



Dias 1

Roskilde University, ENSPAC
Onsdagsseminar – 19.11.2008




**Economic perspectives on
CCS**

Is coal with CCS really that economic?
Cost of CCS
Cost of coal power
Cost of coal

Anders Chr. Hansen *20-11-2008*

Dias 2

What does CCS cost?

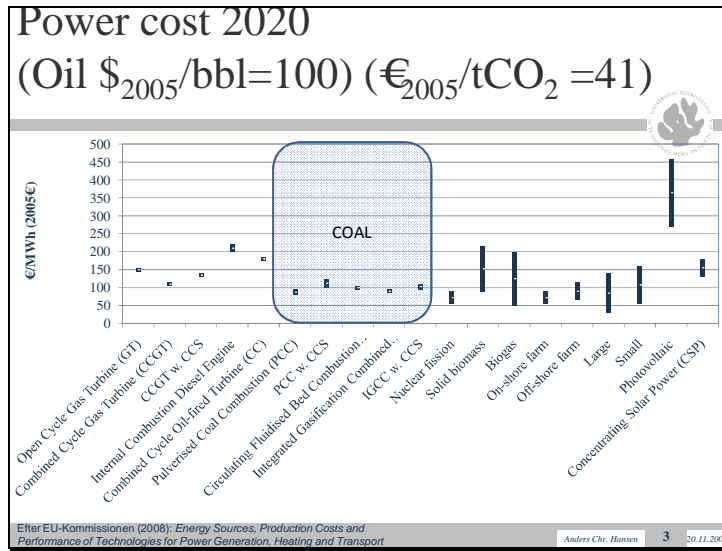


	Con- ver- sion	CO2- remo- val	2020	2030	2020	2030
			€/MWh		€/tCO2	
Natural Gas	CCGT	83%	25	25	86	86
Coal	CCS	80%	25	18	43	24
Coal	IGCC	81%	13	8	20	12

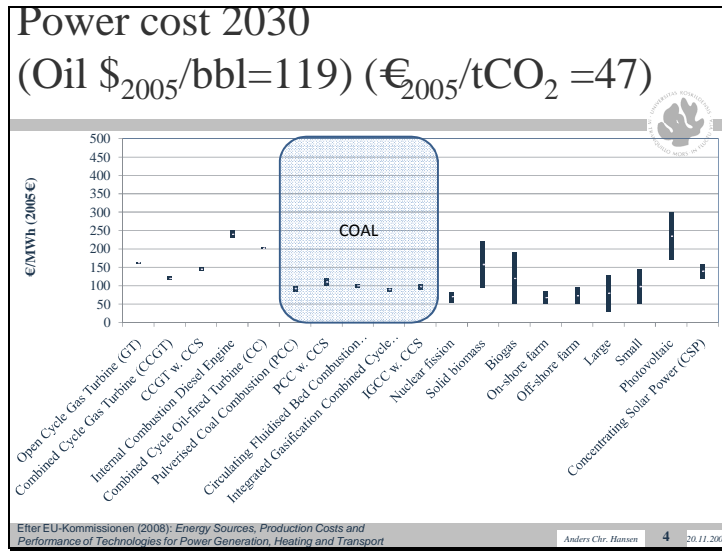
Egne beregninger efter EU-Kommissionen (2008): Energy Sources, Production Costs and Performance of Technologies for Power Generation, Heating and Transport

Anders Chr. Hansen 2 20.11.2008

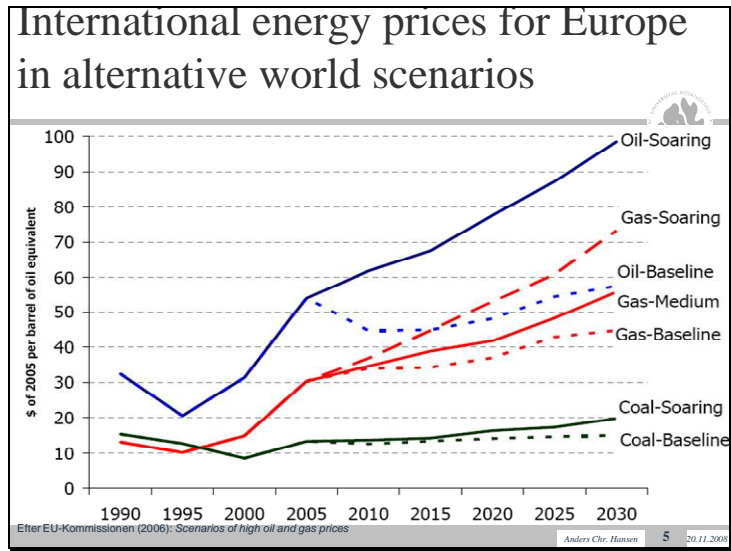
Dias 3



Dias 4



Dias 5



Dias 6

Steam coal: Mine share of price		
	Lower	Upper
Australien	31%	46%
China	57%	54%
Indonesien	42%	46%
Kolumbien	58%	50%
Russland	41%	27%
Südafrika	46%	46%
Venezuela	46%	43%

Efter Bundesanstalt für Geowissenschaften und Rohstoffe (2006):
Reserven, Ressourcen und Verfügbarkeit von Energierohstoffen 2005.

Anders Chr. Hansen 6 20.11.2008

Cost and substitution linkages

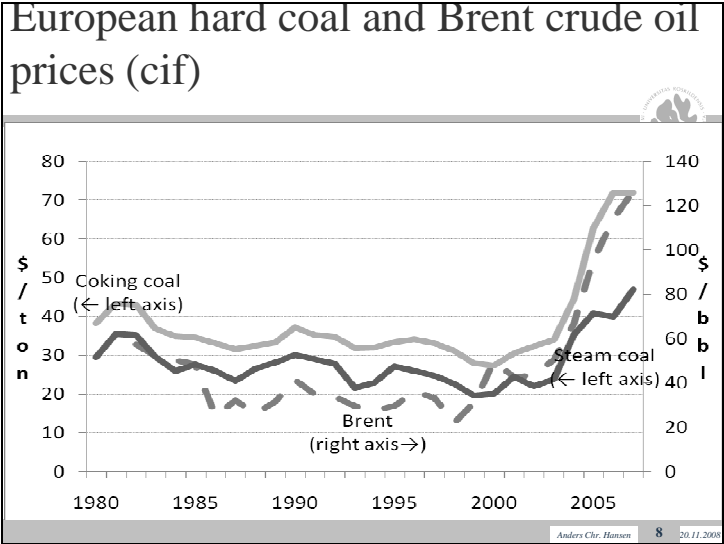


■ Cost

- More than half the consumer cost is transport
- Transport costs \approx oil product costs

■ Substitution

- Still, to some degree alternative to natural gas in power and heat generation
- Increasingly used for synthetic fuels i SA



Conclusions



- ❑ Coal is not necessarily as cheap in the future as assumed
- ❑ If it follows the oil price, coal with CCS could be of limited use in Europe (lignite?)
- ❑ But of great use in countries with coal reserves
- ❑ Not least in the US
- ❑ FT-diesel or DME produced from coal with CCS even greener than conventional fuels?
- ❑ Still, a developing the technology is important

Thank you for your attention!



✚ Anders Chr. Hansen

- Roskilde University, Denmark
- Department of Environmental, Social and Spatial Change (ENSPAC)
- E-mail: anders@ruc.dk