



# **POLICY, LEGAL AND REGULATORY ISSUES IN CARBON CAPTURE AND STORAGE (CCS)**

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## Why are Policy, Legal and Regulatory issues so important?

Critical issues identified by CCS business and financial experts:

- Where is the value from CCS?
- What is an appropriate government role?
- How can viable markets related to CCS be created?
- How can commercial risks be managed?
- How can cost be reduced along the value chain?
- How can we build the necessary commercial expertise?

*Policy, legal & regulatory aspects seen as paramount.*

*Risk due to immature/uncertain framework is a major constraint.*



## Stakeholders have varied interests:

- Source industries
- Service providers
- Local residents
- Agriculture
- Environmental NGOs
- Other industries and local businesses
- Financial community
- Government agencies
- Academic and research community



*What is the appropriate balance among these interests?*

## Rationale for CCS



CCS will eventually effectively, safely and affordably reduce the impact of fossil fuel production and use on climate change.

### **Fundamental Issue**

*Given this rationale and the interests of stakeholders, what is the role of government, its policies, laws and regulations?*

## Legal-regulatory issues arise in each component of CCS.

Some of the issues...

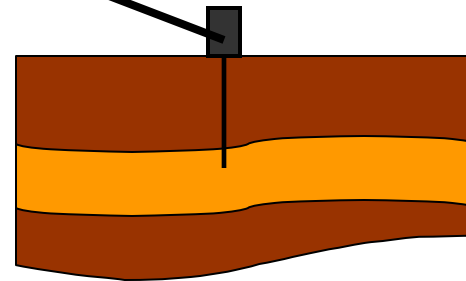


### Capture from CO<sub>2</sub> Source

- Health & Safety
- Reporting of captured CO<sub>2</sub>
- Property rights in CO<sub>2</sub>

### Transport

- Health & Safety
- Pipeline ownership
- Third-party access




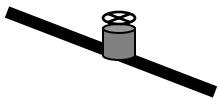
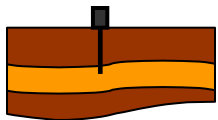
- ### Geologic Storage
- Licensing
  - Reporting
  - Injection rights
  - Monitoring
  - Liability

### Common Considerations

- Permitting process at each stage
- Coordination of different stages
- Categorization of CO<sub>2</sub> emissions
- Multiple jurisdictions



These issues vary with time and go beyond closure for storage.

Project Element	Project Phase		
	Planning	Operation	Post-Closure
 Capture			
 Transportation			
 Storage			



## Some further complications:

- Different parties own obligations at each stage.
- Some of the legal basis has yet to be set.
- Applicable laws not developed with CCS in mind.
- Different legal/regulatory entities are involved.
- Legal/regulatory process is starting to happen.
- Regulation developed for near-term options, not longer-term options.



## Key Policy, Legal, and Regulatory Issues

- **Over-Arching**
  - Incentives/disincentives for CCS
  - Classification of CO<sub>2</sub>
  - Public involvement and support
  - Relationship to existing oil and gas regulations
  - Protection of the international marine environment
- **Planning**
  - “Capture-ready” requirements
  - Siting and permitting
  - Intellectual property/technology transfer
- **Operation**
  - Industrial and public safety
  - Resource protection
  - Measurement, Monitoring and Verification
  - Proper closure
- **Closure and Beyond**
  - Long-term liability and responsibilities
  - Measurement, Monitoring and Verification



## Key Policy, Legal and Regulatory Issues

- Over-arching
  - *Incentives/disincentives for CCS*
  - *Classification of CO<sub>2</sub>*
  - *Public involvement and support*
  - Relationship to existing oil and gas regulations
  - Protection of the international marine environment
- Planning
  - *“Capture-ready” requirements*
  - Siting and permitting
  - *Intellectual property/technology transfer*
- Operation
  - Industrial and public safety
  - Resource protection (groundwater, minerals, etc.)
  - Measurement, Monitoring and Verification
  - Proper closure
- Closure and Beyond
  - *Long-term liability and responsibilities*
  - *Measurement, Monitoring and Verification*

Topics to be discussed today.



## Incentives/Disincentives for CCS

- **Incentives:** Why would anyone want to do CCS?
  - Business perspective: How does CCS create value?
  - Public policy perspective: How do we motivate investment in CCS? How much should society pay? Who should pay? Is the playing field level for different carbon management options?
  - Types of incentives: Carbon credits, CDM, tax incentives, etc.
  
- **Disincentives:** What could inhibit CCS?
  - Classification of CO<sub>2</sub> as a “waste”
  - Unresolved liabilities
  - Uneconomic costs
  - Uncertainty



## Classification: Is CO<sub>2</sub> a waste or pollutant under existing laws?

- Many environmental laws and regulations (including international treaties to protect the marine environment) were enacted before CO<sub>2</sub> became a concern.
- Issues:
  - Is CO<sub>2</sub> covered under these laws?
  - Is the treatment of CO<sub>2</sub> appropriate?
  - How does this affect CCS?



# Public Support: Enabler or Roadblock?

Reasons the Audience Can Be Hostile

Factors	More Hostility	Less Hostility
Catastrophic potential	Grouped in time and space	Scattered in time and space
Level of familiarity	Uncommon	Very common
Level of understanding	Not well understood by science	Well understood by science
Level of personal control	Controlled by a distrusted individual	Controlled by the source
Voluntariness	Involuntary	Voluntary
Effects on children	More likely to affect children	Less likely to affect children
Moral relevance	Relevant	Not relevant
Timing of effects	Immediate effects	Delayed effects
Identity of victims	Closely related	Statistical victims
Level of dread	Greatly feared	Apathetic
Level of trust in institutions	Distrust	Trust
Amount of media attention	Highly popularized	Seldom mentioned
History of accidents	Well-known accidents	No accidents
Equity (fairness)	Viewed as unfair	Viewed as fair
Distribution of benefits	Benefits distributed unequally with risk	Benefits distributed equally with risk
Reversibility	Damage irreversible	Damage reversible
Personal stake	Strong	Weak
Origin	Artificial	Natural
Level of uncertainty	Unknown to science	Known to science
Tone of message	Too positive	Objective
Organizational attitude	Organization ignores	Organization seeks out concerns and acknowledges concerns
Degree of change in lifestyle	Sharp change from normal	Little change from normal
Degree of understanding of process/data	Process/data presentation too complex	Process/data presentation aimed at audience

*(Handout)*



## Capture-Ready Facilities

- The idea—build a plant now without capture and add capture later when the technology is better developed and more affordable.
  - *An intuitive concept, but what does it really mean?*
- Perspectives differ...
  - Policy perspectives: Will requirements produce benefits?
  - Business perspective: Options—what are they worth?
  - Environmental NGO perspective: Will CCS really happen?

*Should capture-ready facilities be required?*

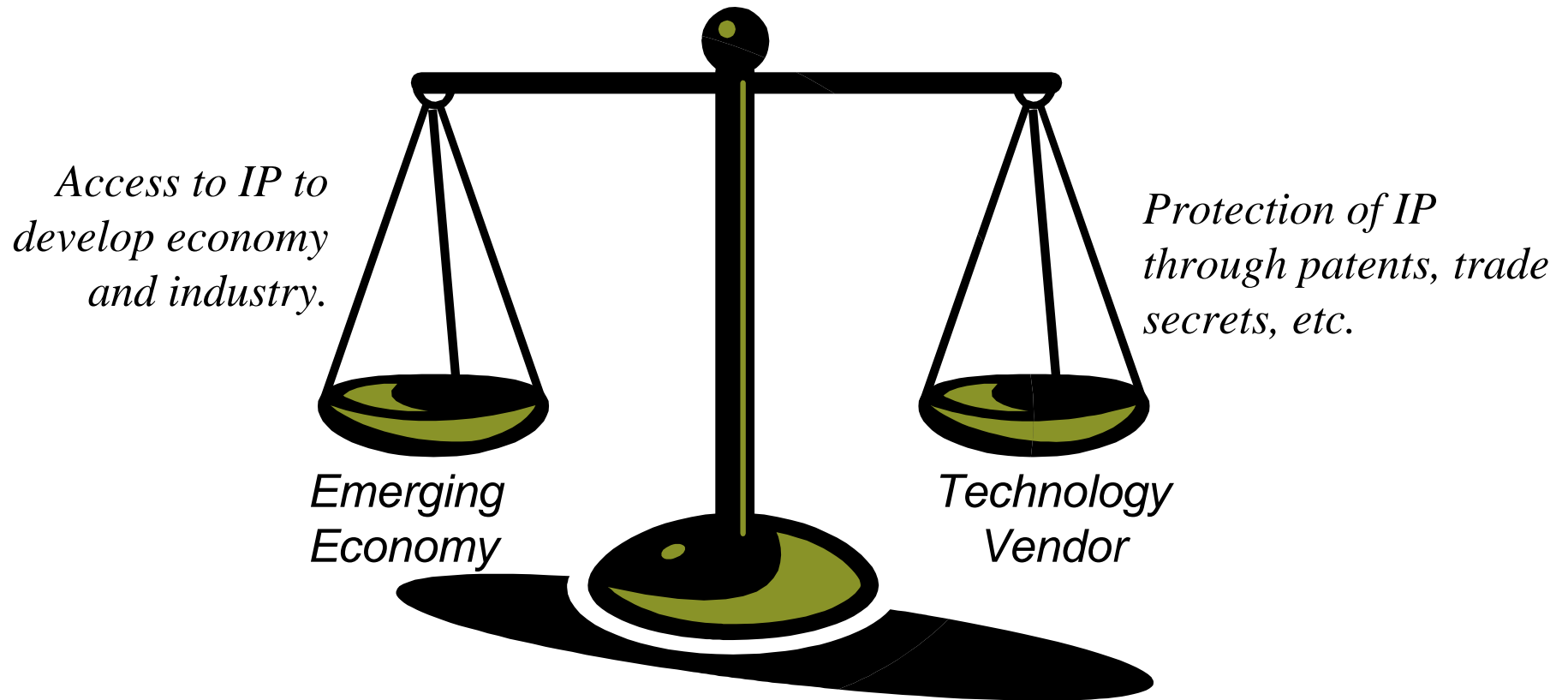


## Proposed IEA Definition of “Capture Ready Plant”

- A plant which can include CO<sub>2</sub> capture when the necessary regulatory or economic drivers are in place.
- Avoids “stranded assets” and “carbon lock in.”
- Developers should consider all factors including:
  - A study of options for capture and potential pre-investments
  - Inclusion of sufficient space
  - A reasonable route to CO<sub>2</sub> storage
- Competent permitting authorities should be provided with sufficient information to judge

Source: IEA Greenhouse Gas Programme

# Intellectual Property/Technology Transfer



*What is the appropriate balance between these interests?*



## Post-closure: Who ensures that the CO<sub>2</sub> remains where it is supposed to be?

- How much continued monitoring is needed?
- Who has responsibility for
  - Ongoing monitoring,
  - Any needed remediation, and
  - Compensating any damages?
- What long-term liability does the project operator have?

*How can post-closure risks be managed?*

**Forthcoming Publication: June 2007**



## “Legal Frameworks for CO<sub>2</sub> Storage Update and Recommendations for Future Work”

By International Energy Agency, based in part on joint IEA-CSLF Workshops on Legal Aspects of Underground Storage of CO<sub>2</sub>