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Europe: prospects of indigenous natural gas production

Gas dialogues

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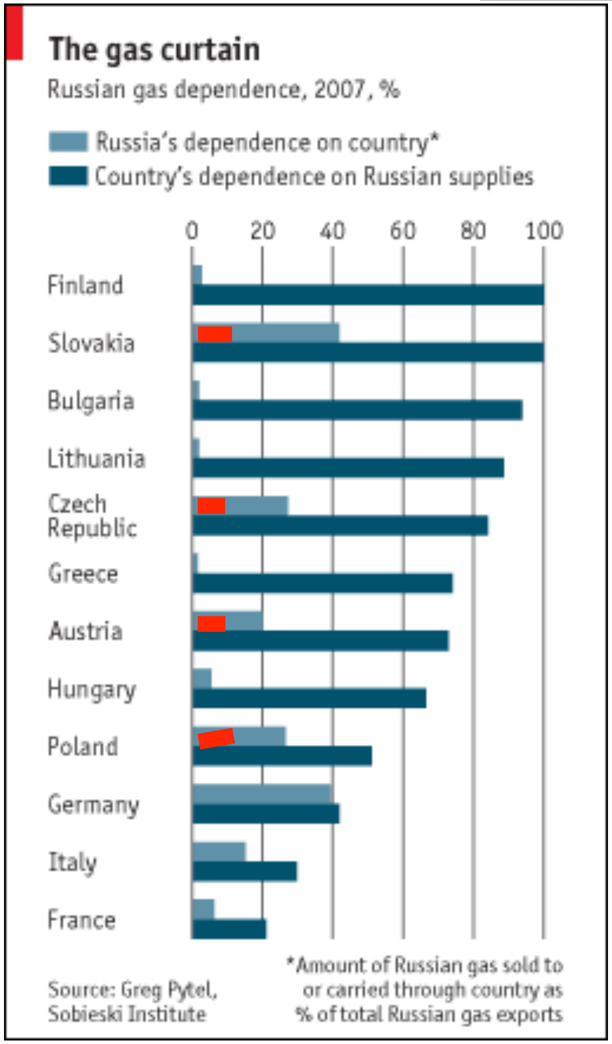
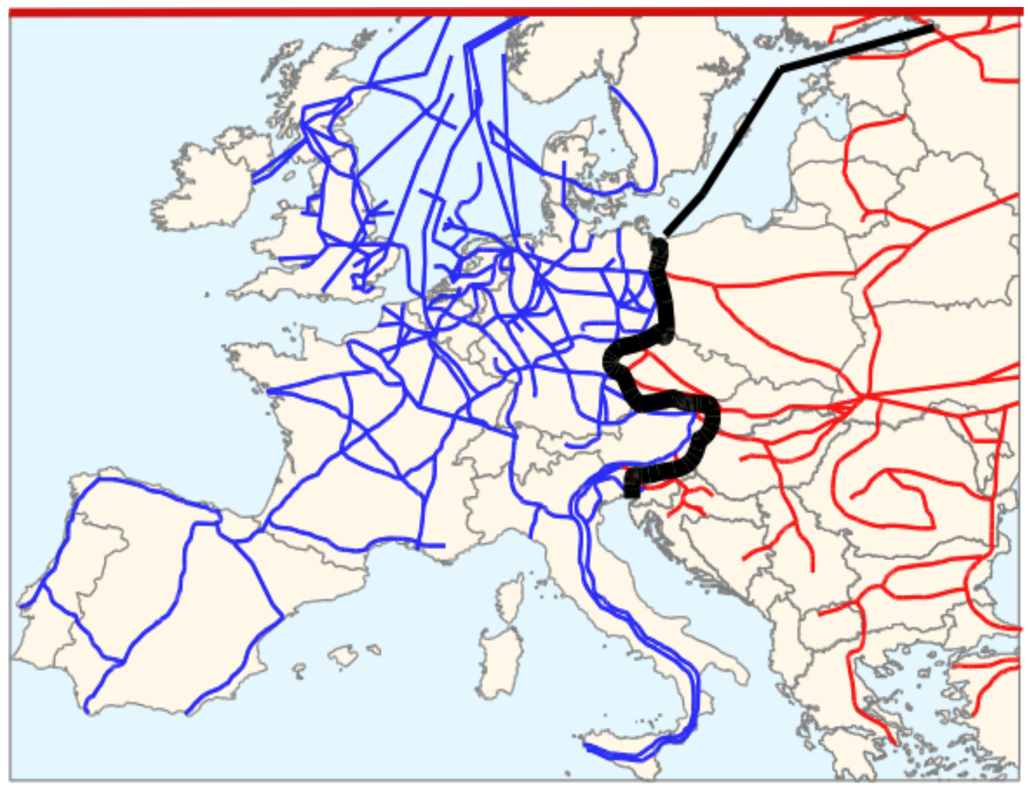
European pipelines – **Gas Curtain**



source: The Economist

Dependence on Supplies
v
Dependence on Transit



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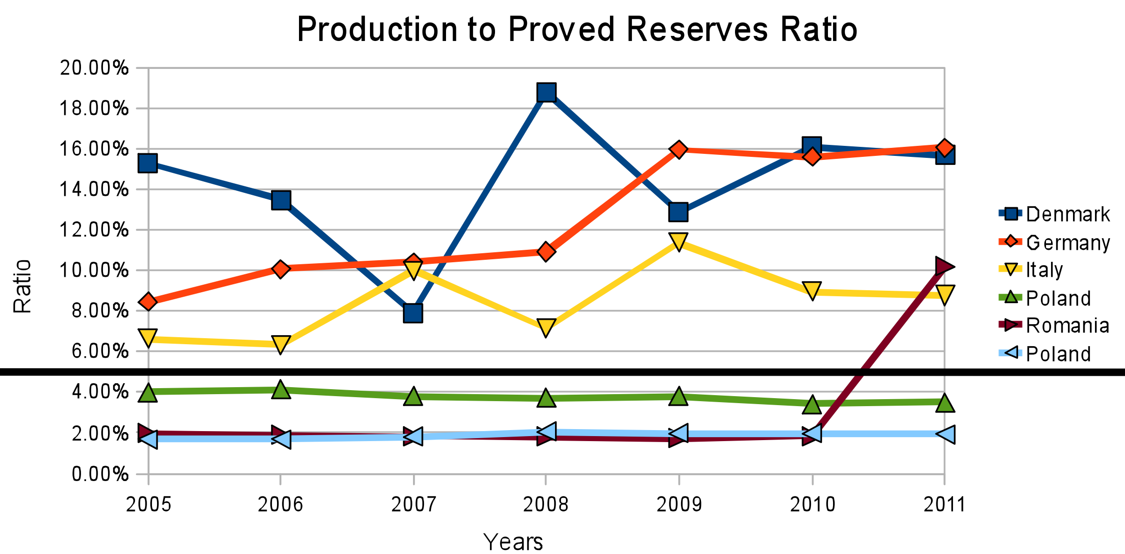
Europe: gas reserves v production (1)

Country		2005	2006	2007	2008	2009	2010	2011
Denmark	*Production*	10.4	10.4	9.2	10.1	8.4	8.2	7.1
	Proved reserves	67.96	77.03	116.11	53.7	65.14	50.97	45.31
	P/PR Ratio	**15.30%**	**13.50%**	**7.92%**	**18.81%**	**12.90%**	**16.09%**	**15.67%**
Germany	*Production*	15.8	15.6	14.3	13	12.2	10.6	10
	Proved reserves	186.91	154.91	137.07	118.94	76.46	67.96	62.3
	P/PR Ratio	**8.45%**	**10.07%**	**10.43%**	**10.93%**	**15.96%**	**15.60%**	**16.05%**
Italy	*Production*	11.1	10.1	8.9	8.5	7.4	7.6	7.7
	Proved reserves	167.09	159.44	88.92	118.94	65.14	84.96	87.79
	P/PR Ratio	**6.64%**	**6.33%**	**10.01%**	**7.15%**	**11.36%**	**8.95%**	**8.77%**
Poland	*Production*	4.3	4.3	4.3	4.1	4.1	4.1	4.3
	Proved reserves	107.61	103.93	112.9	110.45	107.61	118.95	121.78
	P/PR Ratio	**4.00%**	**4.14%**	**3.81%**	**3.71%**	**3.81%**	**3.45%**	**3.53%**
Romania	*Production*	12.4	11.9	11.5	11.4	10.9	10.9	11
	Proved reserves	623.05	627.86	628.15	628.71	628.71	594.73	107.61
	P/PR Ratio	**1.99%**	**1.90%**	**1.83%**	**1.81%**	**1.73%**	**1.83%**	**10.22%**
Ukraine	*Production*	18.6	18.7	18.7	19	19.3	18.6	18.2
	Proved reserves	1104.5	1099.67	1026.33	923.25	982.72	934.57	934.57
	P/PR Ratio	**1.68%**	**1.70%**	**1.82%**	**2.06%**	**1.96%**	**1.99%**	**1.95%**

Europe: gas reserves v production (2)

	2005	2006	2007	2008	2009	2010	2011
Denmark	15.30%	13.50%	7.92%	18.81%	12.90%	16.09%	15.67%
Germany	8.45%	10.07%	10.43%	10.93%	15.96%	15.60%	16.05%
Italy	6.64%	6.33%	10.01%	7.15%	11.36%	8.95%	8.77%
Poland	4.00%	4.14%	3.81%	3.71%	3.81%	3.45%	3.53%
Romania	1.99%	1.90%	1.83%	1.81%	1.73%	1.83%	10.22%
Ukraine	1.68%	1.70%	1.82%	2.06%	1.96%	1.99%	1.95%



Another metric of
Gas Curtain

Example: gas in Poland

2 – 10 Tcm – prospective shale gas, tight gas, CBM

2 – 4 Tcm – prospective gas reserves below 3000m depth

99 bcm – proved (developed) CBM

source: Ministry of Environment

1.78 (0.89 - 2.67) Tcm – prospective reserves

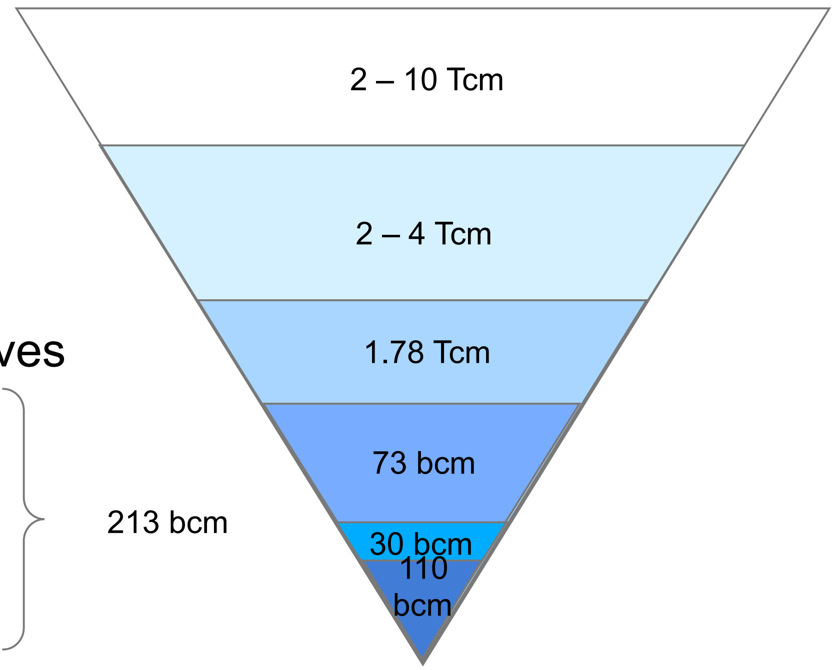
30 bcm – even further proved reserves

73 bcm – further proved reserves

110 bcm – proved (developed) reserves

213 bcm

source: Polish Geological Institute



Until recently Poland never experienced exploration and development campaign on competitive basis (free market rules, modern technologies)

Poland: local gas production prospects

Local conditions:

- monopolistic setting

- the government unaccustomed to working with large private companies

- local conditions not settled

Companies

- do not understand local conditions

- do not understand they are not understood by the government

No significant production can be expected

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Germany: local gas production prospects

Local conditions:

- strong pressure on climate change policies implementation
- focus on renewable energy
- local conditions not settled

Companies:

- understand local conditions
- strong service and technical background

No significant production can be expected

France: local gas production prospects

Local conditions:

- state controlled setting

- pressure on jobs and business development

- nuclear industry strong position

Companies:

- understand French way of doing business

- vibrant local industry market

Shale gas developments are likely to go ahead in form of a national project (like TGV or nuclear industry was developed)

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The UK: local gas production prospects

Local conditions:

- politicians are learning and are committed

- pressure on jobs and business development

- significant experience on bureaucratic level of such developments

- questions about social acceptance

Companies:

- feel very comfortable in doing business

- competitive and open market for services

Shale gas developments are quite likely to go ahead in a similar as the North Sea in the past

Ukraine: local gas production prospects

Local conditions:

- excellent pipeline connections to Europe

- increasingly growing independent and opening new possibilities

- local big business sensing a great opportunity

- difficult local practices

Companies:

- sense great opportunities also

- find local conditions very challenging

It is really on the balance: huge incentives “for” but still much “against”

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Supply pressure on Europe's markets

The UK (from the west):

- LNG hub for European supplies
- prospect of the local production back to high levels
- the City's trading experience and flexible market approach

France (in the middle):

- balancing exporter
- looking to improve trade balance

Ukraine (from the east):

- potential big supplies on the European markets
- above ground challenges

High uncertainty in terms of scale
Medium to low probability high production scenarios

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QUESTIONS?

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