Policy and Regulatory Frameworks for CCS

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IPIECA Roundtable 2006

CO_2 Capture and Geological Storage; Policy and Regulatory Development

Houston, Texas, January 2006

Purpose: Build consensus across the oil and gas industry on;

- Role of policies and regulations in CCS and analogous operations (i.e. EOR and Acid Gas Injection)
- Existing regulations
- Permitting
- Liability
- Monitoring and verification

Key Messages: Priority Issues

Participants of the Roundtable identified and prioritized the following issues.

1. Legal/Regulatory Issues
   - Potential classification of CO2 as a waste in pre-existing regulations
   - Long-term liability
   - Monitoring

2. Industry Strategies
   - Relationship to power industry CO2 sources
   - Potential business model
   - Role of IPIECA (e.g, best practices, facilitate gov't. interaction)
   - Impact on current operations

Key Messages: Priority Issues

Participants of the Roundtable identified and prioritized the following issues:

3. Incentives (e.g., importance of CCS in CDM, crediting, R&D incentives)

4. Transfer knowledge of CCS to policy makers in climate change policy
   - What are industry's goals? How does CCS fit into business portfolio?
   - G8 Glenneagles Plan of Action – Role of CO2 EOR: Early Opportunities

5. Public acceptance

Issues Identified by IPIECA CCS Task Force

- HES criteria for the development of large scale infrastructure
- Likely magnitude of size and number of near-term projects
- Site assessment, evaluation, selection and permitting criteria – including the identification of a competent and credible regulatory authority
- Contribution of CCS to sustainable development
- Technology transfer to allow the deployment of CCS in developing countries
- Regulatory treatment of impurities within CO2
- Carbon leakage from the incremental oil production associated with EOR
- Incentives for widespread deployment of CCS – including infrastructure for CO2 transport and storage
- Transboundary transportation of CO2
- Measuring, monitoring and verification issues – including the identification of a competent and credible regulatory authority
- Permanence of stored CO2
- Liability and emissions accounting for multiple users of same storage formation
- Long-term liability and decommissioning

CO_2 Capture Project

CO2 Capture Project
Policies & Incentives Work Program
2006-2007

Key Issue Areas (1)

"Light" Advocacy entails response to regulatory proposals and policy white papers. Areas of key issues will likely focus on:

- **Promotion of CCS as a viable means of managing significant GHG emissions worldwide**
- **Acceptance of CCS within GHG emissions trading systems**
- **Acceptance of CCS within international conventions not originally contemplating CO2 capture and storage**
- **Promotion of appropriate levels of environmental, health and safety protection for site evaluations and permitting of transport and storage structures.**
- **Regulations commensurate with the risk level associated with CCS**

Key Issue Areas (2)

"Light" Advocacy entails response to regulatory proposals and policy white papers. Areas of key issues will likely focus on:

- **Consistency in regulations between jurisdictions as possible and appropriate**
- **Consistency in regulations regardless of source or location of CO2 emissions**
- **Government incentives for pre-commercial CCS technology development without promoting a particular technologic solution (i.e. government should not pick the winner)**
- **Government partnership in CCS technological development and public education/outreach**
- **Opportunity for industry involvement in public policy development**
- **Facilitation of technology transfer to developing countries**

Principles Paper for Decommissioning & Long Term Liability

- Shared liability with governments.
- CCS Operator remains responsible for the integrity of the site, monitoring of the site, and make reasonable efforts to reinject or offset any re-emission to the atmosphere, after decommissioning in a period referred here as “post closure” period.
- After the post-closure period, full transfer of all liability, monitoring, mitigation responsibilities to the government authority occurs.

Shared liability with government and full transfer of such liability to government after a period of time post closure.

Principles Paper for CO2 and Impurities

- CCP2 should oppose regulatory proposals that label pure CO2 as a waste, particularly as a hazardous waste.
- CCP2 should support the inclusion of an assessment of transport, injection, and storage of CO2 either co-captured with other chemical compounds (or not) as part of any environmental impact assessment that is normally conducted in the permitting process of a project.
- CCP2 should advocate a position consistent with the protection of health and safety of workers and the local community, and the protection of the environment surrounding the capture, transport, and storage facilities. The concentrations of these compounds in the CO2 stream should be reduced cost-effectively to levels posing no immediate harm to workers or the local community. If reductions to trace levels are not cost-effective, then CCP2 should advocate cost-effective monitoring of these compounds to ensure that adequate warning can be given to workers and the local community to take protective actions.

CO2 should not be defined as a waste. If it is so defined, and the co-capture of other chemical compounds are deemed as such, CCP2 should advocate principles of cost-effective reductions and monitoring, consistent with the protection of health, environment, and safety of the local community.

Principles Paper for Incentives and Disincentives for Widespread Deployment

Select principles for advocacy:

- **Funding basic research and development of CO2 capture and storage technologies is the shared responsibility of government and industry.**
- **Government should provide some form of assistance for up-front capital costs necessary to develop large-scale CO2 capture, transportation and storage infrastructure.**
- **Government policy should recognize that the capital and operating costs associated with CO2 capture are the largest single piece (>80%) of the capture, transportation and storage life cycle.**
- **Policy incentives to encourage deployment of capture technology are appropriate.**
- **Regulations related to CCS should not act as a disincentive for CO2 capture.**

The high costs of current capture technology and the need for infrastructure development remain key areas where targeted financial and policy incentives can help spur widespread deployment.

G8 IEA CSLF Workshop on Near Term Opportunities

San Francisco, CA, 22-23 August 2006

Five Breakout Sessions Designed to Work Issues Influencing Near Term Opportunities:

- Technical
- Commercial & Financial
- Legal & Regulatory
- Public Awareness
- International Mechanisms

Participants assigned to each session have expertise and opinions to share.

Preamble

Category	Issue
Urgency	1) Ensure legislators/regulators understand the sense of urgency
	2) Don't aim for 'perfect' regulation (i.e., shouldn't make projects wait)
Uniqueness of CCS	1) Recognition that CCS differs in scale of operations (both size and time) from analogues (e.g., AGI, natural gas storage)
Policies/regulations for early movers	1) Use of early movers to develop regulation
	2) Put legislation/regulation in place necessary to encourage likely, near-term projects
	3) In absence of regulation, can 'appropriate guidelines' be used?
	4) 'Temporary regulation may not be complied with
	5) Policy needs to be set before legislation can be derived
	6) Implementation of regulatory regimes that incentorize early adoption back-stopped by willingness to 'grandfather' early projects
	7) Discretion of regulators

Specific Opportunities Discussed

- High concentration industrial sources
- Hydrogen production
- Enhanced oil recovery
- Gas Production with CO_2 reinjection
- "Capture ready" power plants and other facilities
- Early demonstrations

Any others?

- Projects in countries with CO_2 incentives (e.g., cap and trade system, carbon tax)
- Capture of CO_2 from biofuels

Definitions

Priority	Definition
Critical	Progress on near-term opportunities cannot be made unless this issue is resolved.
Important	Progress can be made without fully resolving this issue, but lack of resolution could be a hurdle that could slow implementation.
Other	Resolution of this issue may be helpful, but not necessary at a critical or important level.

Legal and Regulatory Issues
Critical Issues Identified (1)

Category	Issue	Priority
Ownership/liability issues	1) Need to account for liability along the CCS chain	Critical
	2) Retroactive liability	
	3) Insurance for earliest projects	
	4) State aid and its limitations	
Regulatory treatment of CO2	1) Compliance with applicable, existing regulation (if it exists)	Critical
	2) Possibility of CCS regulation under existing regulations	
	3) Tolerance for contaminants	
	4) Definition of CO2 as a waste or commodity (circumstantial)	
Monitoring / remediation issues	1) Need for system to be in place to monitor possible leakages/seepages over time	Critical
	2) Remediation	

Legal and Regulatory Issues
Critical Issues Identified (2)

Category	Issue	Priority
Property rights/IP issues	1) Need for other resources (e.g., mineral) to be protected	Critical
	2) Need for regulation of geophysical trespassing	
	3) How to deal with ownership of resources (e.g., mineral, surface, water)	
	4) Ownership of pore space	
	5) Unitization of CO2 storage to make clear who stakeholders are and what their roles are	
	6) Need to address regulatory status of use and siting of transportation infrastructure	
	7) Intellectual property	
Jurisdictional issues	1) How to deal with competing laws in the case of transboundary issues	Important for national jurisdiction/ critical for some offshore projects
	2) Need to distinguish between national and sub-national jurisdiction for onshore projects versus international law for offshore projects	