

Economic Potential and Deployment Prospects

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- When will CCS technologies be needed?
- What will be the size of deployment?
- Which technologies?
- Sensitivity to market development?
- Differences with UK results

Assumptions – fuel prices

	Fuel Prices (A\$/GJ)	
	2000	2050
Brown Coal	0.50	0.56
Black Coal	0.90 (~3.2)	1.11 (~3.2)
Natural Gas	2.50 (~6.2)	3.97 (~8.8)
Biomass	1.50	3.21

Values in brackets are UK MARKAL model price assumptions

Assumptions

- Electricity demand growth (2.5% pa)
- CO₂ emissions reduced to 1990 levels by 2050, starting from 2012
- No nuclear option
- Only IGCC with CCS
- Discount rate 8% real
- CCS only applied to coal



BaU – no emission constraint

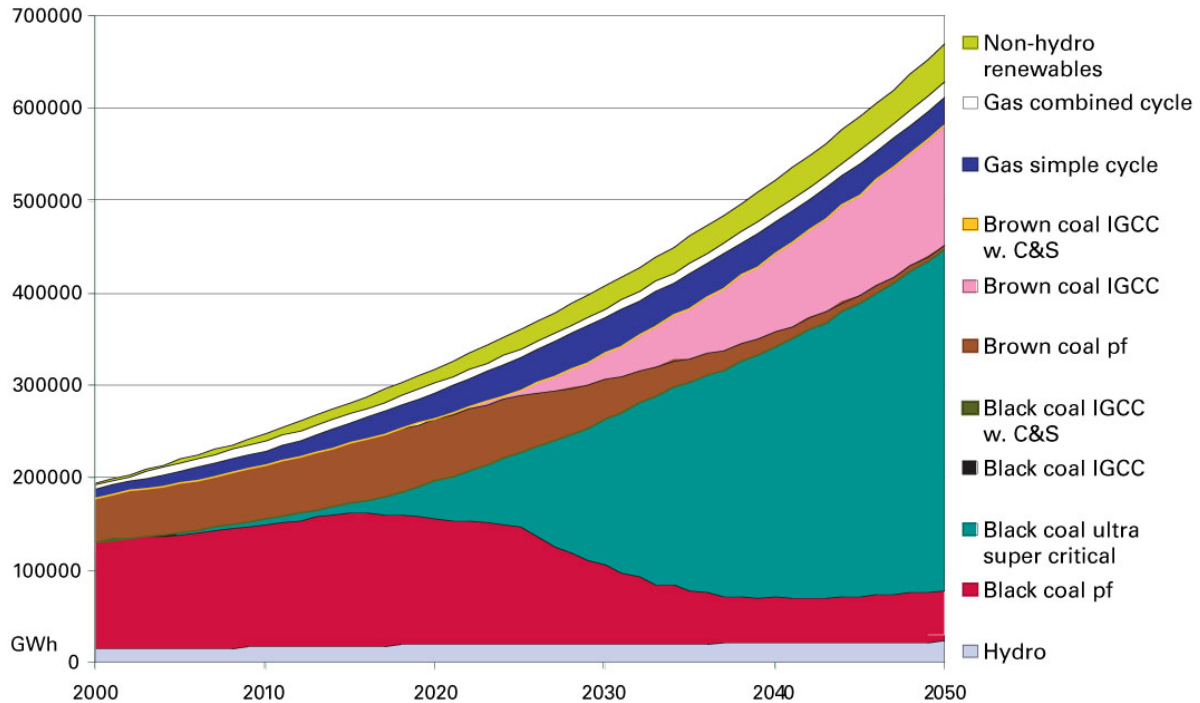


Fig 12.1 - The Simulated Electricity Generation Portfolio for the Business as Usual Scenario under the Base Case Assumptions (image provided by CCSD)



60% Emission Reduction

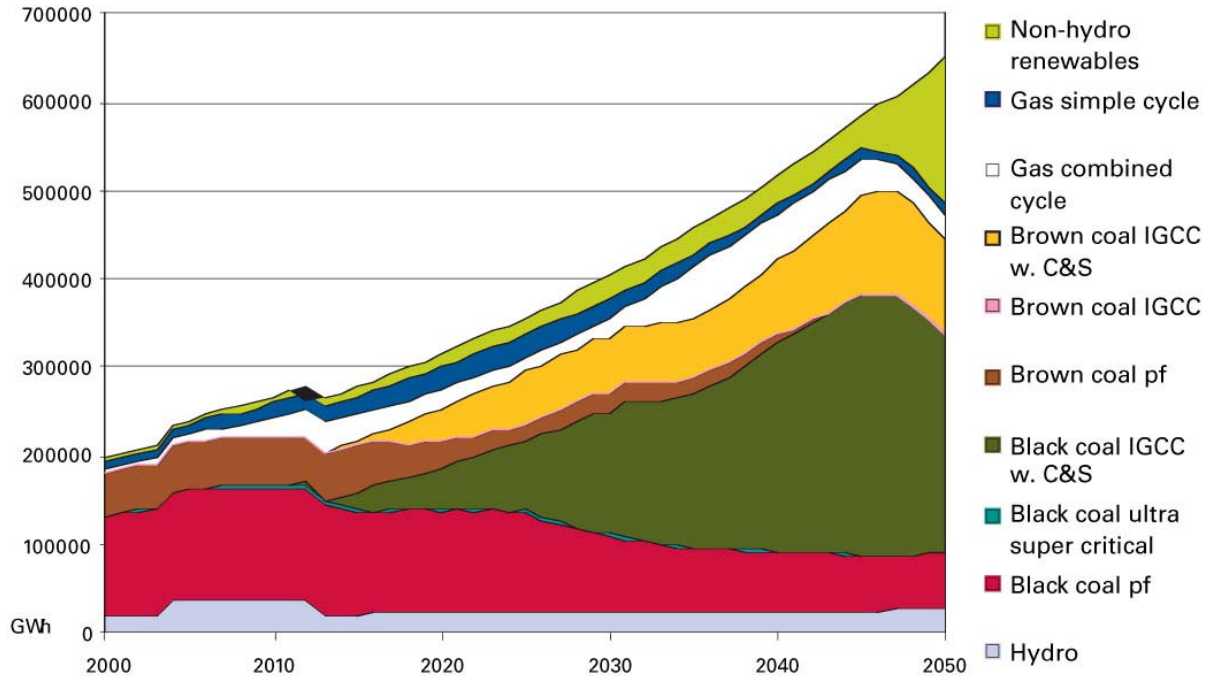


Fig 12.2 - The Simulated Electricity Generation Portfolio for the Return to 1990 Emission Scenario under the Base Case Assumptions (image provided by CCSD)

3.5% pa Demand Growth and 60% Emission Reduction

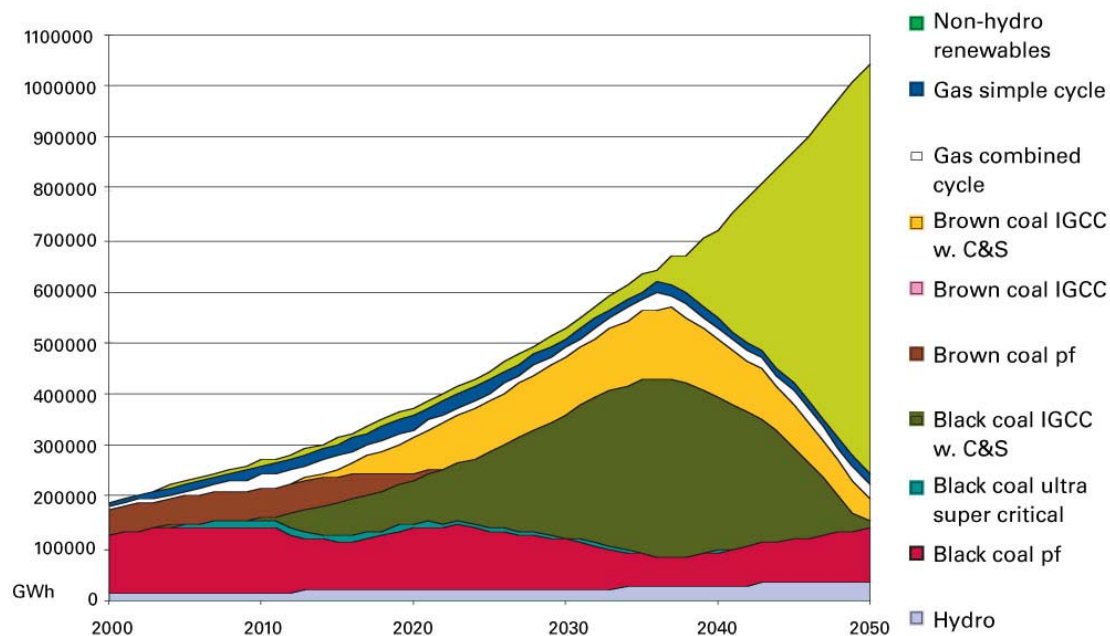


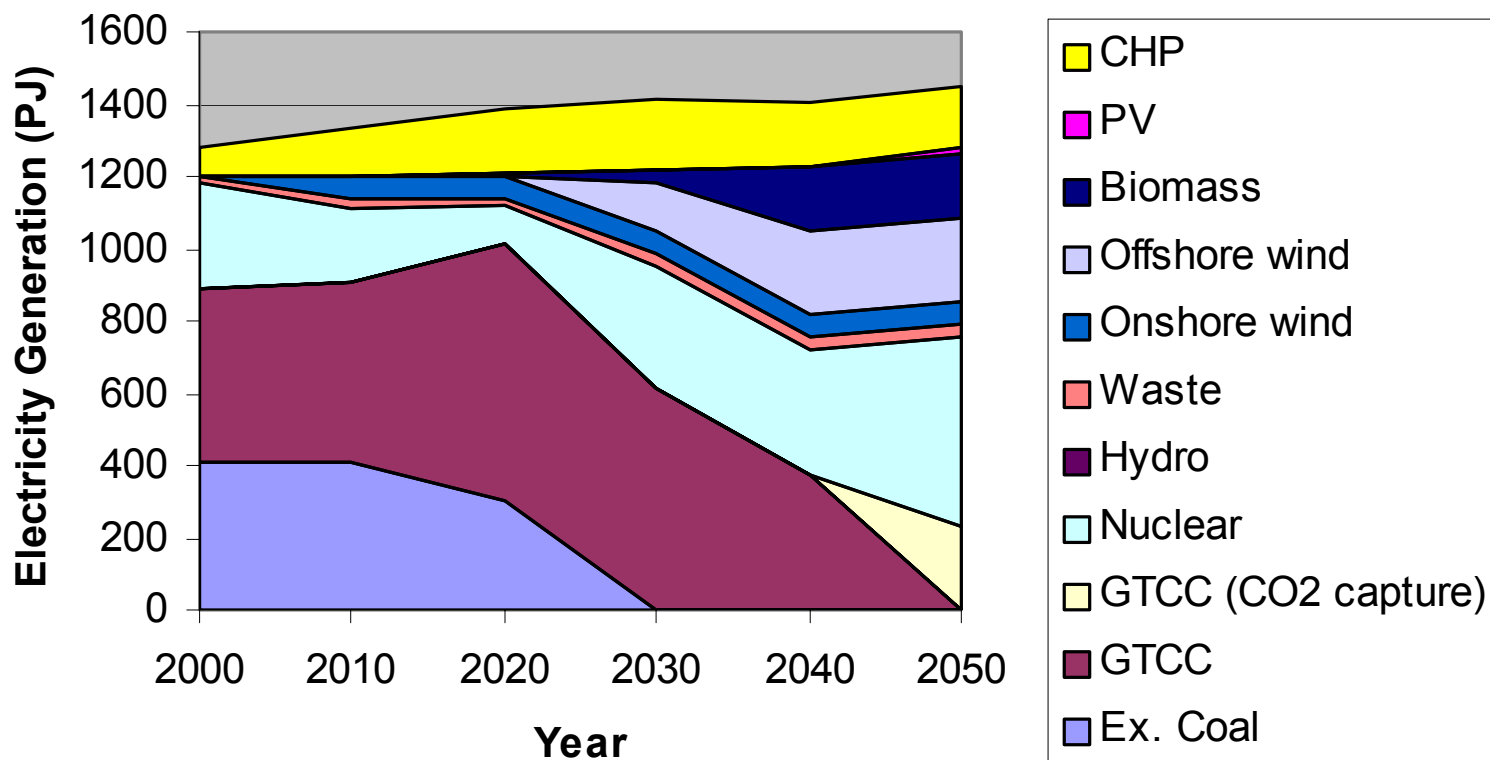
Fig 12.3 - The Simulated Electricity Generation Portfolio for the Return Emissions Scenario under the Higher Demand Growth Assumptions (image provided by CCSD)



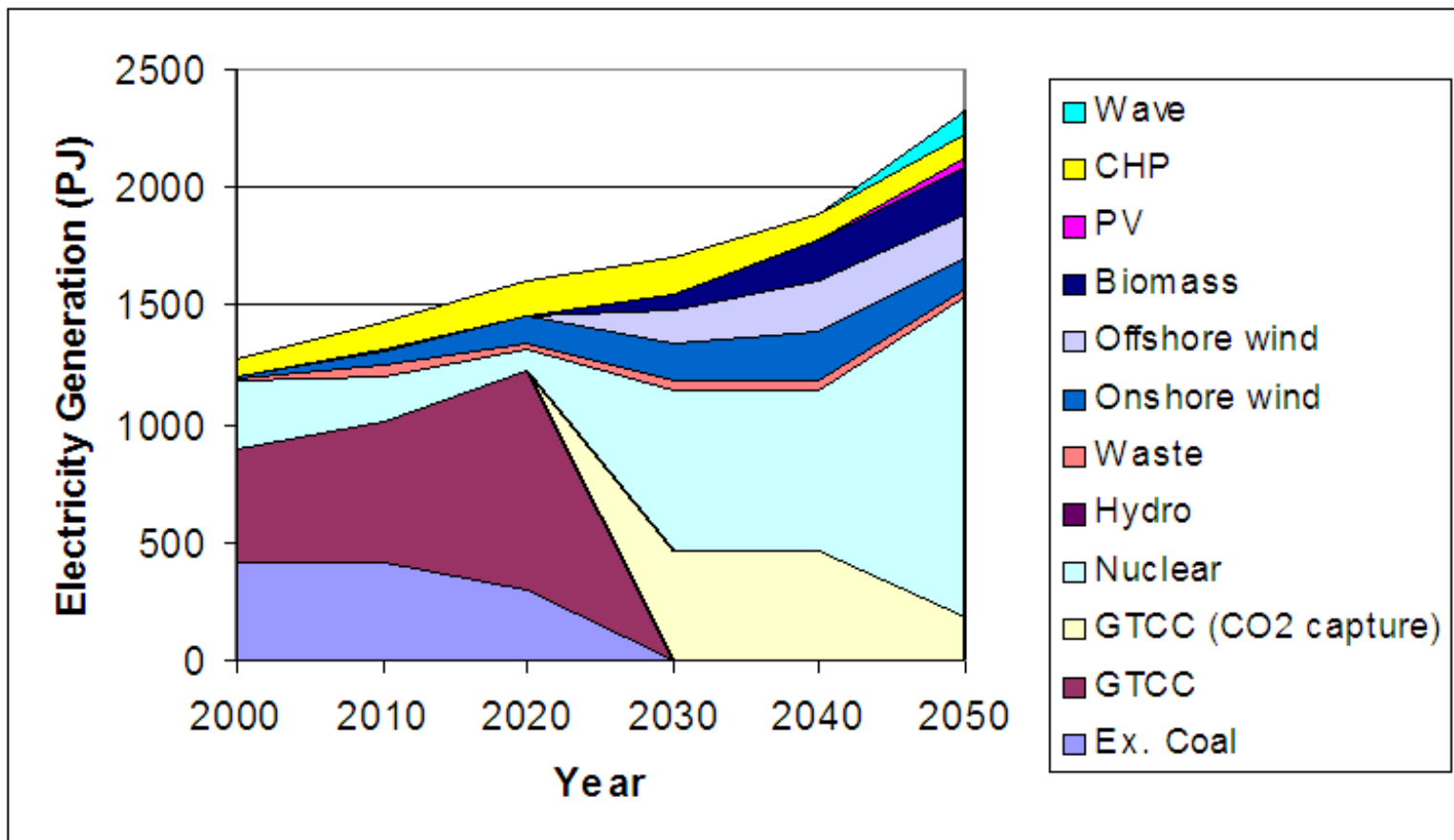
Main trends

- Brown coal PF replaced with IGCC
- Black coal PF replaced with ultra-supercritical technology
- CCS need from when constraints applied in 2012
- Renewable energy expands in the last decade with CO₂ constraints

UK Baseline Scenario 60% CO₂ Reduction by 2050



Baseline Scenario 60% CO₂ Reduction in 2050 (limited Energy Efficiency)



Australia-UK Comparison

- Both countries need CCS to deliver a low carbon economy
- Timing for CCS deployment sensitive to demand growth and availability of alternative technologies
- Importance of energy efficiency
- Importance of CO₂ capture efficiency
- Availability of natural gas influential for technology choice