Incentivizing CCS through market based mechanisms

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by

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Outline

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www.jcconsulting.eu; www.co2prices.eu
Current state of play

- Currently no clear incentives exist for companies to invest in CCS
  - Some companies may be motivated by obtaining first mover advantage
  - Corporate concerns
  - Speculation on carbon economics yet to come
  - Who paid for developing the Toyota Prius?
  - Linking CCS with power generation may be too strange ‘animal’
- The regulatory framework is fragmented; there is no common approach
  - But, CCS is the only technology that all countries agree on, incl China, US, and Saudi Arabia (IPCC Special Report; IPCC AR4, Stern Review)
- Government subsidizes CCS directly or through Joint Ventures
  - But this is problematic, as the BP Peterhead project showed: timing aspect
- According to Socolow’s wedges; install CCS at 800 GW of base load coal plants by 2054 or 1600 GW of base load natural gas plants
  - Is equivalent of 3500 Sleipner size projects
Incentivizing CCS via EU ETS

- CCS is currently not explicitly allowed in the EU ETS. What would be the (dis)advantages of allowing under the ETS companies to reduce emissions through CCS?

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
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<tr>
<td>1. Banking and borrowing allows for flexible use of EUAs</td>
<td>1. Allocation periods are too short – minimum of 15 years is needed</td>
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<td>2. EUA prices are likely to be robust</td>
<td>2. Uncertain allocation methodologies</td>
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<td>3. Banking from Phase II into Phase III</td>
<td>3. EUA prices have been volatile</td>
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- When allowing for CCS in the EU ETS, Governments can push for deeper cuts in allocation: EU focuses on allocation on the basis of x grCO2/kWh and 30% reduction

- Outstanding question is what EUA price is needed to induce CCS?
Incentivizing CCS via EU ETS: *what is status?*

- UK NAP-2: mentions allowing CCS
- NL NAP-2: allocate Power CCS as if emissions would occur
  - Mining Act and Monitoring Decision refer to CCS, provided EC accepts Monitoring Plan
  - Dutch Tender: asking for 0.4 Mt/a service
  - EnergieNed: new 5 coal fired plants will prepare for CCS: provided some government support
- EC withdrew link of Monitoring Guidelines with ETS
  - But still accepts transmitting CO2 to food industry
  - Now prefers ‘opt-in of whole CCS chain’ or amendment
- EU Legal Enabling Framework for CCS under development
- ETS Review per 2013: 8 yr period; allow for CCS
  - ETS should also cap process CO2 emissions!
Incentivizing CCS via EU ETS: *what is playing?*

- Start CCS now would argue for gaining CO2 credits later:
  - Early reduction gives multiplier bonus
- Why not invest ‘windfall profits’ in CCS (Vattenfall)
- Great advantage in having ZEPP for 30 years:
  - no CO2 cost, large volume, upfront revenues
- ETS not enough understood: coal plant can sell forwards
  EUAs: 3 Mton @ € 23 * 5: € 345 million
  - Interest benefits and loan co-finance
  - Forward selling 2012-2020 @ 30??: Morgan Stanley and speculators / ECX has post 2012 price disclosure
Incentivizing CCS via EU ETS: *limiting cost*

- Reduce health problems and cost: with CCS less NOx, SO2, dust, mercury ->> reduce NEC cost
- CO2 Infrastructure laid near Norway and in NL; Rotterdam Harbour interested. Companies offer capture ready service: reduce cost
- Government could ask charge for transferring CO2 waste from source to storing facility
Incentivizing CCS via CDM / JI

- CDM/JI is fundamentally different from the EU ETS. In CDM/JI projects, one receives **credit** after reducing the emissions rather than receiving **rights** upfront.

- Particularly the CDM has had many methodological issues and is very bureaucratic.
  - Baseline setting
  - Additionality

- JI is slightly less bureaucratic because it takes place in Annex B countries; i.e. countries with a cap under the Kyoto Protocol.

- CCS is considered a sink under the Kyoto Protocol, rather than a standard project type.
  - Sink based projects receive sub-category of CERs (temporary t/ICERs).

How about CCS?
Incentivizing CCS via CDM / JI

- To date, several projects have been submitted to the CDM Executive Board
  - Methodology Panels first reviews the proposed project and its methodology
- The MethPanel saw multiple objections and referred the issue back the CoP/MoP;
- CoP Dec. 2006 put CCS/CDM ‘on hold’. What were the main objections?
  - Physical seepage: there is no procedure to select an appropriate site for geographical storage projects → up to market
  - Monitoring methods for seepage: no good monitoring methodology may exist at this point, according to the MethPanel → IPCC 2007
  - Post-project seepage: CO2 may have a long-term corrosive effect
  - Liability for developing country? → CDM not sufficient regime
  - What is sustainability gains in developing country from CCS?
  - Is it really cheaper to do CCS in CDM?
Incentivizing CCS via CDM / JI

- A key question will be what long-term levels of physical leakage (seepage) risk and associated uncertainty is acceptable
  - Is 0.01% per year acceptable?
  - Can be insured / set aside offsets
- Ultimately, who is liable if seepage occurs and the credits are already sold?
  - Is this risk insurable?
- Will the UN propose to create a sub-set of CERs, as they have done with forest based projects?
  - If so, will this sub-set be admissible in the EU ETS and other scheme?
  - Is it tradable enough when it is conditional?
Incentivizing CCS via CDM / JI

- Unlikely that a solution will be found soon. The process is slow and bureaucratic.
- EU sees CCS in CDM as bargaining chip: to get OPEC and China/India in, but
- Fear of CDM ‘lock-in’: would China/India be willing to accept an emission s cap if they have assured CDM investments for 20-30 years?
- With national or energy sectoral cap for developing country CCS could be paid with JI investments with less liability concerns and less transaction costs.
Observations

- A quick solution from environmental markets such as the EU ETS and CDM/JI is unlikely: but ETS market not too well understood
- More urgency needed to turn political support into practical means
- A legitimate question is whether markets can play a role at all, and whether Governments should impose a command & control regime to push for CCS: problem is partly a power market problem
- The climate problem is too serious to allow for thousands new facilities without CCS to come on line
  - A more pragmatic approach is needed
- The current ongoing research and experimental plants should provide guidance on the way forward