

Green Europe: opportunity or economic burden?

ELIAMEP

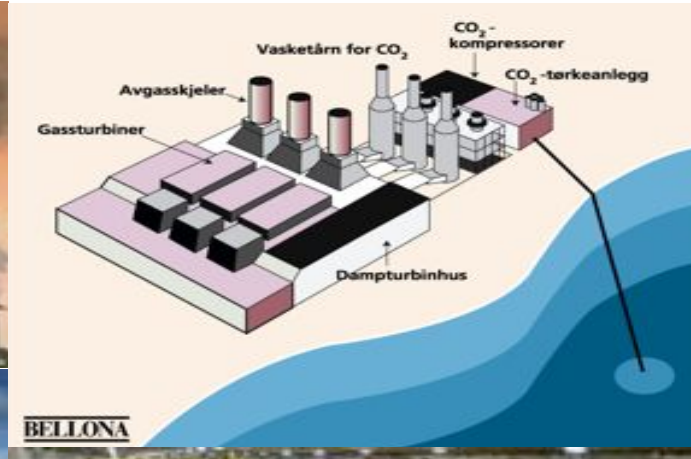
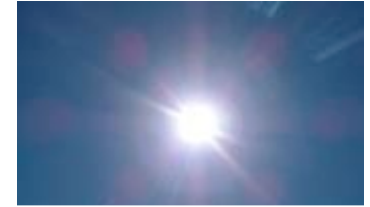
Delphi, 27 June 2009

Paal Frisvold, Bellona Europa



BELLONA

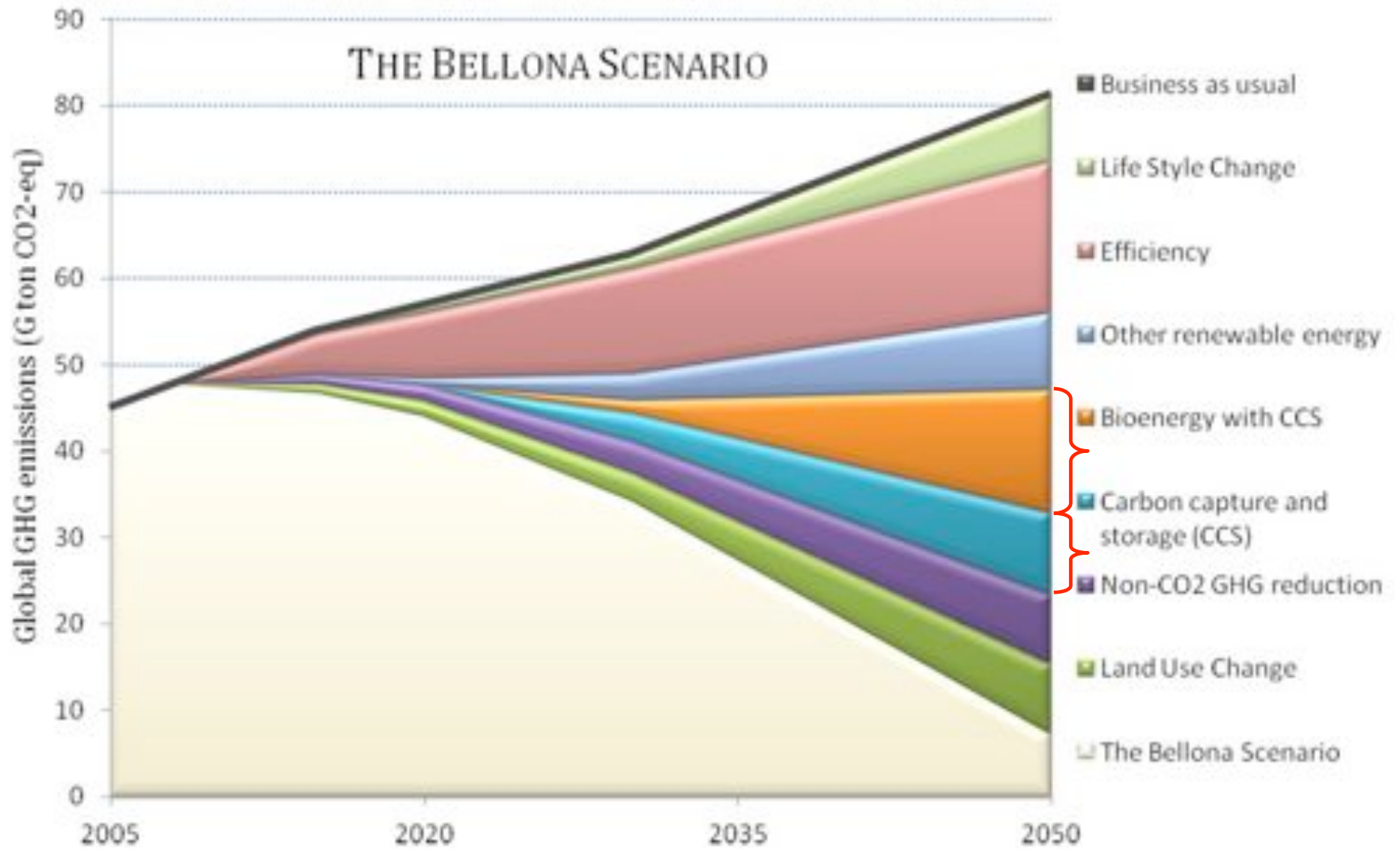
From Fossil to Renewables



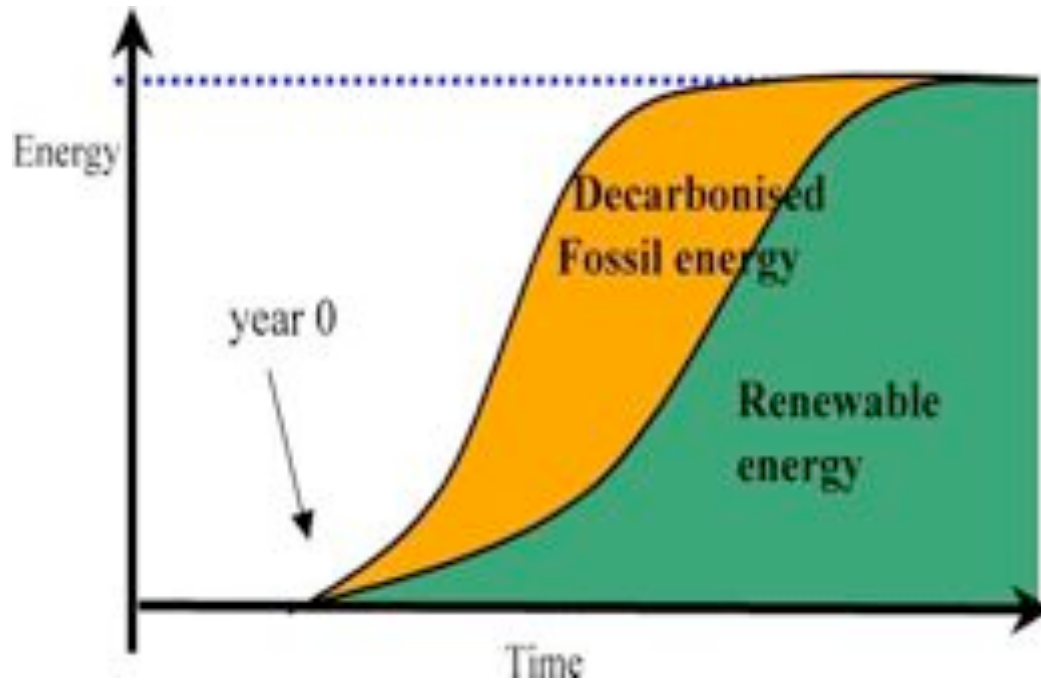
The challenge:

- **80 % of global energy production is based on fossil fuel**
- **Global energy demand is increasing**
- **2/3 of the global population**
 - **need increase of standard of living**
 - **will require increasing energy demand**
- **CO₂ emissions must be at a minimum reduced by 50-80 % by 2050**





A bridge to the Sustainable Energy Chain



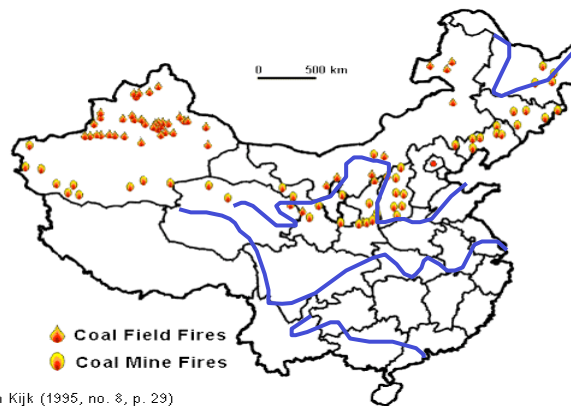
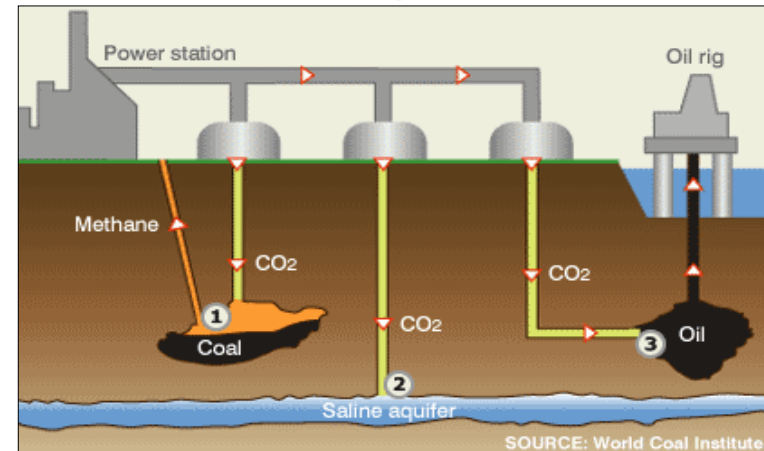
Large volume of energy is required to produce:

- **Si and Al for solar cells**
- **Cast iron for windmills**
- **Fertilizers for biomass**
- **Production of electricity and hydrogen for transport**



CCS - A catalyst for change!

- **Security of Supply: EOR/ECBM**
- **H2 Production with with CCS**
- **Fuel Cell technology for power and ships**
- **CCS used for industry, steel, cement, petrochemical plants, refineries, chalk and fertilizer production**
- **Captured CO2 could be used for putting out coal mine fires in China**
- **Bio-energy with CCS is carbon negative!**



Based on Kijk (1995, no. 8, p. 29)

Commercial viability of CCS

