, POLES); in parallel – RF Energy Strategy-2030
- ❑ 2 stage: International Energy Agency (WEM), POLES, International Gas Union
- ❑ 3 stage: Companies, Research centers, adjusted EU scenarios

Main sources of information

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- European Energy and Transport. Scenarios on key drivers, 2005
- Capros P. Hydrocarbons Outlook and Implications for Modeling and Analysis of Energy Prospects, 2006
- European Energy and Transport Trends to 2030 – update 2007
- Capros P., Mantzos L., Papandreou V., Model based analysis of the 2008 EU policy package on Climate change and renewable, June 2008
- Second Strategic Energy Review: an EU energy security and solidarity action plan, November 2008
- Capros P., Overview of Energy Economic Analysis for the EC, 2009

2005 scenarios

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- Demand for natural gas is nonelastic
- In baseline scenario import dependency on gas jumps from 48% to 82% (2005-2030)
- EU-25 gas import in 2030 varies from 417 to 602 bcm (207 bcm in 2000)
- Marginal costs of decreasing greenhouse gases emission at 20% in 2030 (from 1990) =130 euro/t
- This implies 50% higher electricity tariffs in real terms

Natural gas drift

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- Reducing role of natural gas from scenario to scenario
- Main differences: prices and policies

mtoe	2005	BL 2005	BL 2007	NEP	NEP-HOG
Primary energy consumption	1811	1958	1967	1711	1672
Oil	666	699	702	608	567
Gas	445	620	505	399	345
Coal	320	262	342	216	253
Renewables	123	157	197	270	274
Nuclear	257	220	221	218	233

Source: Capros P., Overview of Energy Economic Analysis for the EC, 2009

Assumptions: prices

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- In 2005-2020 oil prices rises at 12-84%, gas prices at 33-124%
- Oil link? Reasons for high growth?

Price ratio		2010		2020	
\$'2005/barrel	2005	MOG	HOG	MOG	HOG
Oil/gas	1,58	1,31	1,51	1,33	1,29
Oil/coal	3,68	3,98	4,41	4,16	4,14
Gas/coal	2,34	3,03	2,93	3,13	3,2

Source: Second Strategic Energy Review, 2008

Price for consumers?

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- ETS price – 41 euro/t
- Guarantees of Origin price - 40,75 euro/MWh
= 474 euro/toe
- Marginal cost of energy efficiency (non-ETS) –
220 euro/toe
- Subsidies for renewables?
- End consumer price = ?

Long-term gas contracts

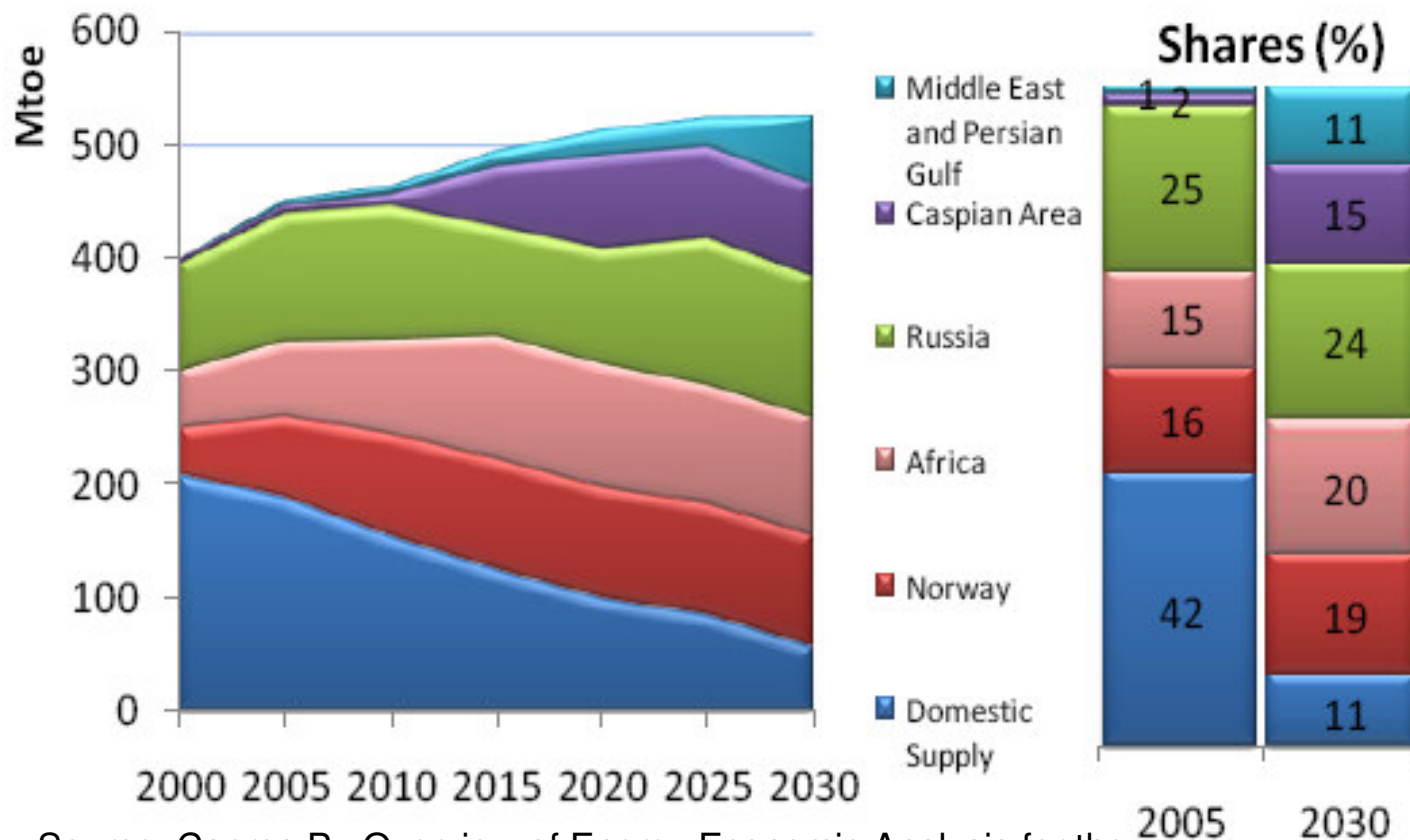
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- New Energy Policy scenario:
 - ▣ Gas import in EU-27 in 2020 = 245-291 mtoe
- Long-term supply contracts in 2020 = 360 mtoe (Eurogas)
- Baseline 2007 scenario:
 - ▣ Gas import from Russia \approx 105 mtoe
- Long-term supply contracts in 2020 \approx 130 mtoe
- Higher growth rate of gas prices

Share of Russia in gas import

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- Dependency on Russian gas will be stable, but its share in European gas import will decrease significantly (from 43 to 27%)



Source: Capros P., Overview of Energy Economic Analysis for the

Comparison of Russian and EU views

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- Huge differences between different scenarios
- High degree of uncertainty

EU-27, 2020, mtoe	PRIMES BL-2007	WEO-2009 Reference	ES-2030
Gas import	390	349	-
Import from Russia	105	172	150-154

Sources: Capros P., Overview of Energy Economic Analysis for the EC, 2009; IEA, World Energy Outlook 2009; Russian Energy Strategy till 2030

Open questions

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- Prices?
- Long-term contracts?
- Subsidies?
- CCS technology?
- Natural limitations for renewables production?
- Exact list of policies?
- Influence for EU economy?
- ...

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Thank you for your
attention!