Equity and Venture Capital Investment in CCS

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At what carbon price is CCS economic?

Around €25-30/tCO$_2$e for coal?

But far lower if you can use the CO$_2$
Difference Between Economics and Financing

- **Economics**
  - Is it conceptually possible?
  - Is it a positive NPV undertaking?
  - Are all the component parts economically viable?
  - Does it meet a reasonable cost of capital?

- **Financing**
  - Can you raise the money?
  - Are the risks correctly allocated?
  - Are risks well managed?
  - Is the capital structure right?
  - Is there investor appetite?
  - What does the asset-class look like?

Issues in clean coal exist in the gap between economics and financing
Hypothetical abatement related investment

Investment costs $200m

NPV of savings amounts to $220 m over period

So go ahead?

Can we raise debt?

Revenues from Investment

Carbon related revenues
But it helps if you know how low prices can go!

- Bank interest payments of $16m pa
- Company goes bust
- Lose access to later cash-flows

Revenues from Investment

Bank calls in loan

Bank loan payments
EU ETS: What has happened?

Historical EUA and UK fuel prices

- Pre-EUETS
- Market debates 1 in 20 winters
- EU NAP2s released
- 2005 emissions data released
- EUA (2006)
- EUA (2008)
- Implied (W07 NBP & Coal ARA spot) (RHS)
Consequences

- Prices driven by coal & gas prices AND policy
- Minimal change in operating behaviour
- No investment in Europe
- Large scale investment in developing world

- so a floor to carbon emission costs would be helpful
Carbon Transport and Storage: Financing Issues

Integrated Projects

- Power Station
- Separation / transport
- Deposition

The Value Chain

- Power Station
- Separation / Transport
- Deposition

- Flexible
- Harder to put together
- Requires ability to contract at interfaces
- Better aligns tasks of parties
Who pays?

The Value Chain

Power Station

Separation / Transport

Permanent

Oil/Gas Field

Issues

What price CO₂?

Duration?

Credit ratings?
Financial Players

**Players**

**Short term**

- Power Station
- Separation / transport
- Deposition

- Venture Capital
- Power Companies
- Energy Companies

**Long term**

- Venture Capital
- Power Companies
- Energy Companies
- Banks
- Private Equity

- Energy Companies
- Private Equity
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