Short-term and Long-term Policies to Promote Carbon Dioxide Capture & Storage

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Is CCS Policy the Equivalent of Nailing Jell-o to a Wall?
...Or Dead Hand of Regulation?
Too Good to be True?

- CCS addresses many policy goals:
  - Energy security concerns
  - Provides baseload non-nuclear power
  - Appeals to major influential stakeholders
  - Allows for possibility of decarbonising existing infrastructure
  - Rising demand of major developing countries
  - Potential for negative emissions with biomass
Ambitions Thwarted

- BP – DF1 (Peterhead, UK) & DF2 (Carson, CA)
  Held up by lack of government support (DF1) and local opposition (DF2)
- Sask Power – Shand 2
  Price tag (C$3.8B!)
- US – Futuregen
  “Restructured”
- Statoil/Shell – Draugan
  Cancelled
- EC – 10 -12 integrated, large-scale CCS demonstration projects
  A commitment with no clear funding mechanism – now “up to” 12
- Carbon Sequestration Leadership Forum
  Bush Administration construct
Flying in the Dark?

• Widespread agreement across government, industry and NGOs that:
  – it is important to move forward with the first CCS plant(s),
  – learning by doing is necessary to reduce costs

• Little consensus on:
  – What the level of support should be
  – What should be the regulatory & licensing requirements
  – What the size of the plants should be
  – Geographical distribution or even the geographical scope
  – What should be the support mechanism
  – The implications of CCS support for other technologies
  – How many plants should be supported
  – What is being demonstrated
The Fundamental Tensions

• Learning by Doing and Economies of Scale vs Maximising Diversity
  – What is the geographic scope where we want to achieve diversity? national? EU? Global?
• Minimising costs vs experimentation and learning
• Commercial scale projects vs demonstrating novel ideas
  – What is the desired size for a capture plant?
    3 MW vs 40MW vs 100 MW vs 300 MW?
• Building up infrastructure vs project-based crediting
• Demonstrating Storage – MIT v US Regional Partnerships (3-4 >1 MtCO2 vs many ktCO2 across country)
• Addressing CCS piece-by-piece (e.g., liability, storage permitting) vs comprehensive CCS and climate legislation
• Development of short-term vs long-term policies
Short-Term Policies

- Funding Demonstration Projects
- Removing perceived regulatory barriers at international level (Ospar, London Convention)
- Removing perceived impediments at national/regional level (state aid provisions)
- Focus on low-hanging fruit (EOR, pure CO$_2$ sources, etc)
- Permitting of first projects
- Developing mechanisms that encourage innovation and technology development
- Stakeholder engagement
Long-Term Policies

• Incentive framework for developing CCS and/or for pricing carbon at a level sufficient to allow CCS plants to become commercially viable
• Regulatory environment for CCS infrastructure
• Establish a Long-term Liability Framework
• Developing educational and communications materials to explain CCS to different stakeholders
Interactions between Short-Term and Long-Term Policies

• Elaborate multi-jurisdictional negotiation between major firms and governments over a ‘package’ of provisions that includes burden-sharing, liability rules, stability of the regulatory framework
• Perceived impediments to financing are often associated with resolving or at least addressing regulatory and liability concerns
• Unwillingness or inability of governments to engage in direct handouts to large energy firms so focus is increasingly on some measure of competition or ability to ensure value for money
Stylized Facts: Current Reality

• Amending International agreements has been relatively pain-free because of the absence of any real opposition
• Some perceived impediments have largely vanished (state aid concerns) but other have remained (liability and financing)
• Progress in regulatory development & design in many nations that have begun to take CCS seriously (US, Canada, UK, Germany, Norway, NL, etc) but largely on a piecemeal basis
• Low-hanging fruit are moving forward no more quickly than other projects
• Funding demonstration projects has been relatively slow to date with focus more on ambition than on funding
• Some evidence of real funding via auction revenues or general government revenues and real projects moving forward but not at the scale and scope to match the rhetoric
Real Funding and Projects Emerge

- Norway – Mongstad 280MW 2.5 mtCO2/yr; Naturkraft Kårstø 420 MW post-combustion, 1.2 mt CO2/yr; €40m SOLVit R&D programme

- Canada - $240m for 100MW Boundary Dam, SK plant by 2013, Alberta provides C$2B for CCS projects

- Australia - A$100m for GCCSI, A$300m for ZeroGen 80->300 MW from Q’land Government; A$60m for Gorgon LNG Project from LETDF

- UK – CCS Competition (several £100M?) for 300-400 MW with 50MW operational by end 2014, and full capacity “as soon as possible thereafter”

- EU – 300,000 EUAs can be used from new entrant pool, possible €1.25B for five CCS projects via EERP

- US – Regional sequestration partnerships; CO2 storage and CCS funding provisions in Bank bailout and Stimulus packages

- China – Greengen project (IGCC 250->650MW IGCC followed by gradual introduction of 100MW CCS
General Conclusions

• Although first projects now seem to be moving forward along with regulatory structures there has been little movement towards coherence in CCS policy or considering the appropriate role for CCS within wider climate change policy.

• Window of opportunity to fund R&D (public communications, policy design, etc) before commercial-scale development is needed has largely been wasted.

• Financial crisis and stimulus package offers new legitimation for injection of funds but reveals little evidence of appetite for policy design and may have longer-term impact on public willingness to support aggressive climate policy.
Thanks!

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