

Renewable Energy
How to tackle infrastructure bottlenecks
The role of regulatory bodies

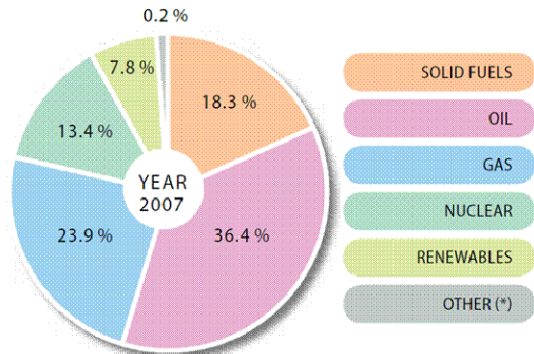
Christian Schönbauer
GFSE Vienna, 29 April 2011

The slide features the E-CONTROL logo and tagline in the top right corner. The main visual is a blue-tinted image of a power transmission tower and electrical infrastructure. Below the image, the title and speaker information are centered.

Energy consumption in EU-27 by fuel 2007



Gross Inland Consumption – EU-27 BY FUEL



Source: <http://ec.europa.eu>

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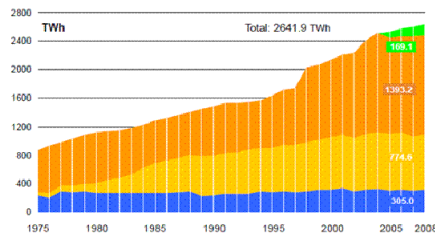
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Electricity supply in Europe (ENTSO – UCTE) 1975 - 2008



UCTE Net generation history from 1975 to 2008

All values are calculated to represent 100% of the national values
UCTE database as of 06 April 2009



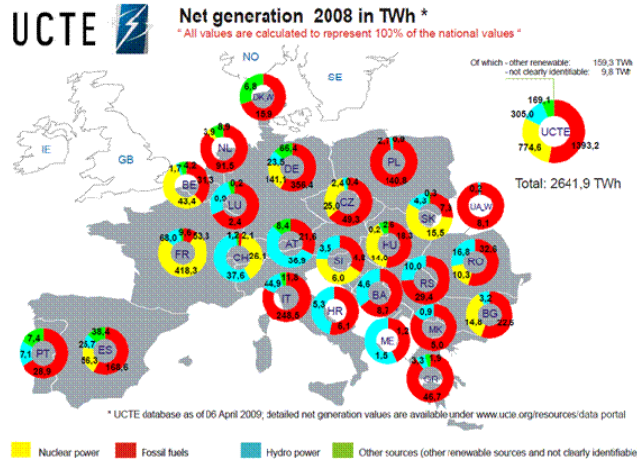
	Fossil fuels:	1393.2 TWh
	Nuclear power:	774.6 TWh
	Hydro power:	305.0 TWh
	Other sources:	145.2 TWh
	Of which:	
	- other renewable:	159.3 TWh
	- not clearly identifiable:	9.8 TWh

Source: www.entsoe.eu

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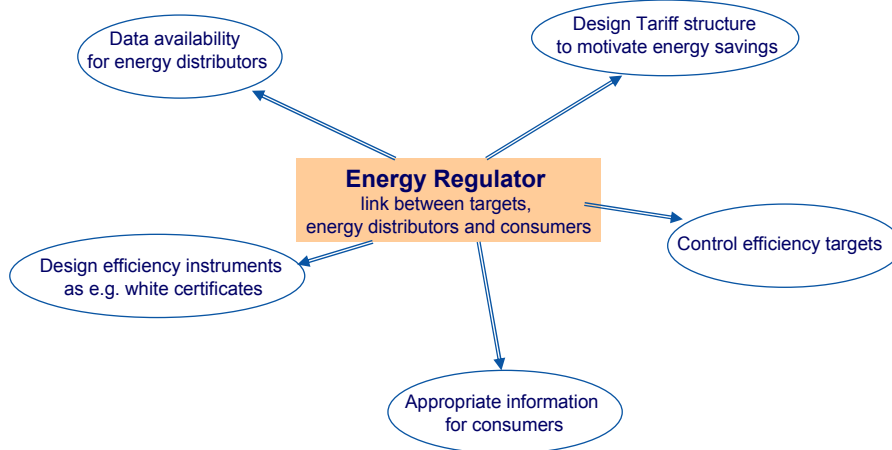
Electricity supply in European countries (ENTSO – UCTE), 2008



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Energy Efficiency - Role of Regulator



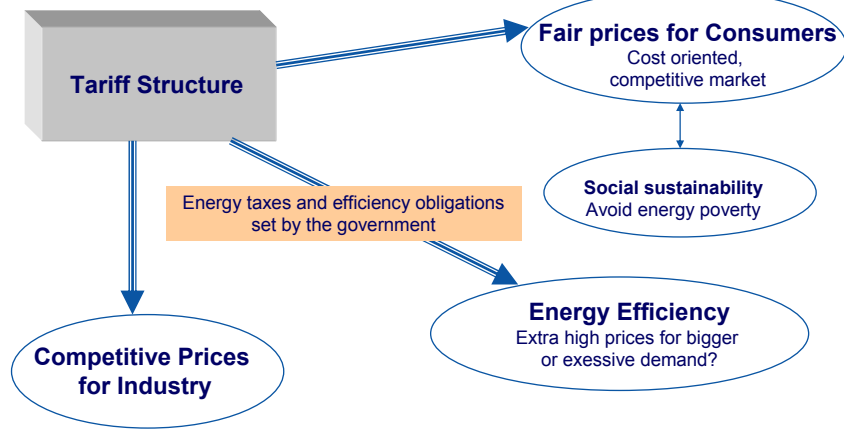
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Energy price structure / Tariff structure



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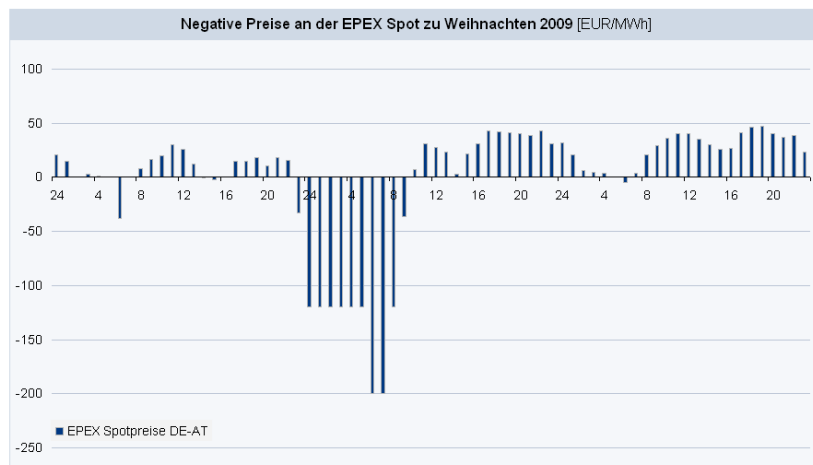
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Perspectives – Chances and risks

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Volatile electricity generation versus electricity demand - Negative electricity prices as consequence of volatilities



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RES-E Infrastructure needs for Wind power



- Transmission grids
- Stand by (conventional) power plants
- Storage capacities

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RES-E Infrastructure needs for Photovoltaic



- Decentral supply structure
- Link to smart meter
- Combined new electricity products

RES-E - Substitution of actual production volumes?



Current electricity supply (EU27) fossil and nuclear part:

- 990 TWh coal
760 TWh gas
115 TWh oil
- Additional
935 TWh nuclear energy

Technology change needs infrastructure



- 1.000 TWh Windpower needs about 100 to 200 additional new high voltage transmission grids from north to south Europe
- 1.000 TWh Photovoltaic needs 100 to 200 additional new high voltage transmission grids from south to north Europe
- New storage capacities
- Demand side reaction

Success factors



- Investments into generation plants: economic feasibility (with reduced subsidy demand)
- Investment into infrastructure (grid): public acceptance
- Decentral supply structure: new electricity products, Modernisation of metering, demand side reaction



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