

TRIBUNA DEL AGUA  
EXPO ZARAGOZA 2008

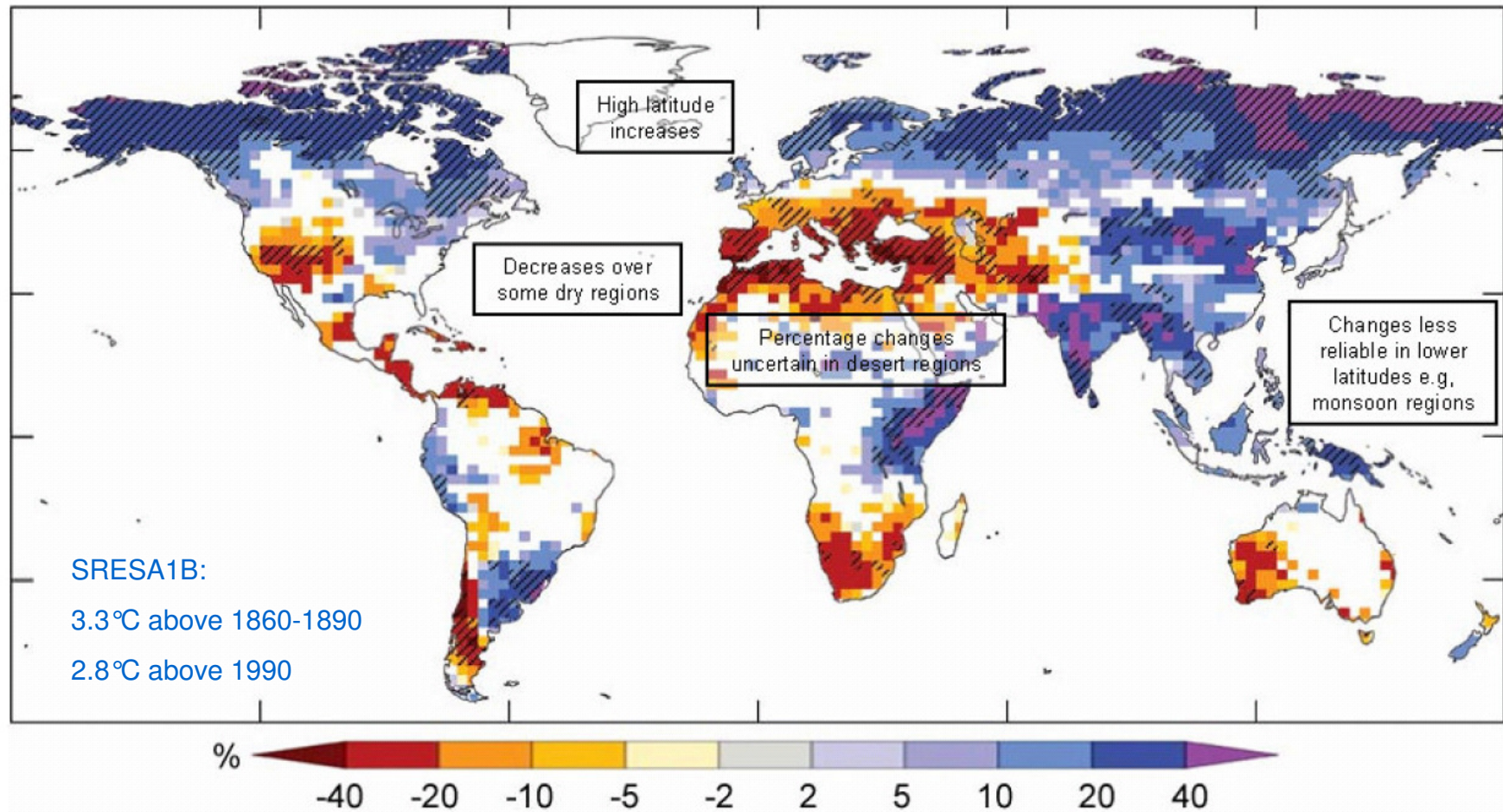
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**Energy and Climate Security**  
**The role of Europe**



# Large water supply risks projected

Projections and model consistency of relative changes in runoff by the end of the 21<sup>st</sup> century



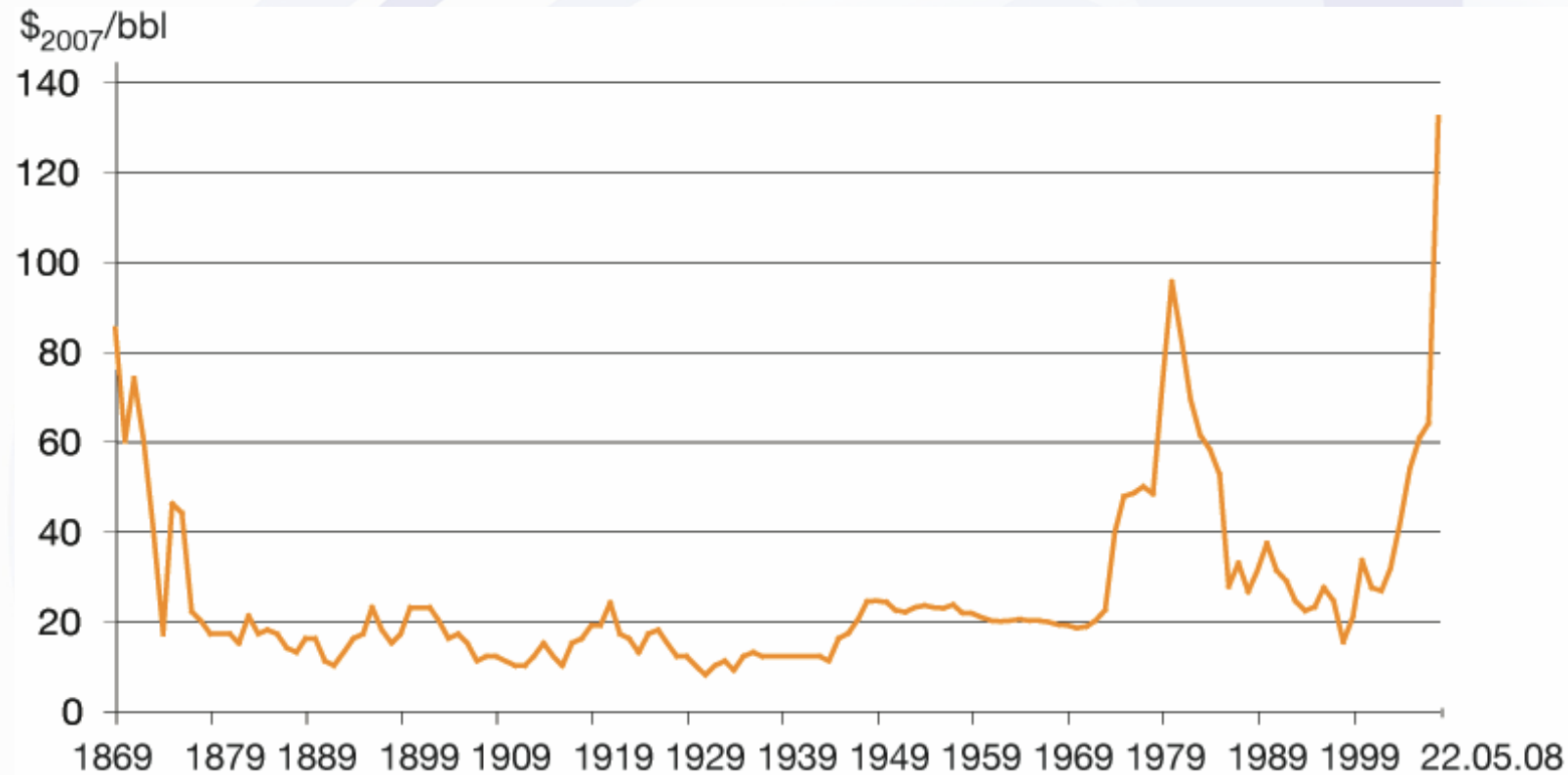
Changes in runoff (% of 1990)



IPCC AR4 SYR Figure 3.5.



# Yearly average oil prices (WTI) in real terms [\$2007/bbl] 1869-2008



Source: Inflationdata 2008; WTRG 2008; Bloomberg 2008



"Global emissions must peak soon and then approximately halve by mid-century. This means that emissions per capita must average 2T by then."

"The technologies and the policy mechanisms required are known and within reach at a manageable cost."

Source: Nick Stern, Key elements of a global deals

# EU CLIMATE TARGETS

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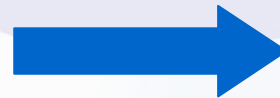
**UNTIL 2020**



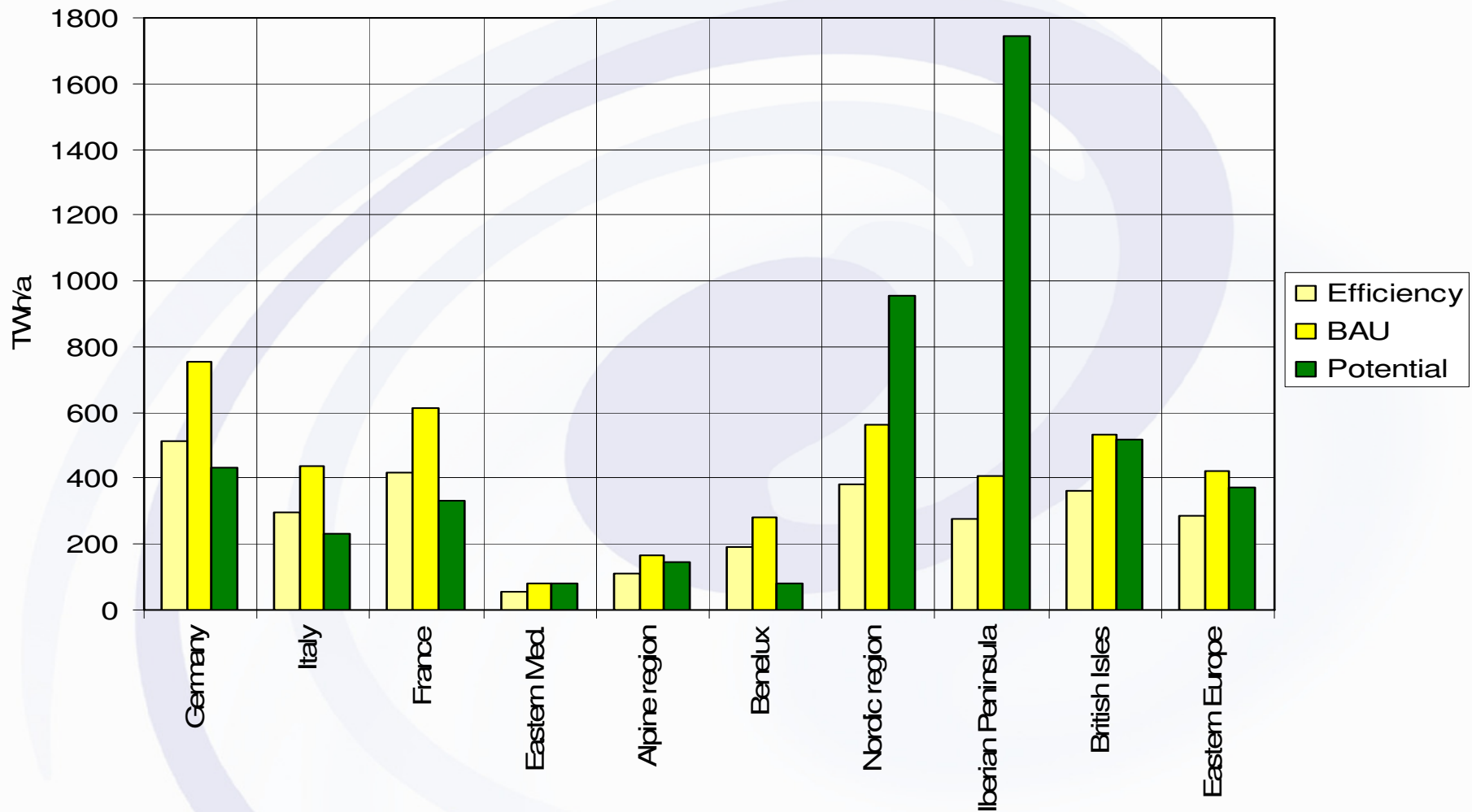
**-20% CO<sub>2</sub>**

**< 2°C**

**UNTIL 2050**



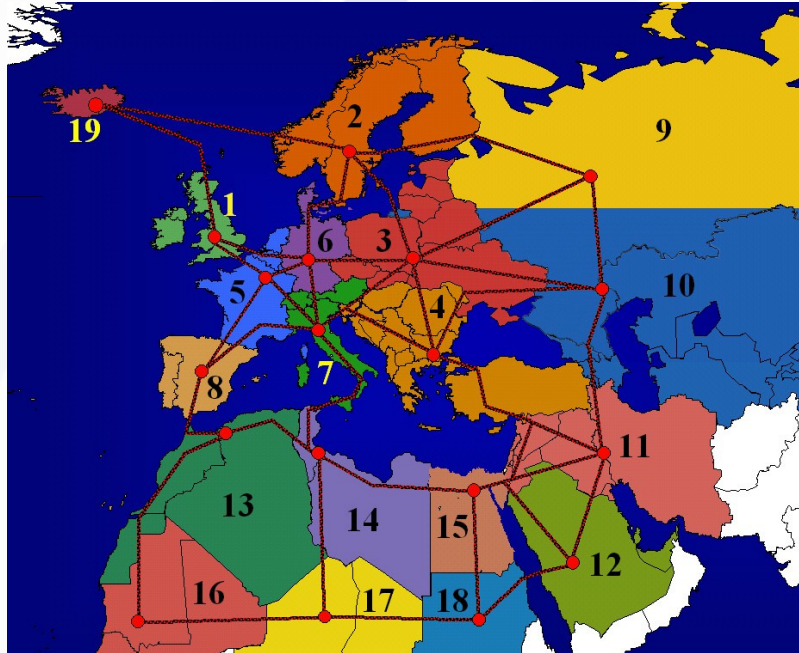
**-80% CO<sub>2</sub>**



Efficiency consumption in 2030 as 2005, BAU increase 1,5%, Potential mid to long term electricity production

Sources: BMU 2005:56; BMU 2006:43; EIE 2006:29ff; Eurostat 2006:16; IEA 2007.

# The SuperGrid



Wide-area renewable electricity supply from 19 regions:

- Wind
- Solar thermal
- Biomass

Transport via HVDC

Using hydro-storage for managing fluctuating supply

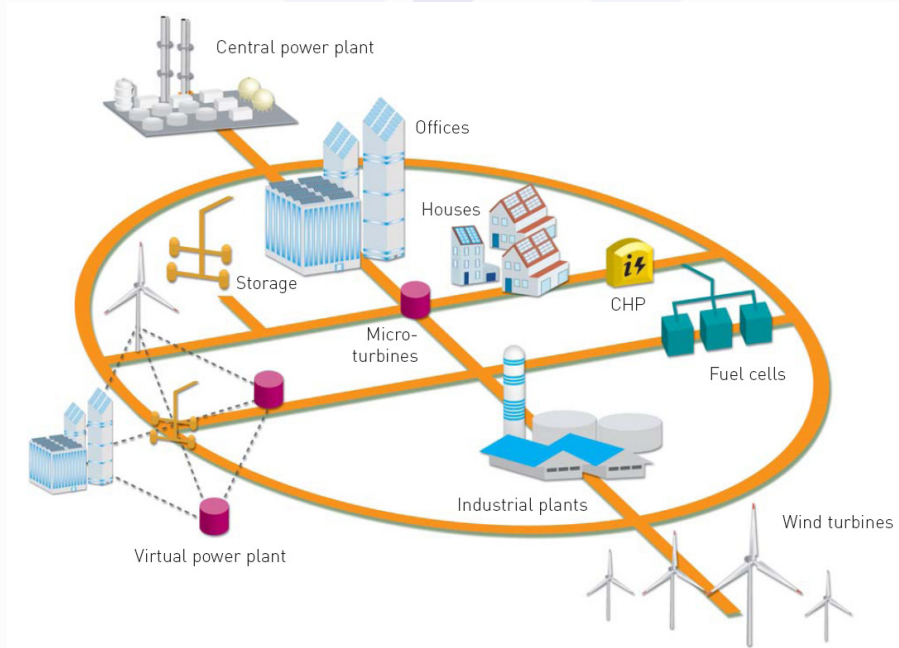
Cost at reference point

Kassel:

4.6 Eurocent/kWh (G. Czisch)



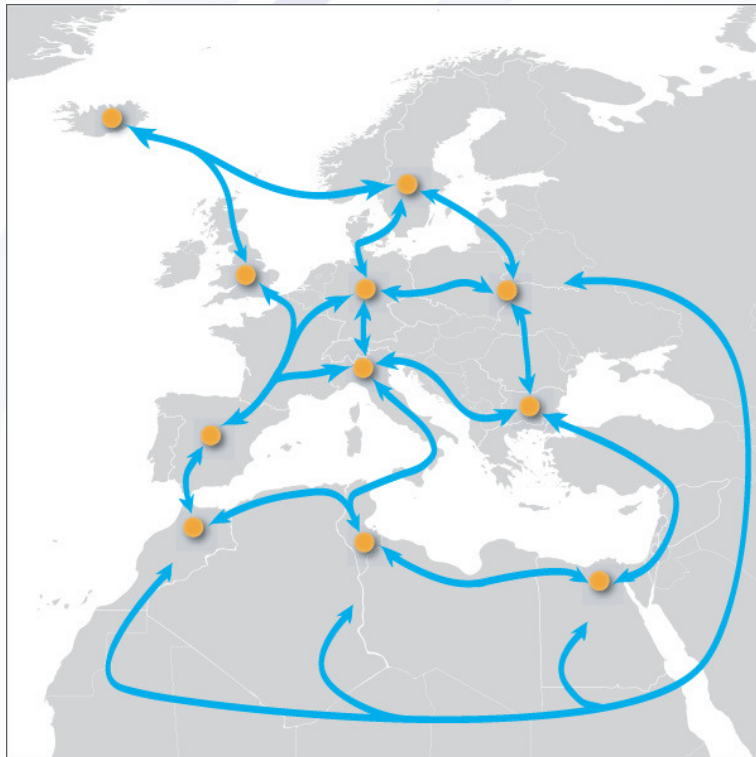
# The Smart Grid



- Combining a multitude of small, decentralised power producing units – Cogeneration, Small Hydro, Biogas, Wind, PV.
- Demand and load management systems – using flexibility of demand.
- Operating an intelligent grid and control system (central or decentral).

EU - DG Research  
Sustainable Energy Systems

# The SuperSmart Grid



- Synergy of the SuperGrid and the Smart Grid.
- Not all eggs in one basket.
- Bringing communities together.
- Coalition of the willing for gaining political momentum.

# The Role of Europe

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- Promote a transition a **100%** renewable electricity system
- Set up a regional **Climate Fund** partially based on 100% auctioning of emission certificates
- Develop **Energy and Climate** cooperation with neighboring countries
- Engage in **transition** process with traditional energy suppliers
- Produce inclusive policies to open the way to **innovation and competitiveness**

# Thank you

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