Dissolve Market and Institutional Barriers for Unconventional Gas Development in Poland

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Disclaimer

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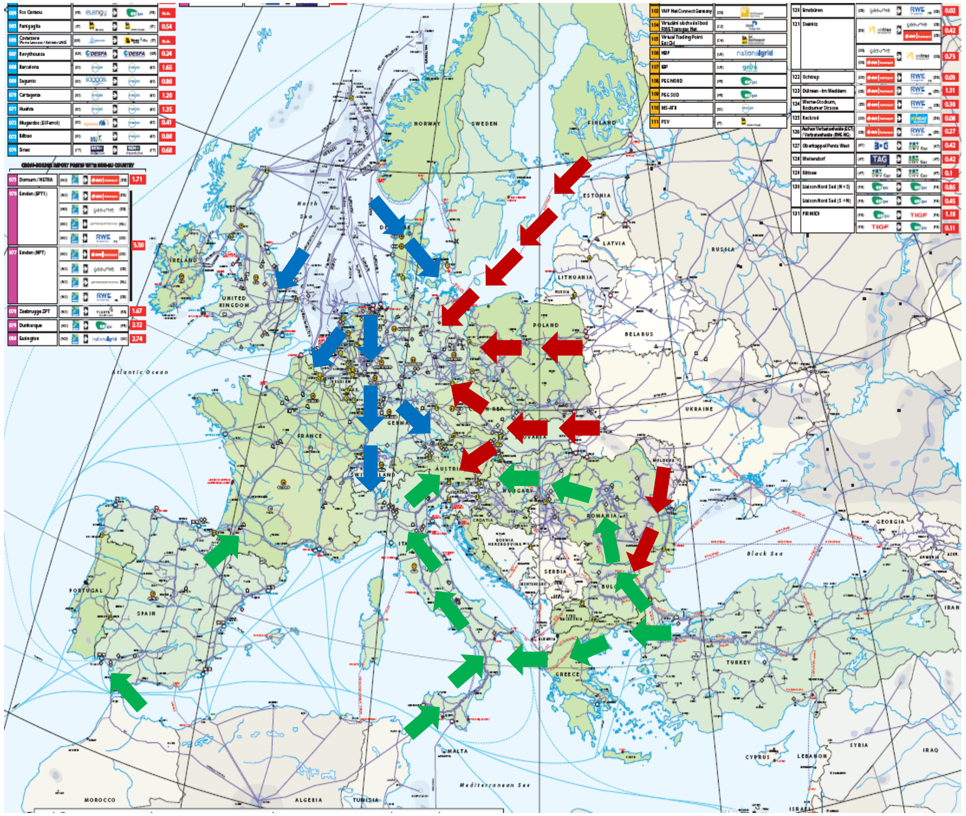
The plan of the lecture…

- ✓ Examine current development of physical and commercial infrastructure in Polish gas market
- ✓ Legal and institutional framework for unconventional gas trading facilitation
- ✓ Potential market barriers for large scale shale gas production
- ✓ Identify possible solutions and how to implement changes



Source: Energy Studies Institute, 2009 based on own calculations and GIE maps.

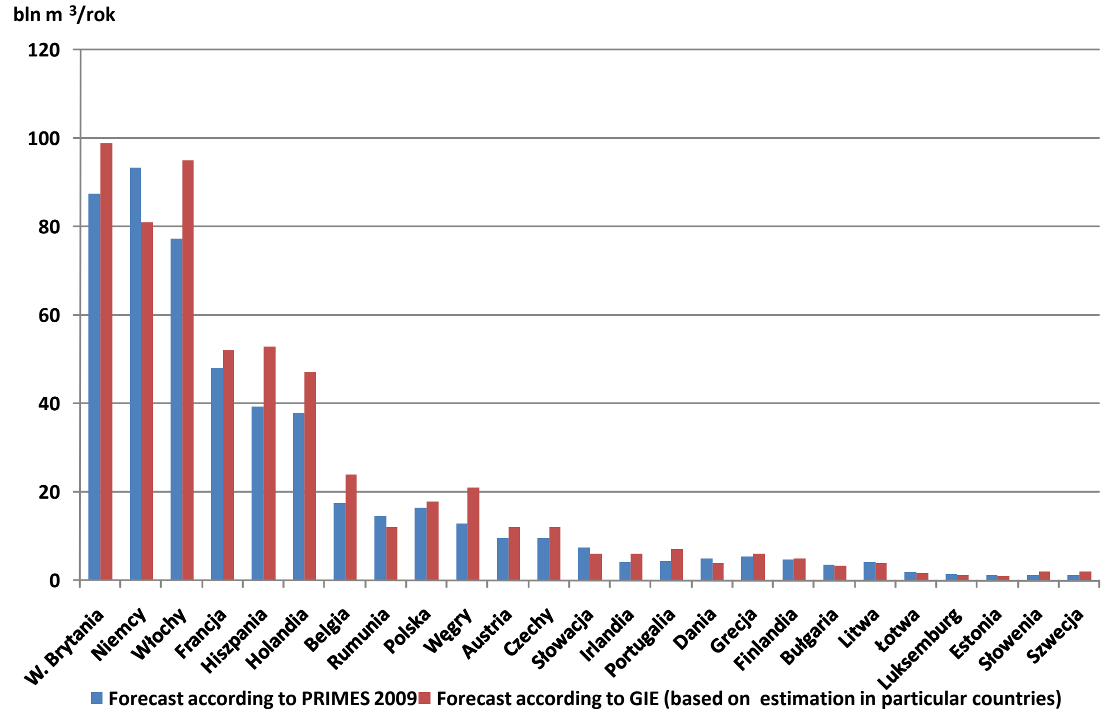
Potential barriers for large scale shale gas exploration and production in Poland

- „Natura 2000" - a strong environmental organizations, and changes and heterogeneity of environmental (noise, lack of water)
  • Strong population in service areas
  • Protectionism of companies servicing the domestic market (especially drilling)
  • Impediments to the entry of foreign firms drilling (eg, Polish / EU powers for operators of drilling equipment)
  • Difficult and lengthy procedures for procurement of drilling equipment from outside the European Union
  • Auctions (time / price) to perform drilling
  • Lack of the market liberalization and uncertainty over gas prices resulting from insufficient liberalization of the domestic gas market (the domestic price of mining?)
  • Unclear (difficult) provisions concerning the right to geological information and the high price of the geological information
  • Lack of tax and financial incentives and capital for exploration
  • Lack of Polish technical thought (the need to purchase technology)
  • Lack of competition in the market for service
  • Break the generation among Polish drillers, geologists, geophysicists, etc. (lack of the specialists in the country)
  • Energy policy PEP2030 not pushing gas as an energy source

Consumption forecasts

- Main sources of the forecasts:
  - New version of the PRIMES model (Baseline 2009) dated Aug., 5th. 2009
  - Consumption forecasts and own production from „Infrastructure Europe „GTE+ Demand Scenarios vs. Capacity report" June 2009, have been prepared by the member countries based on their own internal's documents and forecasts (energy policies, emergency and contingency actions, infrastructure development plans etc.).

- In our opinion the forecast adopted to the new PRIMES model could be too low. For example in 2015 total consumption of the natural gas for the EU-27 is predicted to the level of 511 bln m^3, when we have already consumed in 2008 ca. 490 bln m^3. The Member States own estimation show that consumption in 2015 will be 575 bln m^3.
- Having on mind security of the supply we need to use and adopt higher level of the forecast.
- Higher estimation and higher parameters are more secure in the prognosis.



Source: Own calculation based on data from PRIMES MODEL (Baseline 2009) Aug., 5 GTE+ Demand Scenarios vs. Capacity report July 31st 2009

Comparison of the forecasts for production, consumption and importation of the natural gas (netto) for Poland[1]:

Volume / Forecast mld m^3	2007	2010	2015	2020	2025	2030
Natural gas production Baseline 2007	4,33	3,56	3,44	3,33	3,11	3,00
Natural gas production ARE 2009	4,33	4,48	4,63	4,63	4,63	4,63
Natural gas production Baseline 2009	4,33	3,56	3,44	3,33	3,11	3,00
Natural gas consumption Baseline 2007	13,75	15,68	18,60	21,21	23,72	25,90
Natural gas consumption ARE 2009	13,75	13,33	14,44	16,33	17,89	19,11
Natural gas consumpotion Baseline 2009	13,75	15,17	16,48	16,14	16,12	16,44
Natural gas import netto Baseline 2007	9,17	12,12	15,15	17,88	20,61	22,90
Natural gas import netto ARE 2009	9,17	8,92	9,94	11,60	13,37	14,53
Natural gas import netto Baseline 2009	9,17	11,62	13,04	12,81	13,01	13,44

Source: Own ISE calculation based on PRIMES Baseline 2009 & Baseline 2007 & Agencja Rynku Energii.

[1] Volumes in mln toe are recalculated into mld m^3 where burning heat is equal to 37,7 MJ/m^3, ARE forecast was based on burning heat ratio 35,5 MJ/m^3, so all data in ARE's projections are 6% higher.

Gazprom and PGNiG settle cooperation issues in gas sector

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RELEASE

- Gazprom and PGNiG have settled the Russian-Polish cooperation issues in the gas sector. The parties agreed to increase the volumes of Russian gas supply to Poland and to extend the existing supply contract until 2037. In addition, they resolved the issues relevant to EuRoPol GAZ management and its tariff policy when transmitting Russian hydrocarbons. The agreements reached were fixed in the Joint Statement of the Parties to come into effect after Russia and Poland sign the relevant documents on the intergovernmental level.

- **Background**

  Poland's annual natural gas consumption is about 13.7 billion cubic meters with around 30 per cent produced domestically.
  In 2008 Gazprom export supplied Poland with 7.9 billion cubic meters of Russian gas.
  Natural gas is exported to and transited via Poland under the long-term intergovernmental contracts with PGNiG and EuRoPol GAZ on the basis of the Intergovernmental Agreement of 1993 as amended.
  PGNiG is Poland's largest petroleum company dealing with oil and gas field development, energy resources production, storage and transportation, oil and gas transmission network construction and expansion, as well as natural gas exports and imports.
  The EuRoPol GAZ Transit Gas Pipeline System was incorporated in September 1993. The company owns the 684-kilometer-long Polish section of the Yamal – Europe gas pipeline and five compressor stations, jointly providing for the gas pipeline capacity of some 30 billion cubic meters per annum.
  Gazprom and PGNiG are the key shareholders of EuRoPol GAZ.

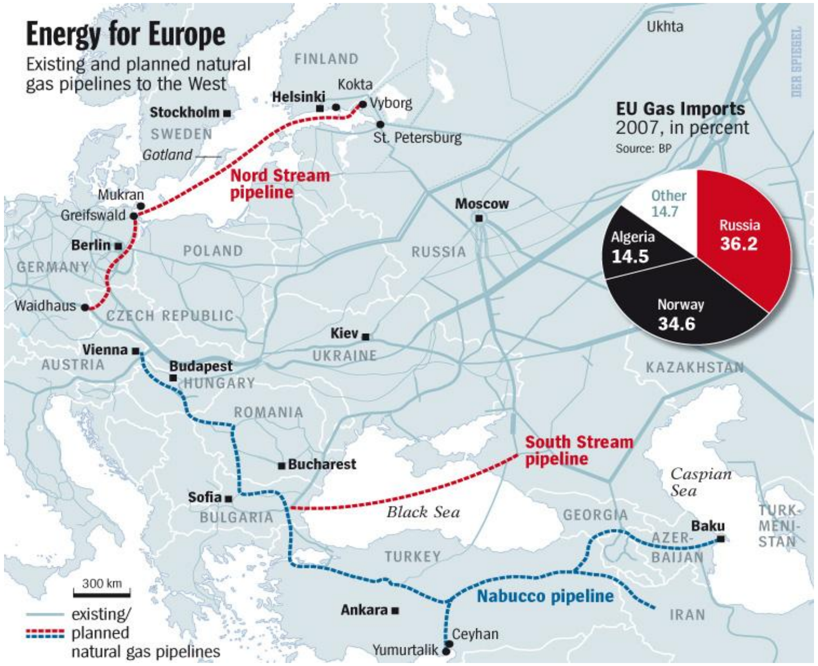
Source: www.gazprom.com

So ….diversification of the sources of supplies is not the only problem to be solved!

Strategy…

- ✓ Stable and long term energy policy
- ✓ Strategic planning
- ✓ Development of the market
- ✓ Pro-ecological solutions: Clean Coal with CCS? Nuclear?
- ✓ Support for an access to high efficient & flexible technology and services

Existing and planned natural gas pipelines to the West



Source: *Der Spiegel*, January 2009

Scheme of the Polish transmission pipeline system, a) existing b) proposed interconnections

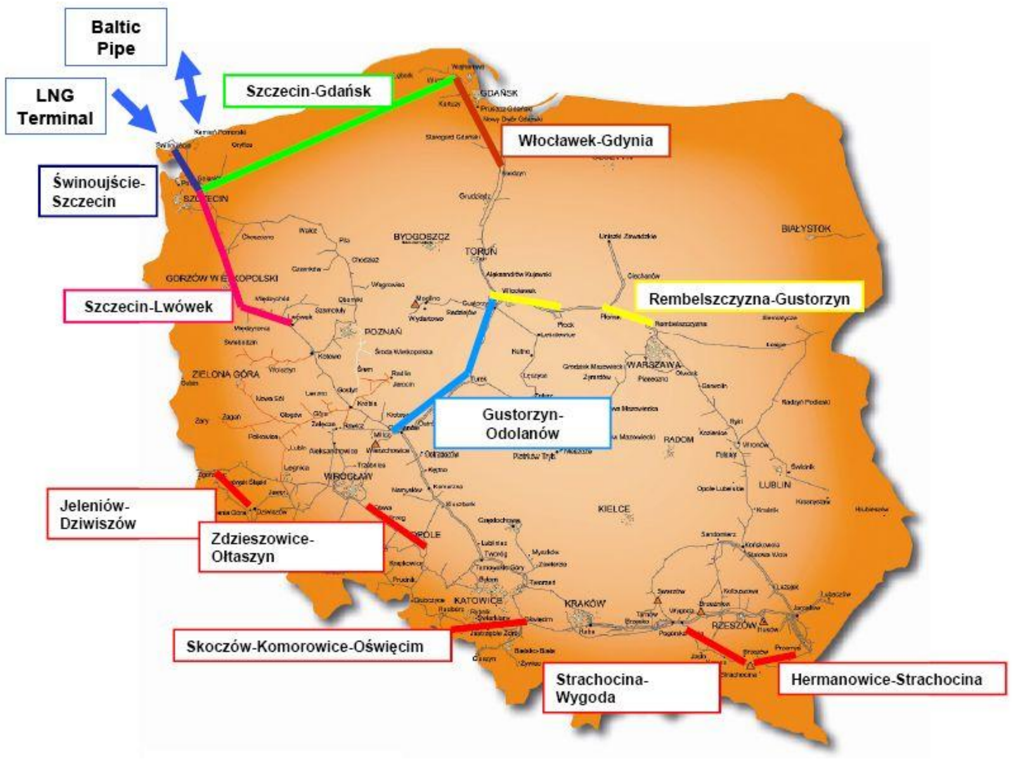
- ✓ Access to grids, gas storage and cross-border connections is difficult for non-incumbents
- ✓ POGC as only one energy supplier dominates the markets

a)

b)

Source: *www.gaz-system.pl, www.gazoprojekt.com.pl and own elaboration.*

Progress of the key projects implemented by Gaz-System S.A.

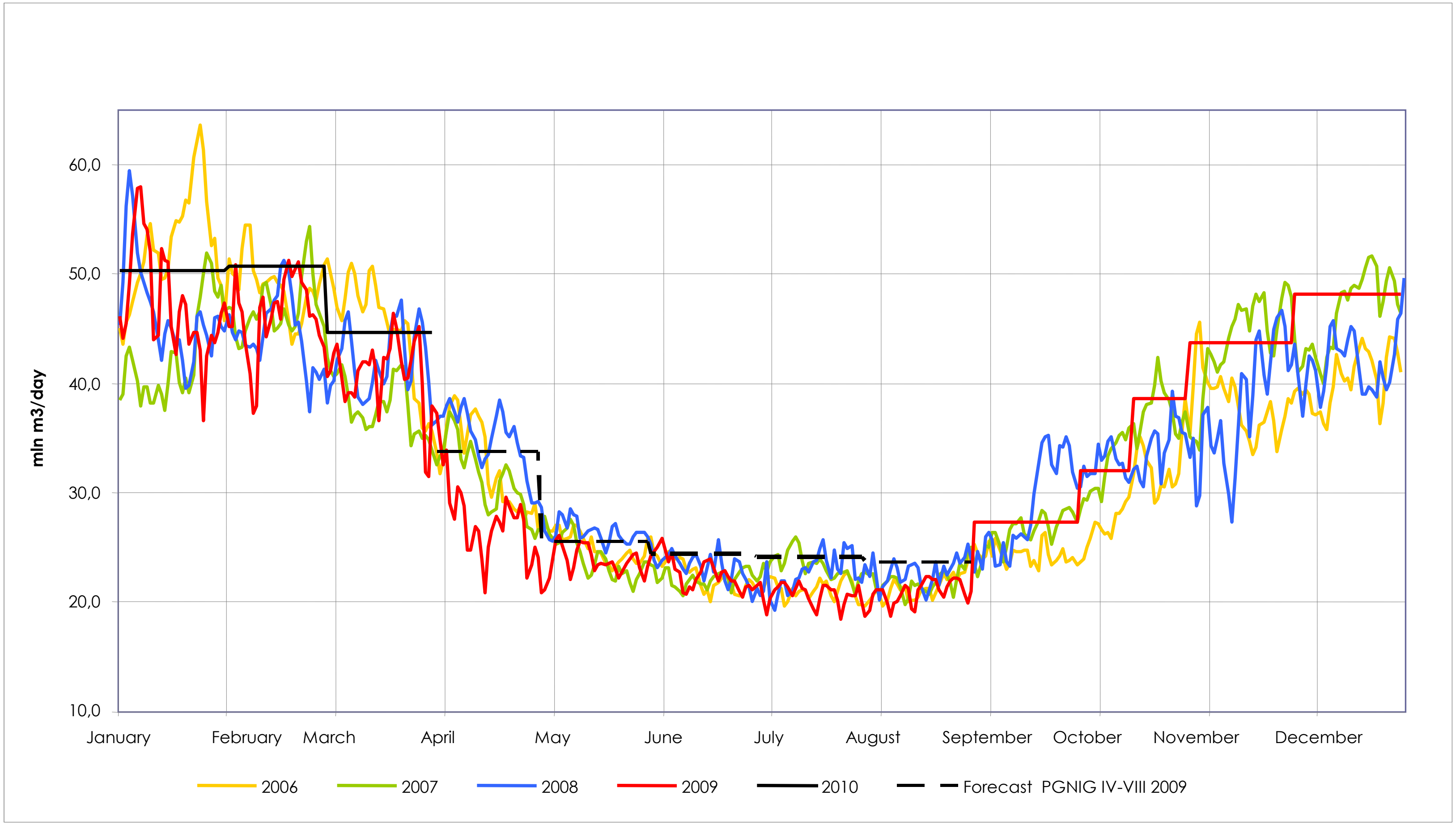


Source: www.gaz-system.pl, GTE+ Demand Scenarios vs. Capacity report, July 2009 .

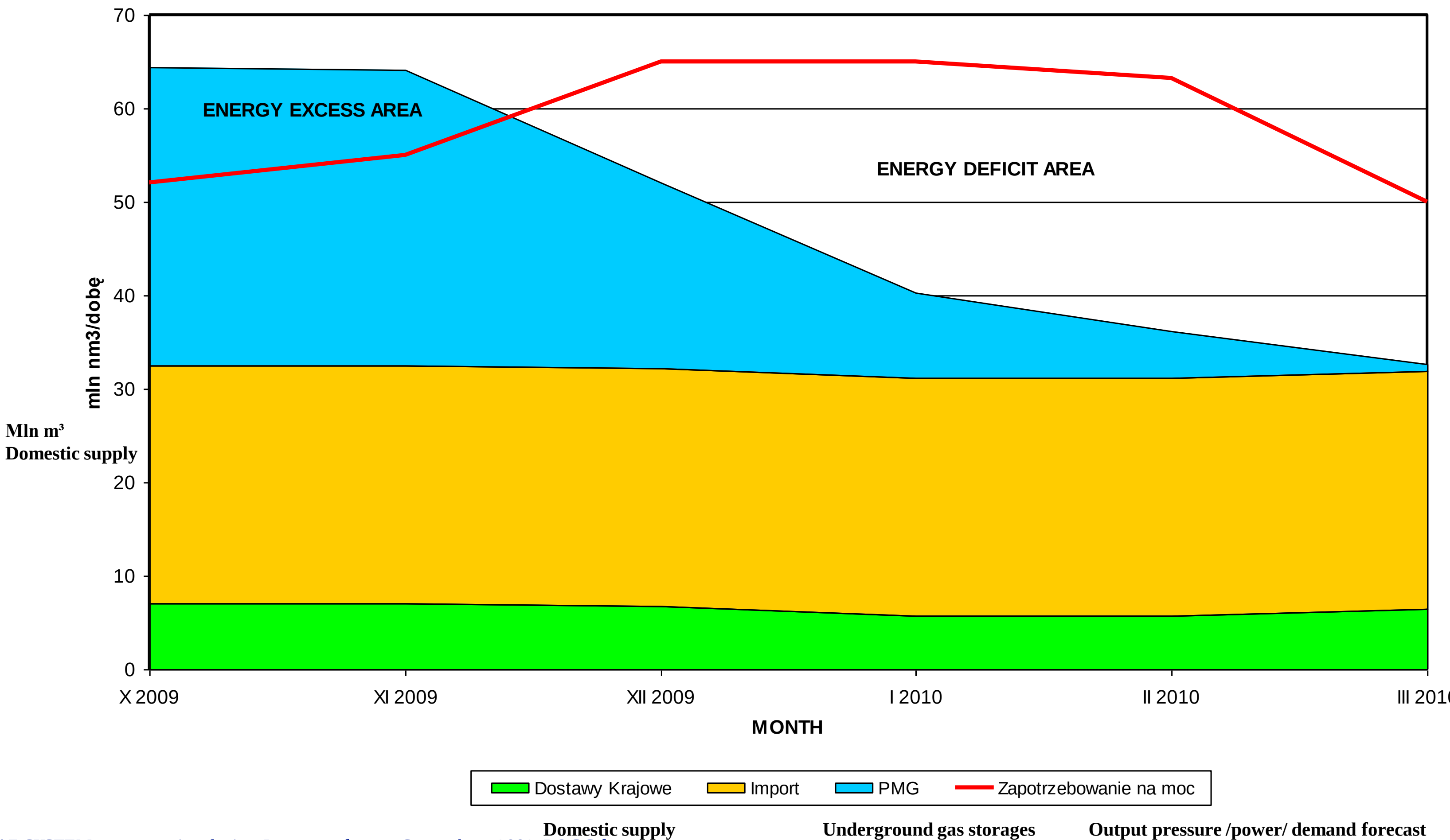
Progress of the key projects implemented by Gaz-System S.A.

Source: www.gaz-system.pl, GTE+ Demand Scenarios vs. Capacity report, July 2009 . ISE own estimation.

Consumption of the natural gas high methane system January 2006 – August 2009 POGC forecast - September 2009 – March 2010

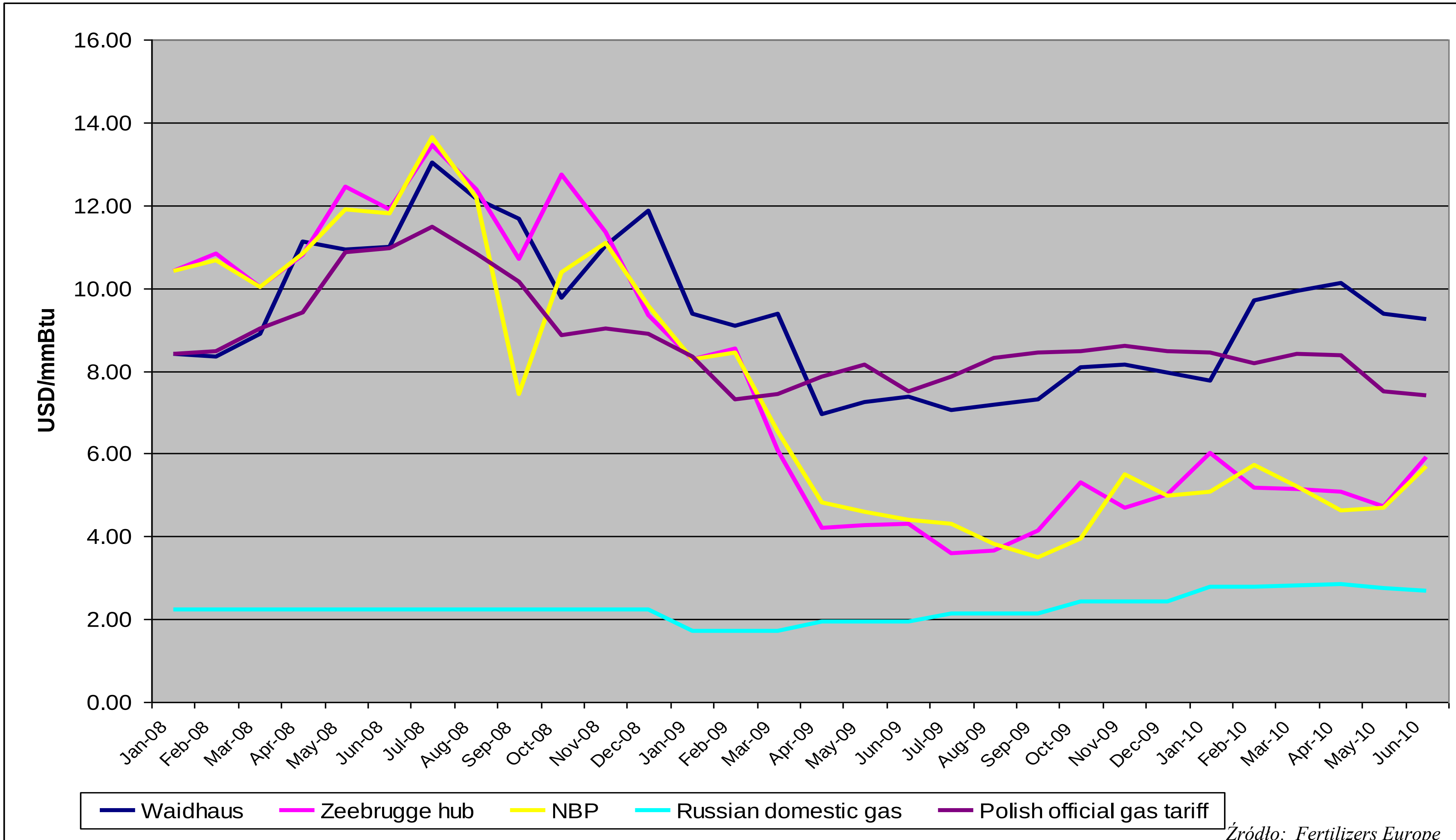


Maximum output power level according to POGC's forecast (max outlet pressure from Polish UGS)



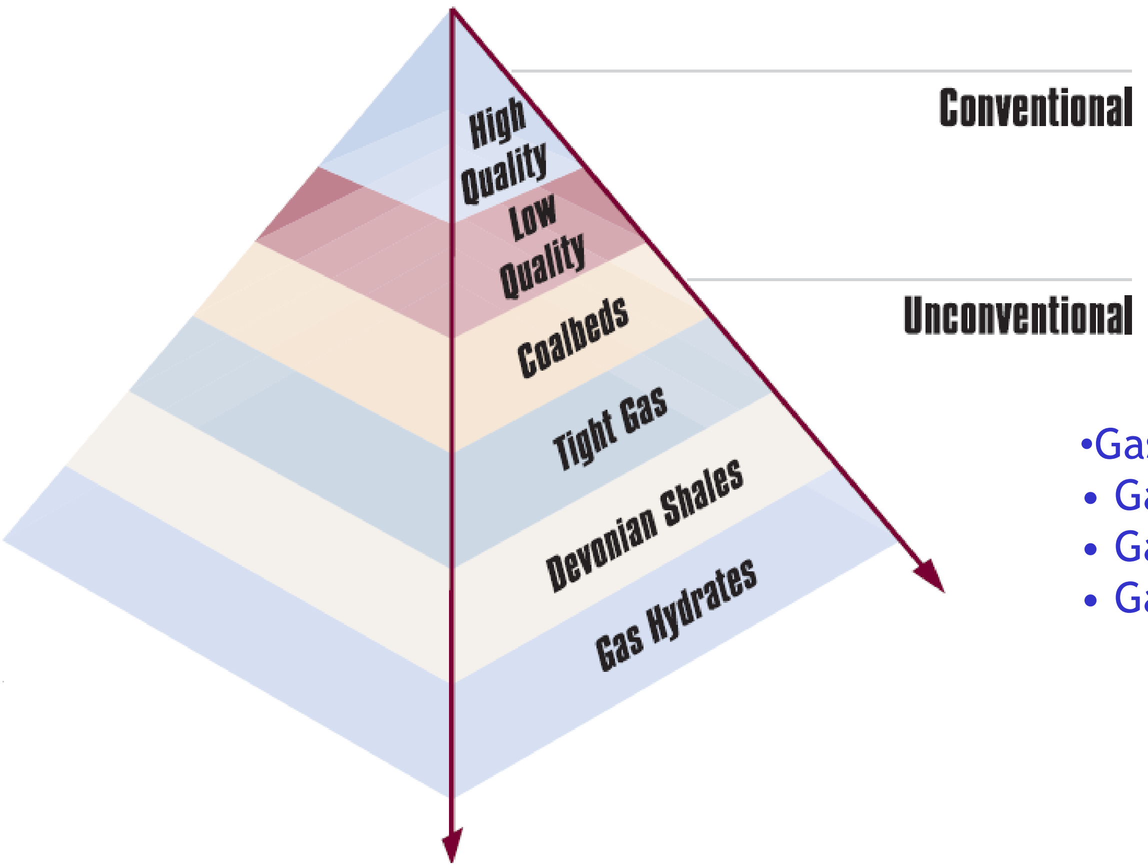
Source: GAZ-SYSTEM presentattion during Jurata conference September. 2009. POGC forecast

Natural gas prices Poland vs UE; Russian domestic gas



Źródło: Fertilizers Europe

Unconventional gas sources

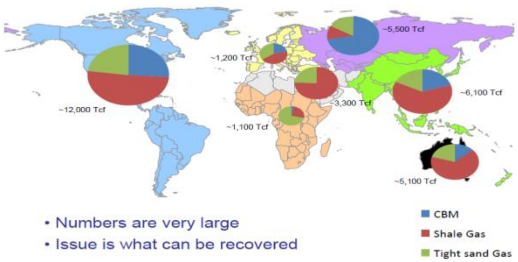


Dry, sweet natural gas with high methane content
- wet, sour gas
- condensate

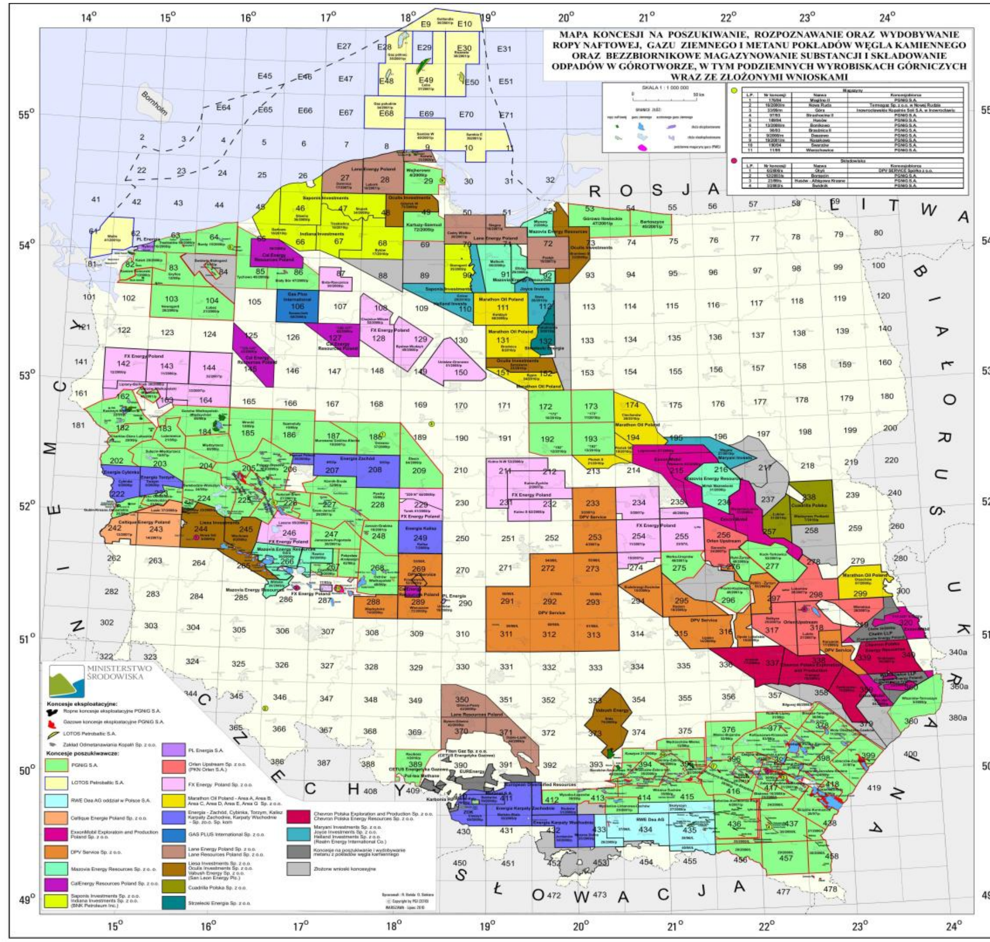
- Gas from the zones of extreme pressure

- Gas from coal seam (Coalbeds)
- Gas from tight sands (tightgas)
- Gas from shale (Devonian shales)
- Gas Hydrates

Unconventional gas-myth or reality?



- Europe is still preliminary, „infantile” exploration phase.
- Little knowledge of recoverable resources.
- No one is at the stage of production commercialization.



OIL&GAS Blocks and concessions for shale gas in Poland.
Source: Ministerstwo Środowiska RP 01/07/2010, www.mos.gov.pl

Unconventional gas-myth or reality?

European Unconventional Gas activity

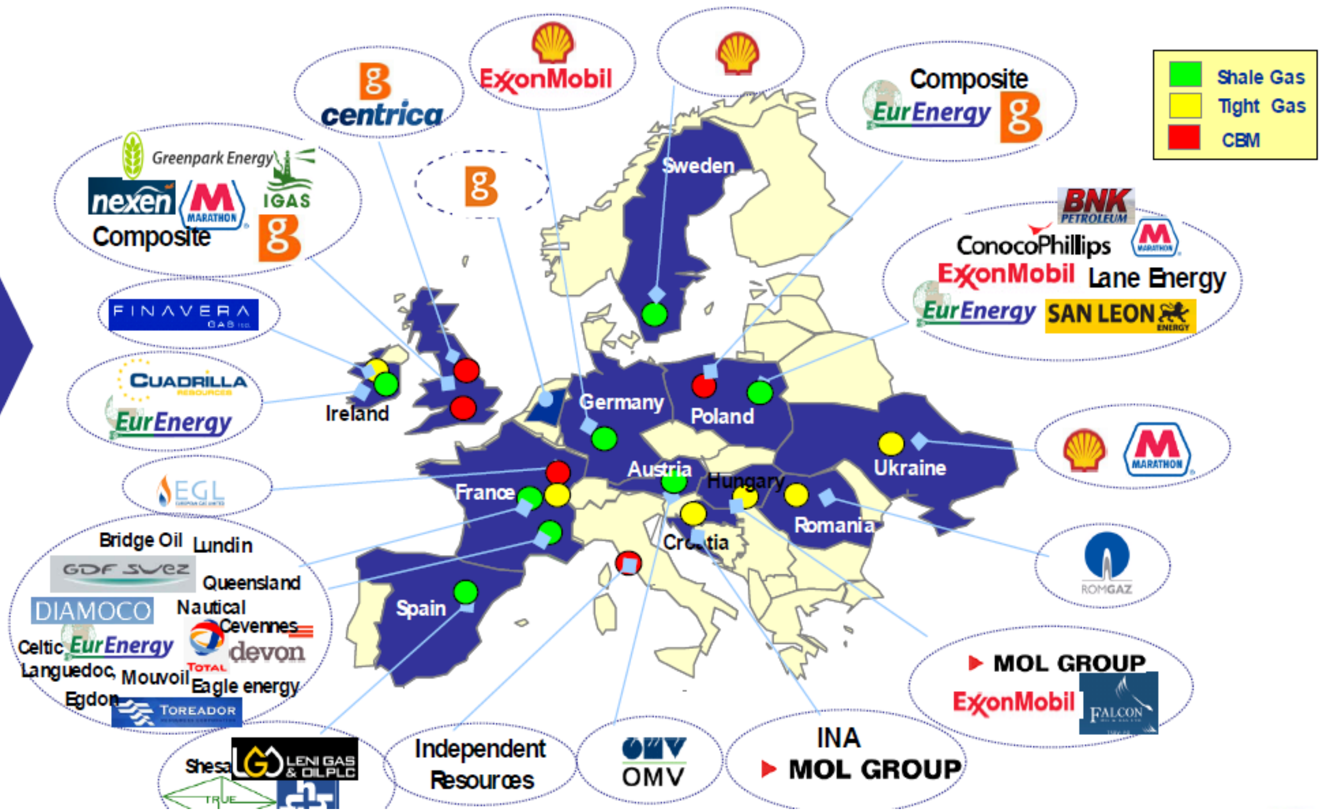
5 Years ago
Hungary
FALCON

3 Years ago
German
y
ExxonMobil
MOL GROUP
Hungary
FALCON
ExxonMobil

Today

Current overview of known companies with European unconventional gas positions

IOC's:	XOM, Shell, COP, Total
Large E&P Co's:	MRO, Devon, Nexen, BG
State Oil Co's:	OMV, MOL
European Utilities	Centrica, GDF Suez
Niche players	Eurenergy; Falcon, Lane



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Questions ?

Thank you very much !

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