COMPETITION IN THE EUROPEAN ENERGY MARKET

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Competition: Well Balanced Energy Supply

…have a regionally different focus.

Asia:
- Development of primary energy supply
- Affordable energy
- Environmental issues are not priority

Trends 2000:
- Liberalization of electricity markets
- Low energy prices
- Generally conflict-free world politics
- Anthropogenic environmental changes in discussion

USA:
- Security of supply through energy mix
- Promotion of clean coal technologies
- Promotion of renewables

Reliabiltiy of Supply

NME USA

Asia

EU

2006

2000

D

Trends 2006:
- Adapting processes to market liberalization
- High energy prices
- Conflict-filled world politics
- Acknowlegdement of anthropogenic environmental changes

EU:
- Emissions trading
- Promotion of renewables
- Balanced energy mix
- Phasing out of nuclear energy

Profitability

Environment
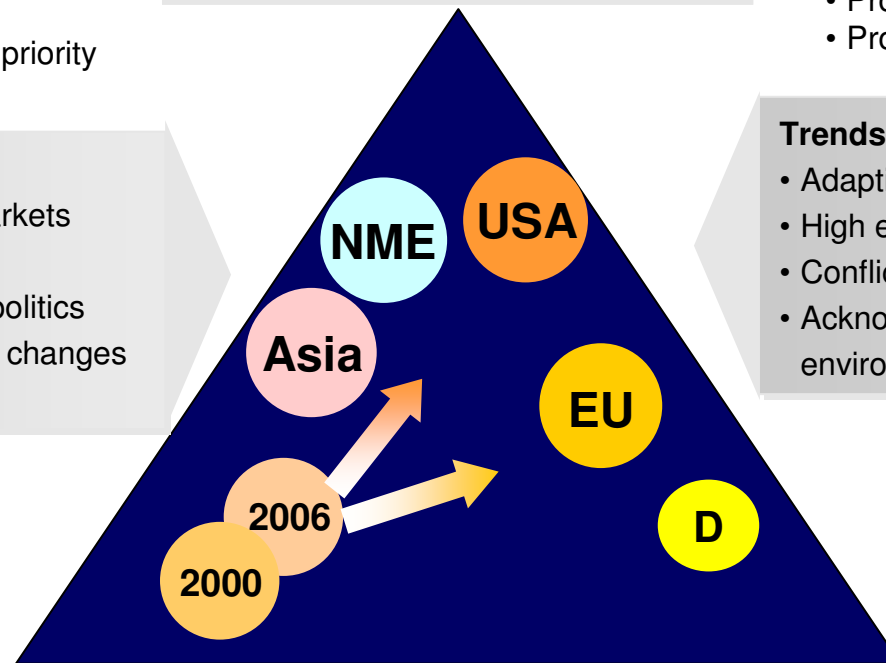
Power Generation Costs by Types of Power Plants

Type of Power Plant	Full Load Hours (h/a)	Invest Costs (EUR/kW)	Power Generation Costs (EURct/kWh) *) Operation-/ Total Costs	
Nuclear (1600 MW, 36%)	8000	1700	0,7	4,0
Hard Coal (700 MW, 45%)	7000	900	1,3	4,6
Gas fired CCPP (800 MW, 58%)	5000	500	2,1	6,5
Hydro (700 MW)	5000	1800	< 0,1	5,6
Wind (> 1 MW)	2500	900	0,05 – 0,5	7,8
Photovoltaics (1 MW)	2400	6000	0,4	::::

*) LCC: Life Cycle costs

CO2 not considered

Possible tomorrow's power mix

Privileged feed-in demands load leveling

- Wind
- Concentrated Solar Power

Intermediate-load/peak-load

- CCPP:
    - High efficiency
    - Low emissions
    - Steep ramp up

Low-carbon base-load

- Coal PP with high efficiency
- IGCC (based on coal) with pre-combustion capture
- Post-combustion capture for retrofit
- Nuclear PP
- Hydro PP (running water)

Comply with CO_2 abatement policies
- ✓ CO_2 cap & trade, CO_2 pricing
- ✓ Mandatory Carbon Capture and Storage (CCS)
- ✓ R&D funding
- ✓ Renewables quota
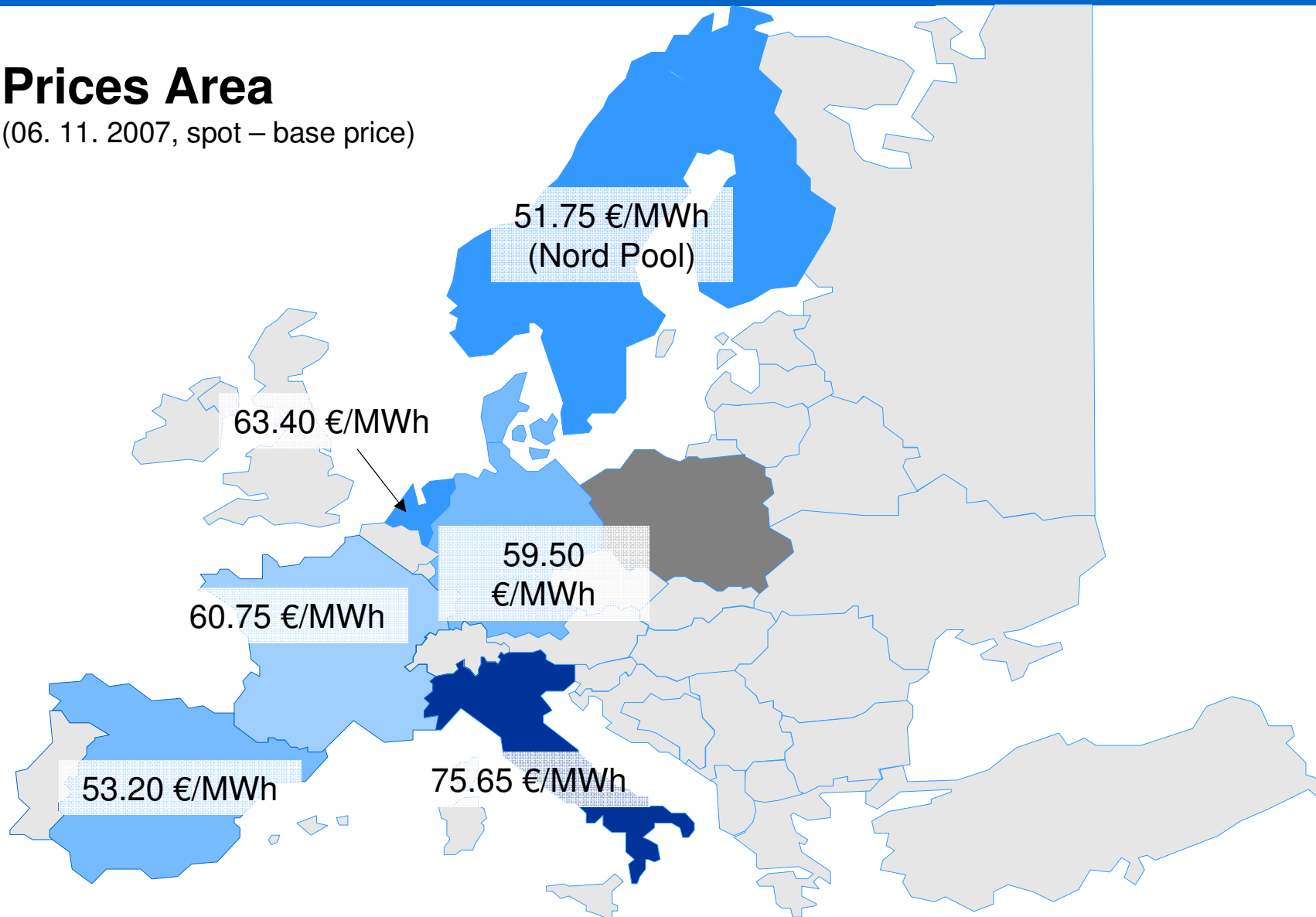- ✓ National nuclear program

Ensure reliable power supply
- ✓ High efficiency and limited resource usage
- ✓ Reduced dependence on fuel imports
- ✓ Stable grid operation
- ✓ Economic viability

▶ **CO_2 abatement while maintaining reliability of supply would be feasible.**

Prices Area

(06. 11. 2007, spot – base price)

51.75 €/MWh
(Nord Pool)

63.40 €/MWh

59.50 €/MWh

60.75 €/MWh

53.20 €/MWh

75.65 €/MWh

Source: ATEL Trading Desk

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Developments in Europe

1. Political trend for more liquid, converging wholesale markets

2. More than one European electricity market emerging medium term

3. There is uncertainty about the speed at which the markets will develop

4. Additionally, a return to national regulations is conceivable

European Energy Package

Politics/regulation: the Commission of the EU, in particular, is pushing for further liberalization of the energy market
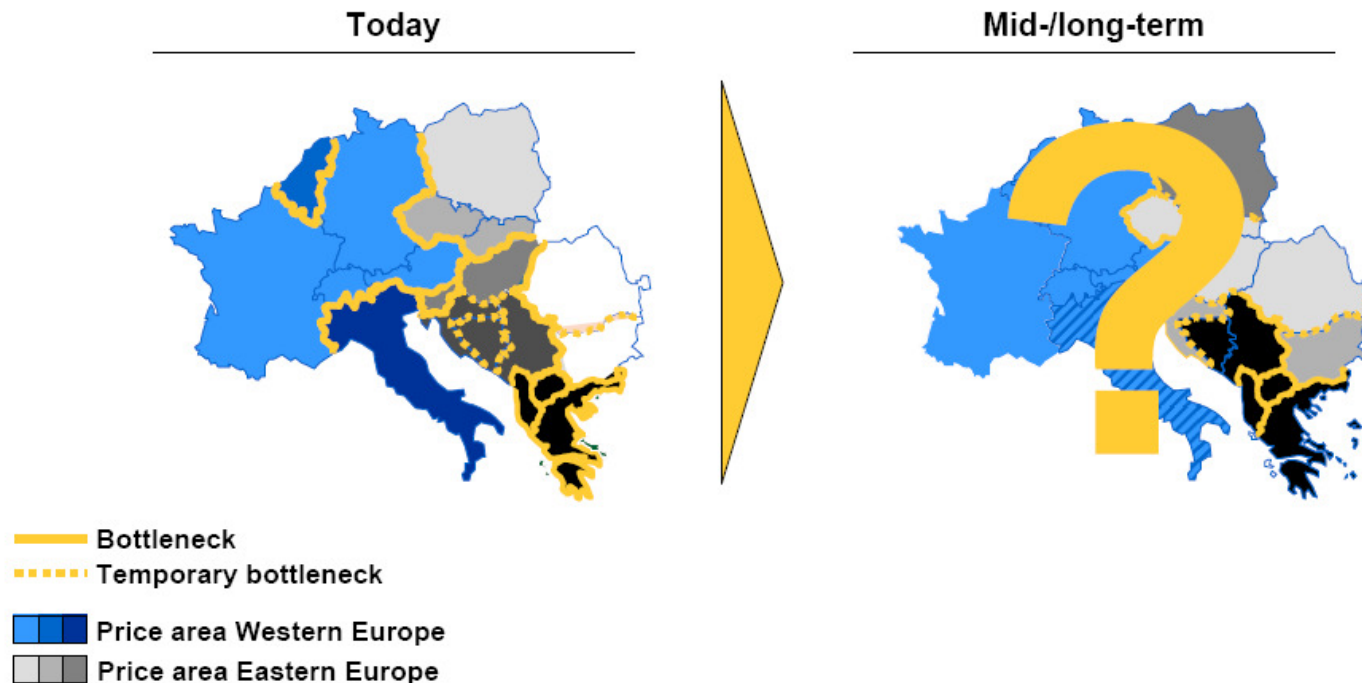Partially diverging national interests to be considered

Proposed regulatory measures (Sector Inquiry/EU Energy Package)

- More regulation at the European level and intensified cross-border coordination

- Promotion of liquid markets and reduction of market concentration and entry barriers

- Effective unbundling of transmission and supply

- Promotion of better cooperation among TSOs and promotion of investments in infrastructure/interconnectors (use-it-or-lose-it rules)

- Ensuring attractive business and regulatory environment to support investments in power plants

- Harmonization of market design, especially methods for cross-border trading

Implication: competition will become possible in markets still closed
Today' possibilities of arbitrage reduced

European Market

Markt convergence: Separate markets develop in Europe – speed of market development and future bottlenecks uncertain

Politics aim for European copper plate to cut power prices

Today	Mid-/long-term

Legend:
- ⎯⎯ Bottleneck
- ▪▪▪▪▪ Temporary bottleneck
- Price area Western Europe
- Price area Eastern Europe

More than one European electricity market emerging medium term – regional focus stays relevant

Source(s): BCG analysis

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As opposed to the development for more open and liquid markets, a return to national regulations is conceivable

Potential drivers	Market development (alternative)
EU member states won't agree on a political agenda (some member states do not agree that efficient markets will bring about security of supply, sustainability, and low prices) Significant increase of prices, as incumbents exploit their market power Security-of-supply crisis (especially gas) Foundation of GOPEC Eastern European states protect their own economies against rising electricity prices	National, heterogeneous regulation (i.e., regulation of markets not at EU-level but increasingly at national level instead) Closing of markets Support of national champions Low investments in interconnectors Incumbents with fully integrated organization further on Little retail-/sales-competition Low liquidity of wholesale-market