Incentivizing CCS through market based mechanisms

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and IEA Clean Coal Centre,
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by

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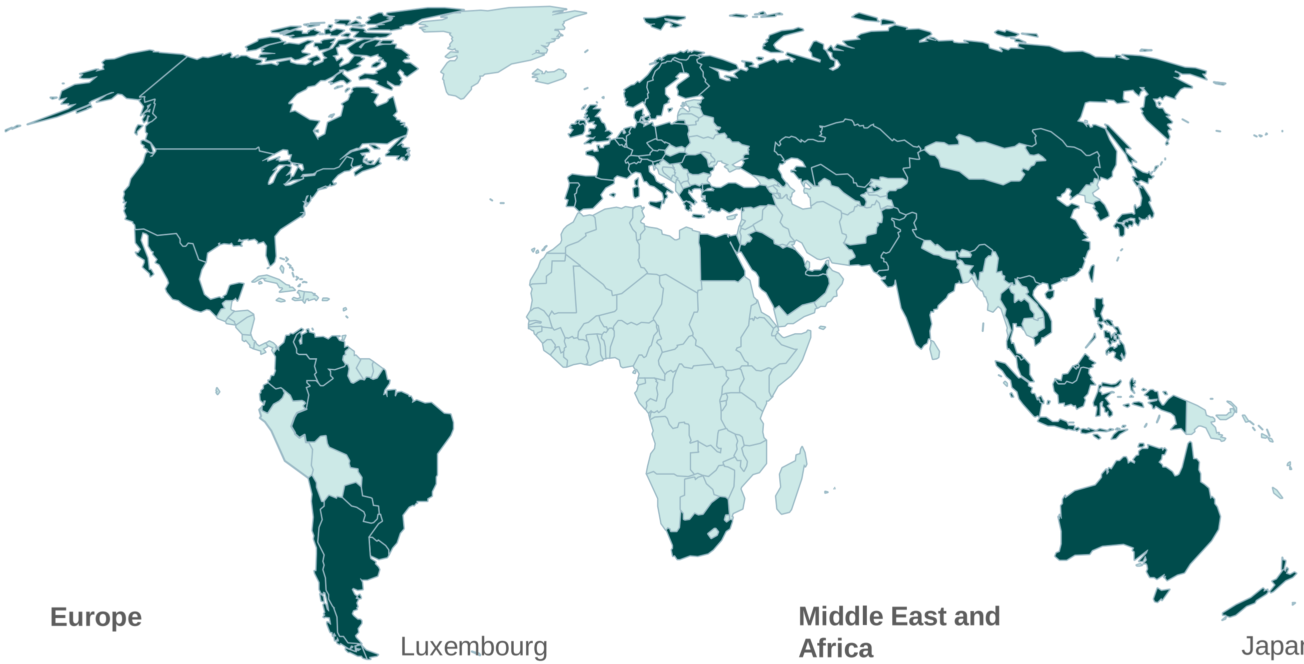

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JC Consulting Attorney’s portfolio

Since 1998:

- Outreach and seminars on CO_2 Market: from Amsterdam and Athens to Johannesberg
- Legal advice on ETS
- Strategic advice: how to gain CO_2 market access?
- Customers: from Dutch Environment Ministry, Russian MEDT, Shell Global Solutions and Horticulture Organisation to Environmental Defense and Greenpeace

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?

Advantages	Disadvantages
1. Banking and borrowing allows for flexible use of EUAs	**1. Allocation periods are too short – minimum of 15 years is needed**
2. EUA prices are likely to be robust	**2. Uncertain allocation methodologies**
3. Banking from Phase II into Phase III	**3. EUA prices have been volatile**

- 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?

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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/lCERs) 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?

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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