Sixth Annual Conference on Carbon Capture & Sequestration

Perspectives on the Potential Elements of Oversight Regime(s) to Govern Various Approaches to CCS

Legal and Regulatory Challenges

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Current Barriers to CCS Deployment

- Technological
- Economic and financial
- Public attitude and acceptance
- Policy, legal and regulatory

Where are the Stumbling Blocks?

- Capture and transportation are industrial processes that are active only during the operational stage of a CCS project and that are extensively regulated, with precedents and analogues from other industries
- Injection: process extensively regulated, at least in certain jurisdictions, and that model can be adopted
- Storage: long term, unregulated process as yet, with analogues in some jurisdictions

Policy Issues

1) Classification of the CO_2 injection stream:
   - Commodity (if it is produced from the ground or traded)?
   - Greenhouse gas?
   - Pollutant?
   - Waste?
   - Hazardous waste?
   - Toxic substance?
   - Controlled substance?

Depending on classification, it will be treated differently and it will be subject to more or less stringent controls and regulations, regardless of CO_2's intrinsic characteristics

Policy Issues

2) Ownership of the pore space (mineral rights)
   - State, Crown, government,
   - Free holders

3) Competition and priority between storage rights and other mineral rights, co-optimization of resources
   - Fossil fuel production for energy security and revenue, versus
   - CO_2 storage for greenhouse gas emission reduction

Policy Issues

4) Third party transfer and credit allocation during the storage process

- CO_2 emitter (e.g., power plant),
- pipeline operator,
- field and well owner and operator

Reverse analogy with the oil and gas industry:

- upstream (exploration and production),
- midstream (gathering and pipelines), and
- downstream (refineries and gas stations)

Policy Issues

5) Long term ownership and liability after cessation of injection (the "who?")
   - Monitoring duty and liability
   - Remediation liability in case of leakage
   - Financial liability

   - Third party transfer in case of merging and acquisitions
   - "Orphan" sites
   - Ultimate transfer to the state (what level of government in federal nations, federal or state/provincial?)

   The State of Texas passed legislation to undertake liability for FutureGen, is this setting a precedent?

Who Will Take Care of Orphan Storage Sites?

Abandoned well leaking brine and gas

What about CO_2 Leaks through Natural Pathways?

Natural gas seepage at Hot Pots, northern Alberta, Canada

Territorial and Constitutional Jurisdiction

- International agreements (in force or being negotiated, e.g. London Convention and OSPAR)
- National jurisdiction, including territorial waters
- Sub-national jurisdiction (state or provincial in federal nations)
- Transborder movement (intended, as in pipelines, or unintended, as in plume migration)

Issue of overlap, differences and precedence:

- Natural resources versus waste disposal
- Air, water, subsurface
- Sea, subsea

Organizational Jurisdiction

Competition between, different mandates, and different philosophies and approaches of:

- Development/Energy ministries/departments – “you can do it unless explicitly forbidden” ☺
- Environment ministries/departments/agencies, which tend to be more restrictive – “you can’t do it unless explicitly allowed” ☹

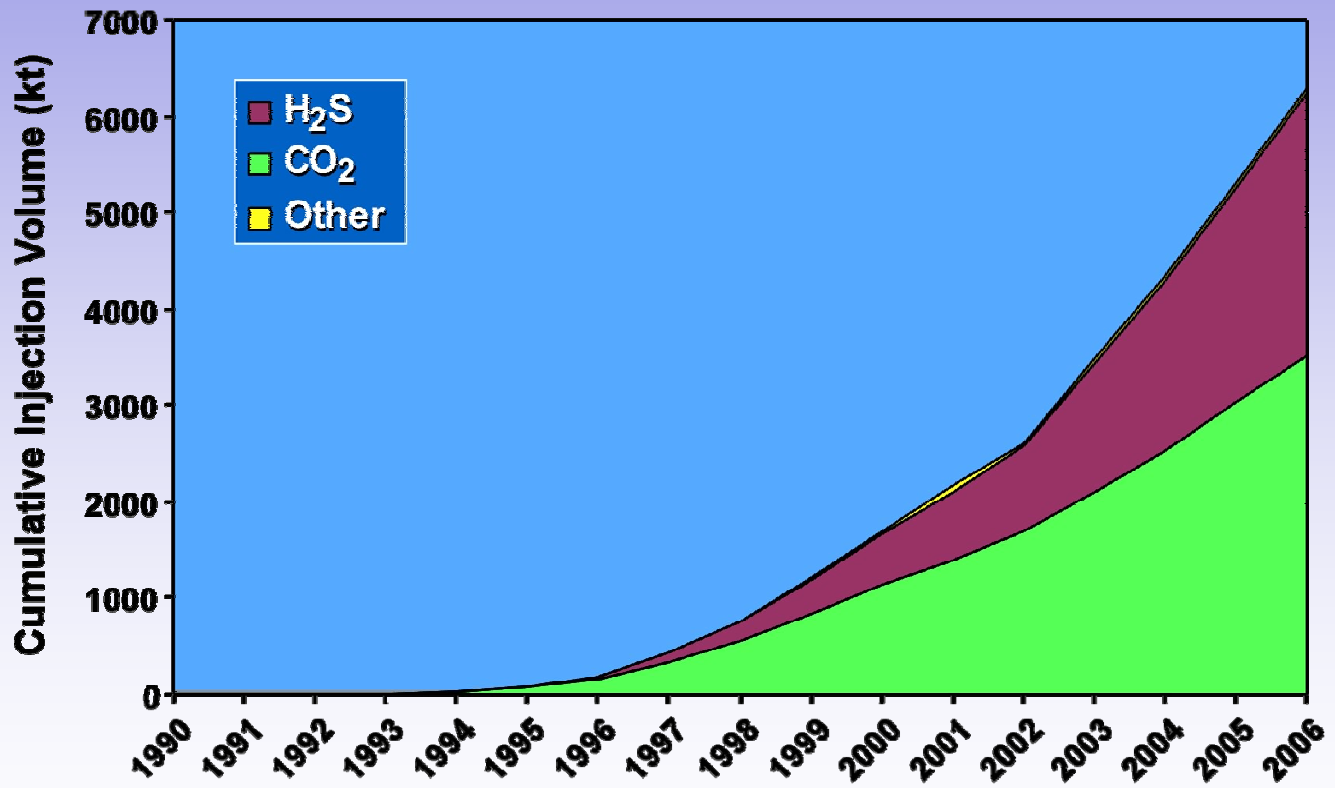
Regulatory Issues

- Origin, type and level of impurities in the CO_2 stream (H_2S, NO_x, So_x, etc.)
- Application and permitting process
- Operational and post-operational monitoring and remediation (the “what?” and “how often?”)

Location of Acid-Gas Injection Sites in Canada

Average Composition of Acid Gas Injected In Western Canada

Cumulative Amount of Acid Gas Injected in Western Canada

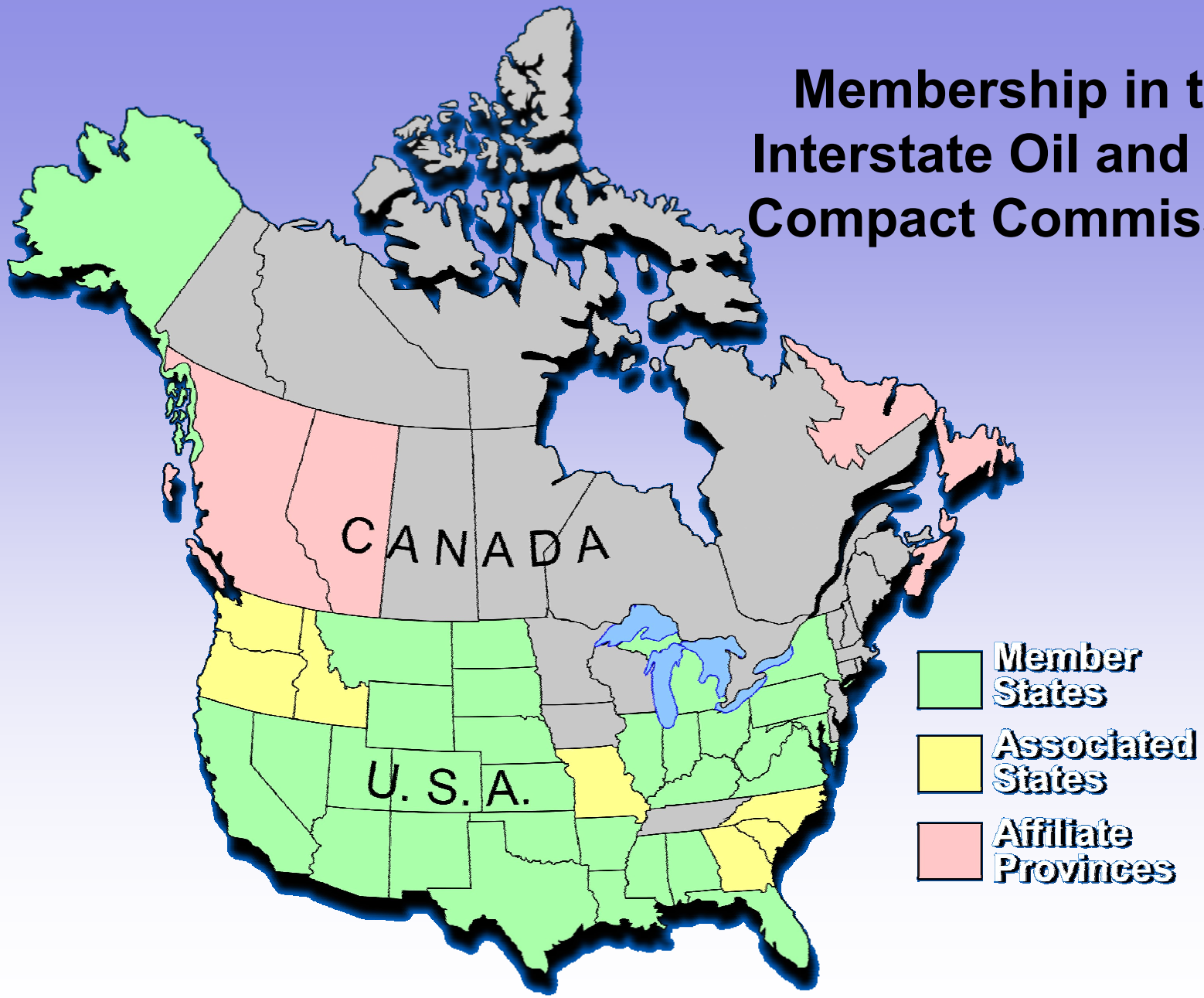


Regulatory Status

- Some North American jurisdictions, like Alberta and Texas, have already in place a regulatory framework for CO_2 transportation and injection, for both enhanced oil recovery and acid gas disposal, that can be adapted and/or adopted for the operational phase of CCS (in Alberta, CO_2 is explicitly listed among allowed injection fluids in Class III injection wells!)

- There is need for the development of a post-operational (post-injection) regulatory framework (see proposed model statutes by the IOGGC Task Force on CO_2 Geological Sequestration")

Membership in the Interstate Oil and Gas Compact Commission



Concluding Remarks

- Industry won’t move unless the rules are established and clear
- Policy makers need to establish legislation!
- Regulators will implement regulations!