Energy Security Issues – INFORSE Perspective

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EU dependency on imported oil and gas is growing.

EUROSTAT (16 February, 2007):

EU – 25	Jan-Nov 2006	Jan-Nov 2005
Energy Trade Deficit (bn. EUR)	-259,7	-202,3
Total Trade Deficit (bn. EUR)	-165,3	-102,2

FUEL IMPORTS IN NEW EU MS in % (2005)

	Natural Gas	Oil
ESTONIA	100	100
SLOVAKIA	100	98,9
CZECH REP.	100	98,7
LITHUANIA	100	94,7
SLOVENIA	99,4	100
LATVIA	88,6	100
HUNGARY	80,6	81,8
POLAND	66,4	100
EU – 15	64,9	92,5

ENERGY SECURITY

- January 2007: Russia shut off the oil pipeline across Belarus to Germany, Poland and other parts of Eastern Europe.
- August 15th 2006: Russia stopped the oil deliveries to Lithuania via pipeline Druzhba-1 (the same happened to Latvia and Poland in 2004).
- January 2006: closed pipeline natural gas through Ukraine.

Oil and gas are the new weapons.

Why we should take Energy Security issues more seriously?

EU share of RE on PE consumption

Year 2000 – 5,80 %
Year 2004 – 6,08 %
Year 2005 – 6,38 %
5-year average growth: 0,12 %/yr.

Eurobarometer : „*it's obvious that the rate being followed at present will not make it possible to reach the objective that's set for the European Union countries (12% until 2010). The European Commission is expecting a 9% share in 2010.“ (increase 0,5%/yr.)*

	RE electricity production (share on EU electr. consump.)
1997	13,90 %
2005	13,97 %

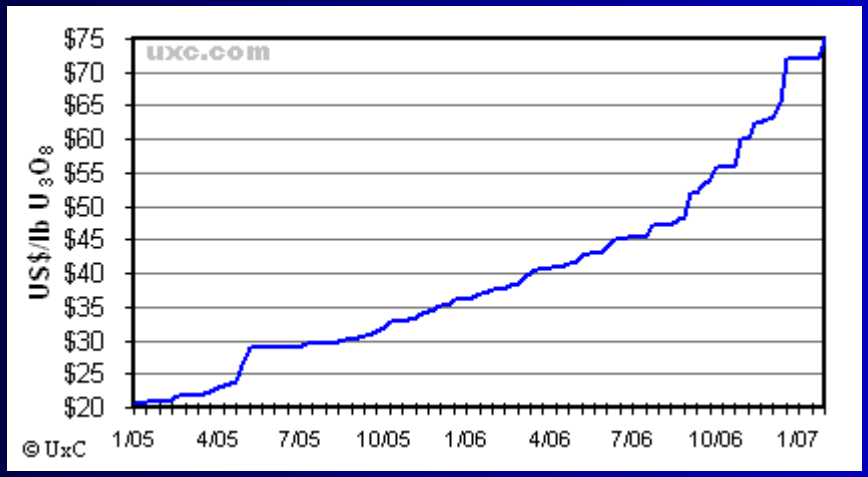
8-year average increase = 0,01 %/yr.

EU RES-E directive target : 22,1 % (2010).

EU electricity generation: +2,0%/yr. (5-year average).

Present policies = the road to Energy crisis.

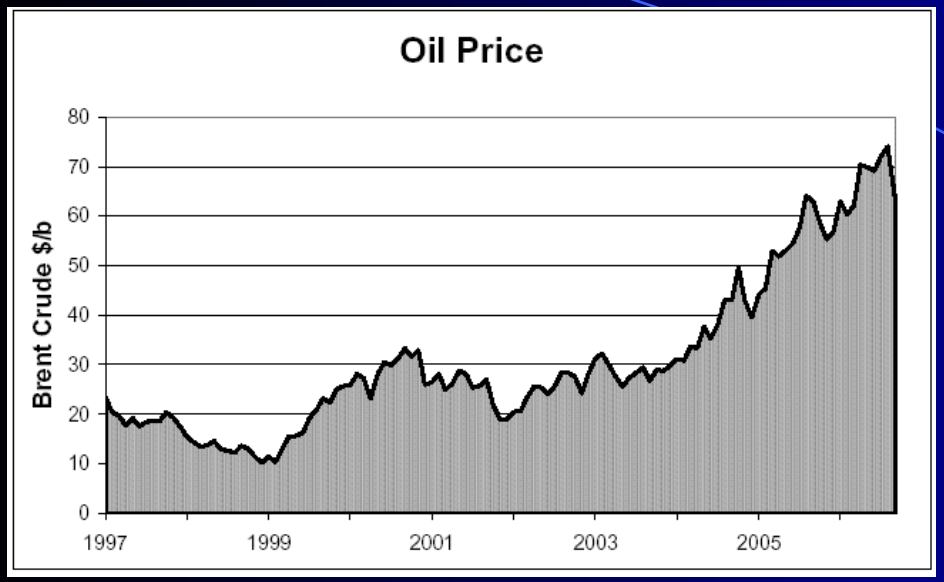
What the energy prices are saying?



Uranium price increased from 7 USD per pound in 2000 to 75 USD in February 2007.

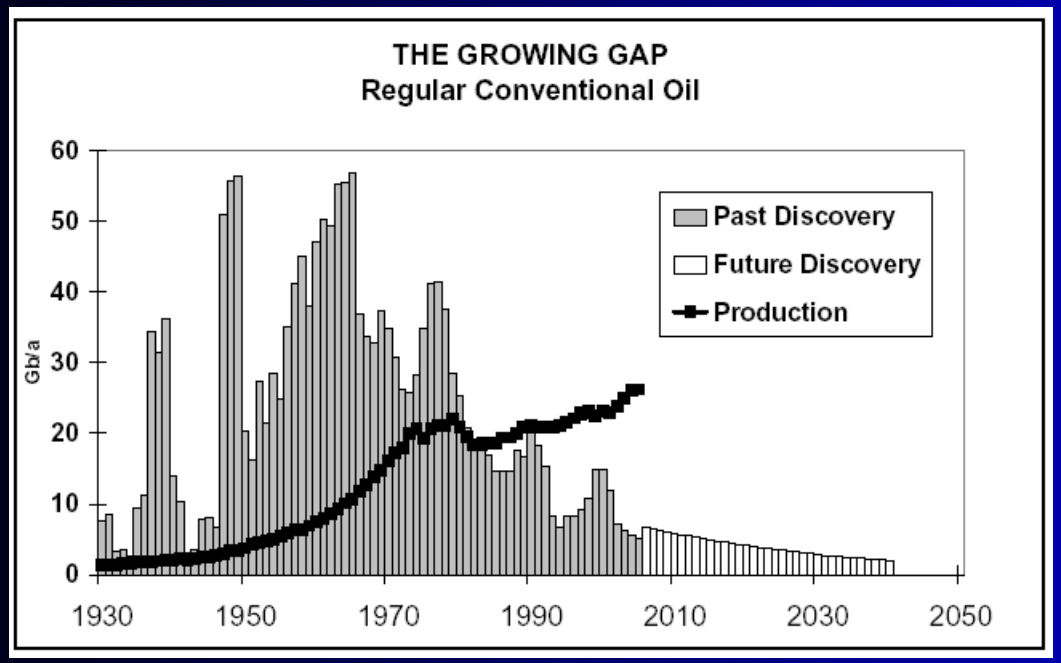
EU nuclear power generation 5-year average: +1,8 %/yr.

OIL

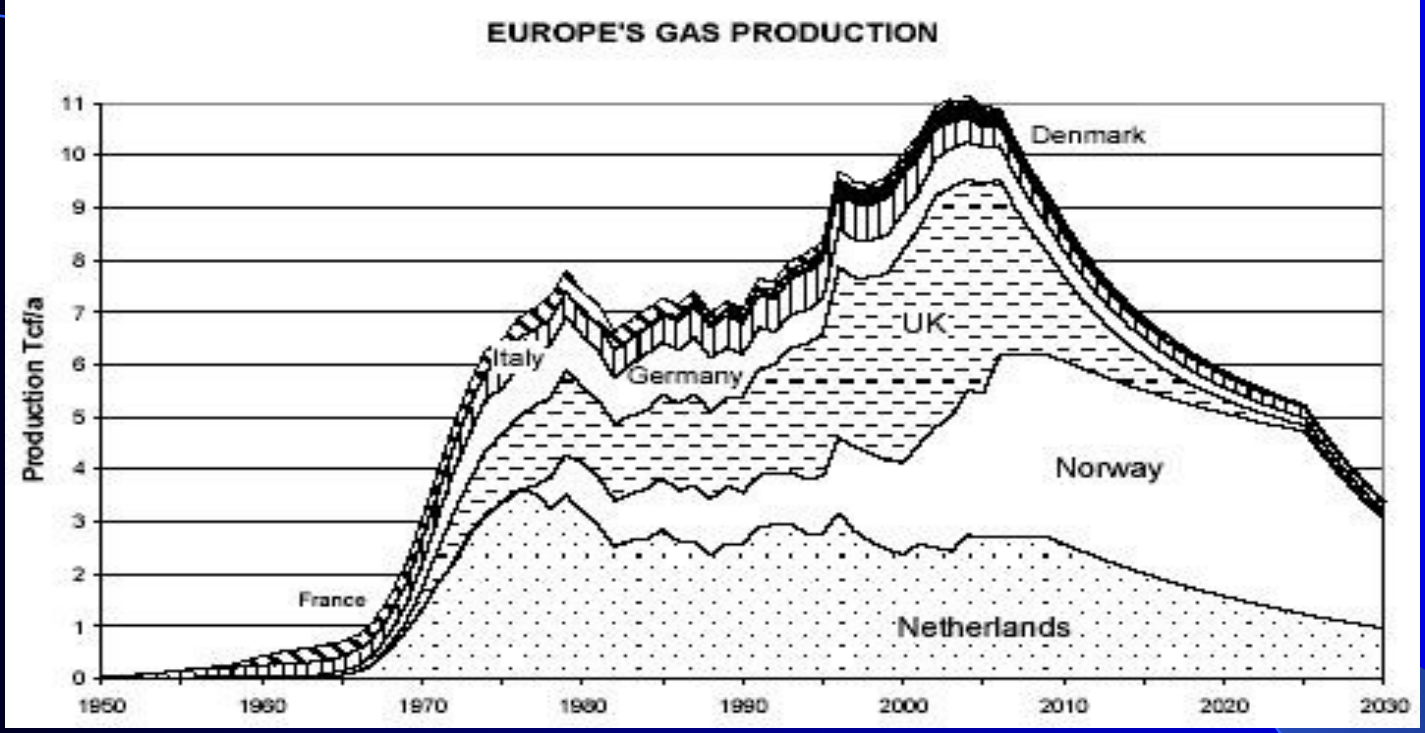


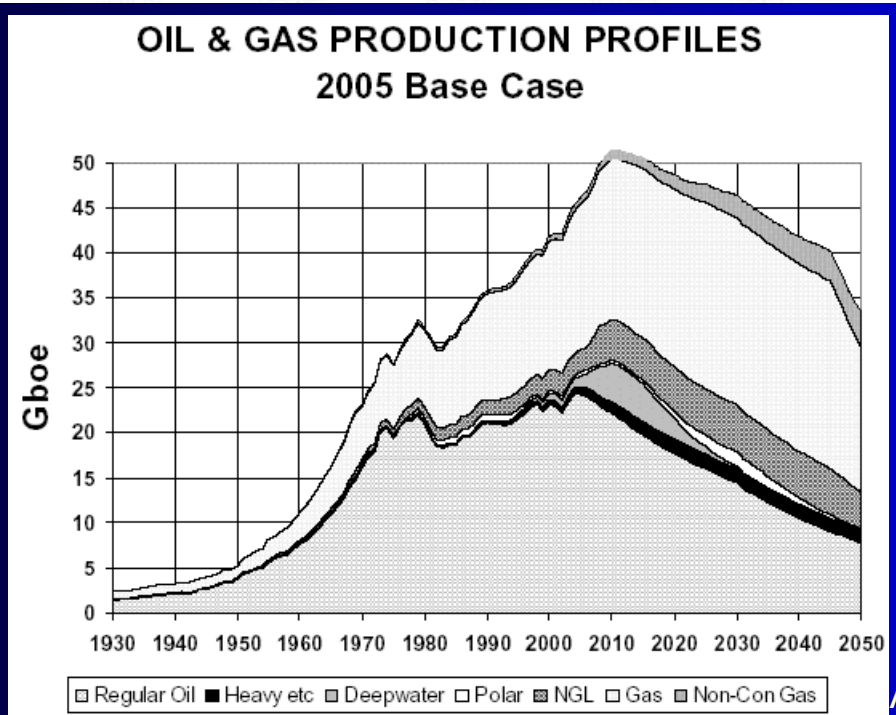
Natural gas price is following the oil pattern.

Prices reflect the political problems and physical constrains (declining reserves).



ASPO News, February 2007





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PEAK OIL NEWS

BP statistics 2006 : 33 out of 49 largest oil producing countries are behind the peak production. In 1970 there were only 3 (incl. USA).

UK production	Year 2006
Oil	- 9,3 %
Natural gas	- 9,1 %

British energy statistics (February 2007) .

UK production peaked in 1999 (Norway in 2001).

Cantarell (Mexico) the world's second-largest oil field is declining faster than previously estimated.
Monthly production peaked in 2004 at 2,1 million barrels/day and has fallen more than 28.5% since then (1.44 million b/d in December 2006).
Mexico has already warned US oil importers that it will be unable to fulfill some existing contracts.

Mexican and North Sea production will decline by 800,000 to 1 million b/d in 2007 which is more than enough to offset new production coming on stream elsewhere.

It’s getting harder every year for the gainers - Angola, Brazil, Russia, Canada -to offset the decliners.

All the world’s extra oil supply is likely to come from expensive, energy intensive, hard-to-develop and environmentally damaging unconventional sources (Canadian oil sands, Venezuela’s Orinoco tar belt).

Canadian oil sands: it takes vast quantities of scarce and valuable potable water and natural gas to turn unusable oil into heavy low-quality oil.

RUSSIA

	Oil production growth
2003	11,0 %
2004	9,0 %
2005	2,7 %
2006	2,5 %
2007	2,1 % (forecast)

Domestic oil consumption growth: 1,5%/yr. Oil exports growth - ?

CHINA - The second largest oil importer in the world.

Question : How are the 1,3 billion Chinese going to cope with their growing needs for energy?

China's share of global oil consumption has risen from 3.5 percent in 1990 to about 8.2 percent in 2006. The world = 1.8 % growth.

New oil and natural gas pipelines from Russia and Kazakhstan to China are being build.

China imported 15,97 million tons of oil from Russia in 2006, 20 % more than in 2005.

What does this mean for the EU?

The age of cheap energy is over.

Competition for energy supplies will be harder.

Energy security should be the primary issue.

Switching to the RE means avoiding the problems.

KEY QUESTIONS

- What should be our reaction to the upcoming energy problems (price increases, shortages)?
- Do we have a plan?
- Are our governments prepared?
- Does EU has a plan ?

INFORSE RESPONSE – PLAN B

PLAN B = Low Energy Living and Carbon-Neutral Society

Plan B means set of measures for individuals, communities and countries which should be developed in **short period of time** (typically in less than one year) in case of emergency, sharp rise of fossil fuels prices or when the large part of population is spending too much on energy (like 30% of family income for the poorest in Slovakia).

For whom:

- Individuals (families)
- Communities
- Countries

Energy needs:

- Heat
- Electricity
- Transport fuels

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1. INDIVIDUALS

Possibilities to reduce (substitute) fossil fuels do exist in the area of heat and warm water production. The measures are cost effective under present conditions and the technology is available.

Limited possibilities exist in transportation – mainly in rural areas (biodiesel).

To cover electricity needs by individuals (independent power production) is practically impossible without strong governmental support.

1.1. Heat

Solar energy - solar collectors. Build it yourself – cheap and fast development of technology is possible. Back up for winter energy needs is needed.

Biomass – wood chip burners (furnaces). Cheap and fast introduction of technology is possible. Resources (wood) can be limited at some locations (big cities). Fast growing plants- wood plantation should be considered.

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What is needed to develop this option?

- Information

What is the payback time of technology needed?

- Solar collectors – 7 years (Slovakia, 2006 energy prices)
- Boilers for wood chips, pellets, and logs – between 3-7 years.

Energy savings

- Insulation
- Regulation

What is needed to develop this option?

What is the payback time of technology needed?

- In general less than two years for energy savings in houses (isolation).

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1.2. Electricity

The power production should be decentralized with communities and regional governments as the main players.

What is needed to develop this option?

- Feed-in tariffs (government)

1.3. Transportation

Converting diesel car to biodiesel fuelled.

Biodiesel – cold pressed rapeseeds, 1 ha of rape (production of 1000 liters of biodiesel per year) can cover fuel needs of one car per year. Or purified used cooking oils from restaurants.

What is needed to develop this option?

- Information (Folkecenter example)
- Biodiesel production (cooperatives, communities, farms)

Where to get the money for investments? Payments from saved energy costs.

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2. COMMUNITIES

Decentralized heat and power production is possible on communal level. This option should be connected to local food production with the aim of transport fuel reduction. In general best option exist in rural areas.

2.1. Heat

Biomass waste products (wood, straw) should be preferably used on communal level for heat purposes. Centralized district heating systems should have the priority.

2.2. Electricity

Wind power generation, small hydro power plants. Biogas for heat and power production. Energy plantation for power production?

2.3. Transportation

Biofuels production on communal level - biogas from wastes (wood waste even in cities).

Example: **Gothenburg. 3000 cars, 19 biogas fuelling stations, growing interest.**

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3. COUNTRIES

Problem Nr. 1 – transportation fuels

Provided that heat and electricity can be produced on national level quite easily.

Example:

- Swiss per capita oil consumption in the Second World War was about 0.15% of current US per capita oil consumption. Switzerland survived a six-year complete oil embargo during World War II. They did it primarily by electrifying their transportation system.
- Swedish government: Oil free Sweden until 2020.

What is needed?

- informing transportation professionals, decision makers, and the public at large of the value and advantages of electrifying transportation operations, and the electrification of public transport systems.
- For individual transportation strict rules on energy efficiency (consumption by cars, 4 ltr./100 km is possible with today's technology) and shift to biofuels like biogas (methane) from organic waste and biodiesel from different crops. Production of bioethanol from grain or other foodstuffs should be avoided.