ECN

Energy research Centre of the Netherlands

CO_2 capture and storage: Policy and public perception

Heleen de Coninck, SB-24 Side-event, May 19, 2006

This presentation

Policy and regulatory issues

- Incentives
- Framework
- EU Emissions Trading Scheme
- Clean Development Mechanism

Public perception

- Outcomes of public perception studies to date
- Views of NGOs

Policy and regulatory issues

CCS technology available

Limited no-regret potential for CCS

- Capture-ready sources, on location, EOR
- 360 $MtCO_2$/yr (IPCC, 2005)

Structural incentive for CCS needed

Legal framework needed

- To ensure safety of storage sites
- To provide clarity for project developers

Policy and regulatory issues

Domestic legal framework

- Mining, drinking water and environmental laws
- Property rights
- Liability: local and global risks
  - EU: Directive on Environmental Liability

Clarity on international law

- Make prevention of harmful acidification illegal?
- UN Convention on the Law of the Sea
- London Convention and its Protocol
  - Include land-based pipeline?
- Preliminary guidance on OSPAR: CCS for CO_2 from offshore installations not prohibited

Policy and regulatory issues

IPCC 2006 Revised Guidelines for Inventories

- Emission reduction by source (not sink)
- Capture of emissions addressed in appropriate sectors (energy, industry, etc)
- Transport:
  - Seepage estimates for transport
- Storage:
  - Site characterisation; include potential leakage pathways
  - Monitoring plan consistent with site characterisation
  - Forward modelling of permanence
  - Post-injection monitoring consistent with forward reservoir modelling

EU Emissions Trading Scheme

Appropriate instrument for CCS implementation

However:

- Not included activity
- Uncertainty on appropriate methodology
- Final guidelines to be developed
- Interim guidelines can be proposed by Member States and approved by Commission
- Unlikely that any are approved with site characterisation and management guidelines still pending
- Prices currently too low for structural CCS deployment in the power sector (~ 11 €/tCO_2-eq)
- Policy certainty beyond 2012 lacking

Clean Development Mechanism

Project-based mechanism; end date

Approved by CDM Executive Board

Crediting time runs up to 21 years

2 large-scale geological storage submitted to the CDM Executive Board

- Vietnam: Gas-fired power station capture, transport offshore, Enhanced Oil Recovery
- Malaysia: Gas recovery operation offshore; capture-ready CO_2 source, injection in saline formation

Workshop on CCS and CDM staged on Monday

National policies

Netherlands: Government policy announced but the form is still unclear

- K-12B project: sponsored by CO_2-reduction plan
- Other projects announced; similar financial assistance
- R&D policy for fundamental research
- Technological development support for full-scale demonstration
- Financial gap compensation for electricity prices (parallel to feed-in tariffs for renewable energy), support beyond the ETS, decarbonised electricity certificates, etc..

National policies

Norway:

- Sleipner and Snøhvit project through offshore CO_2 tax
- Shell/Statoil project proposed in combination with EOR
- Government plan to only install gas-fired plants with CCS

United Kingdom:

- BP DF-1 project planned - financial support from government
- More structural financial support through energy review

Germany:

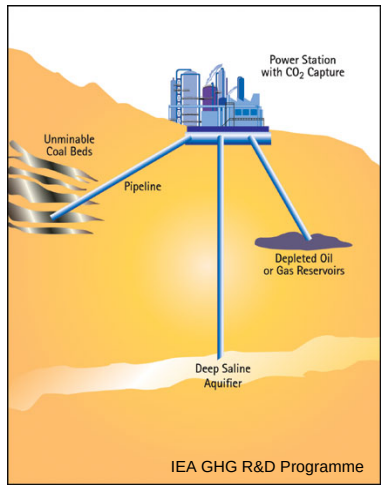
- Ketzin in-situ underground laboratory; EU research project
- Projects announced; Vattenfall claims to expect long-term viability through emissions trading

Lay public perception

Studies conducted in Australia, Canada, Japan, Netherlands, Sweden, United Kingdom and United States

Widely varying methodologies

- Internet surveys
- Citizen panels
- Written/phone/face-to-face questionnaires
- Energy option ranking efforts
- Expert/lay public groups
- Representative/non-representative



Results incomparable

General conclusions may be consistent

What do the countries have in common?

Awareness and knowledge of CCS generally very low

Knowledge of other mitigation options better but also poor

Initial reaction sceptical

Contextual conditions for acceptance

- Climate change seen as a problem
- Significant CO_2 reductions as a solution

Other relevant aspects

- Level of trust in key institutions important
- Trustworthy government and regulatory framework
- Smaller relative increase in electricity prices

Attitude seems to be more neutral than negative

Notable differences

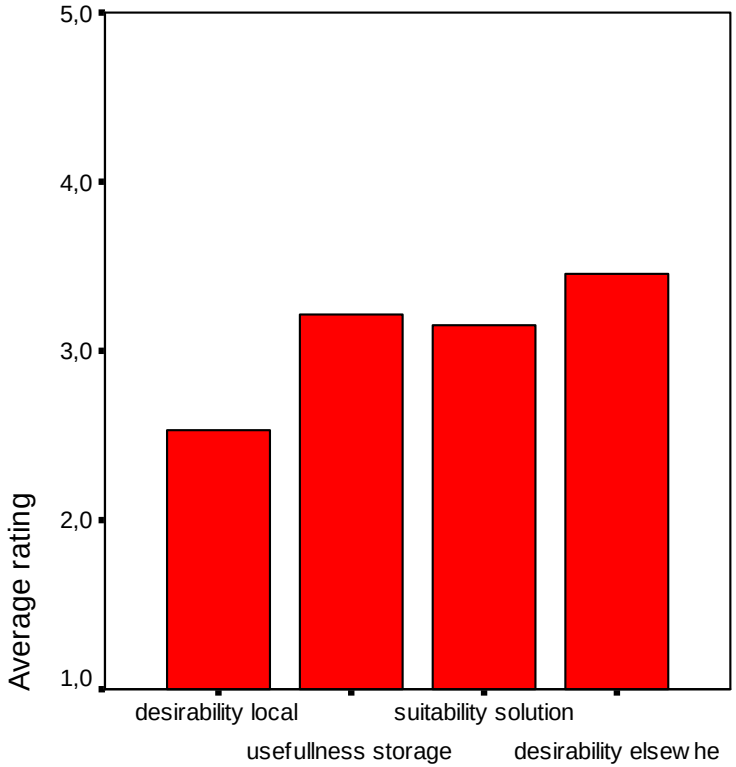
Pseudo-opinion?

Support for CCS

- Renewable energy > CCS > Nuclear energy
- But not everywhere; US exception

Impact of provision of information

Some Not-Under-My-BackYard feelings observed



Position of NGOs

Public opinion could be shaped by stakeholder groups
Public often identifies with NGO viewpoint

All opposed to ocean storage (as are most governments)
Contingent
Mostly not principally opposed against geological storage
Dependent on diversion from renewables
Nuanced viewpoint often seen:

- for CCS
- against spending public money (subsidies) or policy efforts (ETS, CDM)

An argument against nuclear?

To summarise…

If incentives in place, CCS could deploy rapidly, which might try public acceptance

Regulatory framework urgently needed to ensure safety and permanence

Public still volatile; could probably be persuaded that CCS is necessary, but could also be dissuaded easily in case of irregularities