

Legal and policy issues CCS

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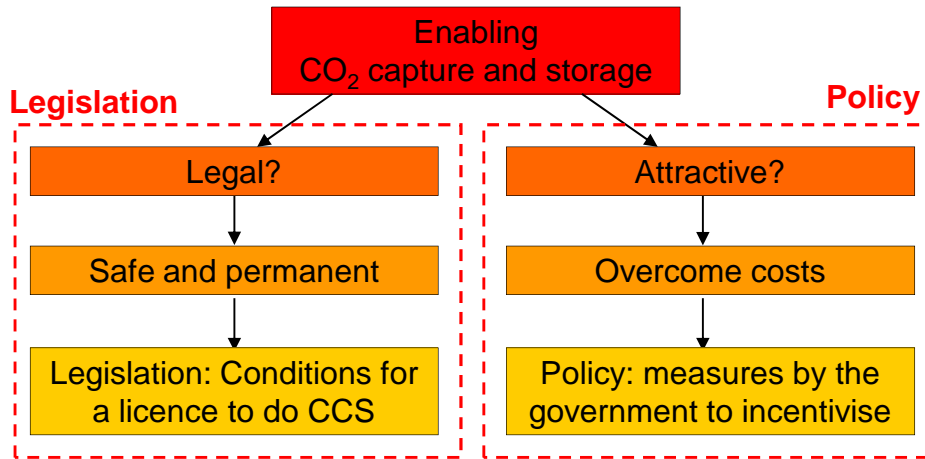
CCS-Africa workshop – Botswana, April 8th, 2010



Presentation outline

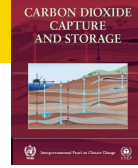
- Introduction
- Making CCS legal (and safe)
- Policy options
 - Domestic policy for CCS
 - International processes around CCS
 - Clean Development Mechanism
- Conclusions

Introduction



Legislation





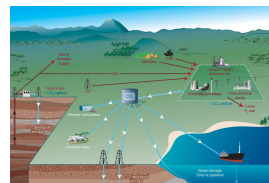
IPCC: legislation essential

- Fraction retained in appropriately selected and managed **geological** reservoirs is
 - very likely to exceed 99% over 100 years, and
 - is likely to exceed 99% over 1,000 years.

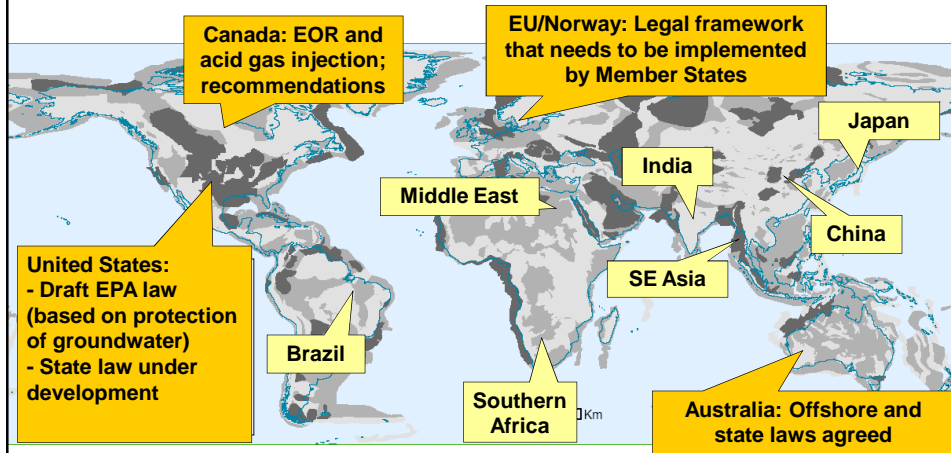
("Likely" is a probability between 66 and 90%, "very likely" of 90 to 99%)
- But only if: appropriate **site selection**, a **monitoring** program to detect problems, a **regulatory system**, **remediation methods** [..], risks are comparable to risks of current activities (natural gas storage, EOR, disposal of acid gas)

How do we ensure all that?

- Through laws that arrange under which conditions a license is extended
- Differs greatly per country, depending on the legal regime in the jurisdiction
 - Who owns the pore space?
 - Who is the competent authority?
- International accounting
- Existing legislation



CCS legislation around the world



How is CCS made legal?

European Union (2008):

- Passed a set of laws that removed legal obstacles in other legislation (IPPC, Water, Waste, others)
- Passed the CO₂ Geological Storage directive
 - Storage permit only if there is “no significant risk of leakage”
 - Liability transfer to Member State when evidence indicates that the CO₂ is completely and permanently contained
 - Prescribes to some degree site selection, characterisation, risk assessment and monitoring plan
- Member States need to implement the CCS-Directive by mid-2011

Public perception and legislation

Legislation could also arrange for public consultation

- Trust of officials and experts or scientists is essential
- Information provision by trusted individuals and institutions
- Consultation



Experience in Europe and the United States shows that without consultation, protests may occur



International: IPCC guidelines for inventories

Site characterisation: Identify geology of storage site, local and regional hydrogeology and seepage pathways

Risk of seepage: Evaluate potential for seepage based on site characterisation and realistic models that predict CO₂ movement

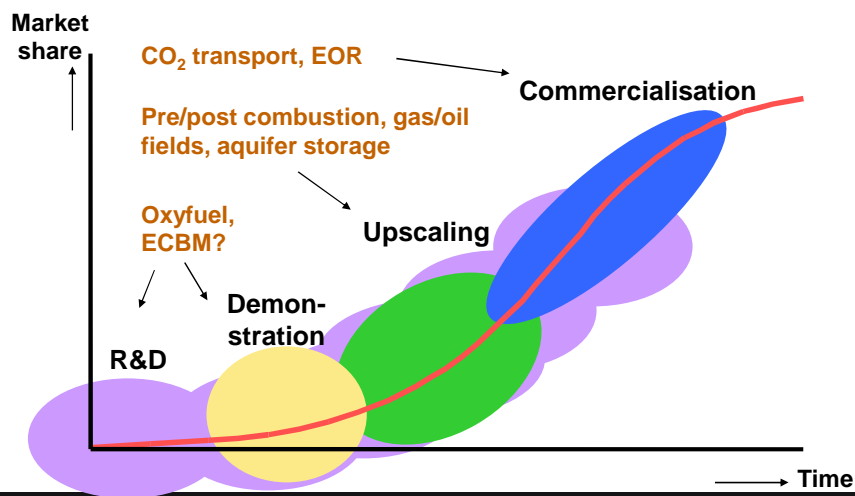
Monitoring plan: Adequate measurement based on seepage pathways identified. Validate update models if necessary

Report CO₂ injected and emissions from storage site

Policy



Appropriate policy for innovation phase?

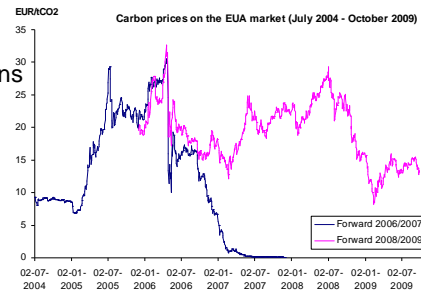


Domestic emission trading/carbon markets

Considered in United States, Australia
Operational in European Union since 2005

EU Emissions Trading Scheme

- Cap-and-trade of allowances; “constructed market”
 - Ca. 15,000 installations in EU (power, industry)
 - Cost- and environmentally effective instrument, if cap is low, enforcement is strong and leakage minimal
 - However, if EUA prices remain low:
 - Preference for low-cost abatement options
 - Innovation market failure
 - ETS unlikely to lead to CCS deployment
- Need for complementary policies

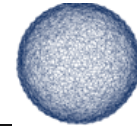


Policies other than emissions trading

- Public financial support, such as investment support, feed-in subsidies or CO₂ price guarantee
 - EU: stimulus package (1 bln), 300 million allowances
 - Canada, Australia, Japan, Norway: funding for demonstration projects
 - United States: stimulus package
- Carbon tax:
 - Norway ca. 40 US\$/tCO₂ for offshore gas and oil industry
- Low-carbon performance standard
- CCS mandate for new coal/gas-fired power plants

International processes

- IPCC: Special Report on CCS (2005) and Guidelines for Inventories (2006)
- United Nations
 - Kyoto Protocol: Clean Development Mechanism
 - Copenhagen Accord: Nationally Appropriate Mitigation Actions (NAMAs)
- Carbon Sequestration Leadership Forum: Knowledge exchange and coordination
- IEA, IEA GHG R&D Programme: information provision, roadmaps
- Global CCS Institute: facilitate demonstration



CCS in the Clean Development Mechanism

IPCC (2005): Special Report published

November 2005: two CCS-methodologies and projects submitted to the CDM Executive Board

Forwarded to COP/MOP: more information needed

Workshop held SB-24: Bonn, 22nd May 2006

The two submitted CCS methodologies reviewed and rejected on procedural grounds

Report and follow-up discussed at COP/MOP2 in Nairobi (Dec 2006)

SBSTA-27 (June 2007) decision on further process and submissions for June 2008

Discussions at COP/MOP4 in Poznan (2008) and COP/MOP5 in Copenhagen (2009) have not resolved the issues

Where would we see CCS first?

High-purity CO₂ sources

- Coal-to-liquids
- Bioethanol production
- Natural gas processing
- Hydrogen production (in refineries)
- Ammonia production

Revenue-generating CO₂ storage options

- Enhanced Oil Recovery
- Enhanced Coal Bed Methane recovery



The issues around CCS in the CDM

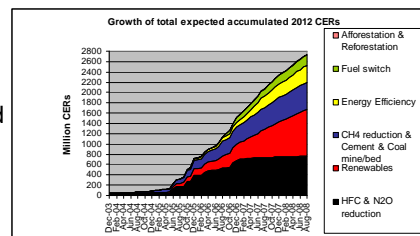
Procedural issues: current CDM procedures not compatible with CCS technology

Uncertainty: CCS technology considered relatively new and not fully proven

Resistance to CCS in the CDM by environmental organisations and some governments

- Sustainable development
- “Developing countries as guinea pigs”
- Impact of CCS on other options

Funding for awareness raising, regulatory support and small pilots in developing countries under consideration (GEF, World Bank, GCCSI)



Conclusions

- ✓ **Accounting for GHG inventories**
- ✓ **CCS legal: in some areas well underway, in others still to be done**
- ✓ **CCS incentives for demonstration**
- ✓ **Structural incentive**
 - **Clean Development Mechanism**
 - **Bilaterally supported NAMAs?**

Thank you

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