



# Liability and Accounting for CCS

Elizabeth Wilson  
Humphrey Institute of Public Affairs  
University of Minnesota

WRI Carbon Capture and Storage Project  
February 28, 2006  
Washington DC



# Overview

- Main accounting issues
- Main liability issues
- Questions for resolution



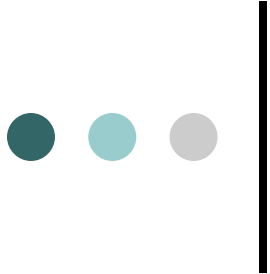
# Accounting

- Injected CO<sub>2</sub> must count for something within larger framework
  - International or national system
  - For international firms, compatibility with international standards important
- Methodologies from capture to storage
  - Short term  
Easier
  - Long term  
Challenge



# Accounting

- UNFCCC Frameworks
  - Current accounting fuel combustion → CO<sub>2</sub> emissions
  - Inclusion in project-based activities
  - Sink enhancement – create new category of sink
  - Source reduction – change emissions factors
    - Potentially more complex and less transparent



# Accounting – Voluntary Reporting 1605(B)

- Draft Technical Guidelines March 2005
- Interplay with accounting and MMV
  - “Over the long term, stored carbon dioxide should be measured and monitored both for safety reasons and to ascertain if any leakage of the stored carbon dioxide occurs” p. 156
  - “Any physical leakage of carbon dioxide from the permanent storage site measured within the current reporting year but after the time of injection should also be treated as an emission”
- Sold CO<sub>2</sub>, right to reductions transferred to purchasing entity
  - Fugitive emissions belong to party in possession at time of leak
- Injection = permanent sequestration
- EOR
  - Assume all emitted
  - Life-cycle approach
  - Active MMV

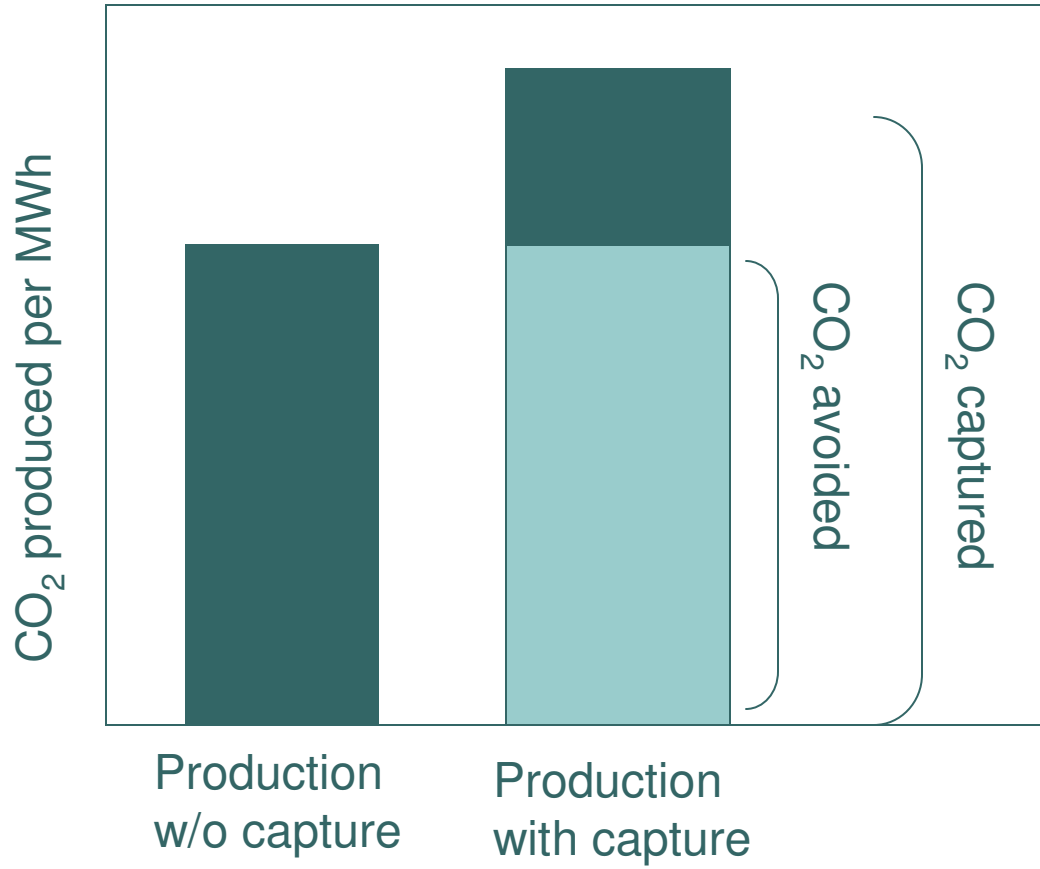


# Accounting for emissions

- Operational accounting relatively easy... fuel in, CO<sub>2</sub> out
- Capture: Baseline considerations... sequestration compared to WHAT?
  - It takes CO<sub>2</sub> to capture and sequester CO<sub>2</sub>
  - Marrakech Accords, 3 baseline approaches
- Transport emissions =
  - CO<sub>2</sub> captured – CO<sub>2</sub> injected
  - or more complicated fugitive emissions calculations along the pathway?



## Establishing a baseline





# Accounting for leakage

- Sequestration
  - Going in is easy
  - Leaking out is harder to quantify...
  - Accounting for the *potential of leakage*
    - Impermanent storage, similar to terrestrial sequestration?
  - Implications of different approaches to accounting for leakage



# Accounting – other considerations

- Escaped CO<sub>2</sub> reported in national inventories as
  - Fugitive emissions?
  - New category for CO<sub>2</sub>
- What about CO<sub>2</sub> that has already been injected?
  - EOR...reporting and registering
    - 1/2 to 1/3 credit?
- What about cross-border CO<sub>2</sub>?
  - Reported in different national inventories
    - Who monitors? Who gets credit?
- Differential between CO<sub>2</sub> accounted for and CO<sub>2</sub> sequestered
  - Credit based upon accounting, liability based on amount injected...



# Liability

- More than just leakage to surface...
- Operational liability, covering injection activity
  - Pretty well covered by existing mechanisms
- Post-injection: Long-term liability (*in situ* liability)
  - Subsurface: Potential damage to hydrocarbon resources, potable water supplies, induced seismicity
    - Need to create large and legal sequestration sites!
  - Surface: leakage causing harm to
    - People
    - Agriculture/Forestry
    - Natural ecosystems
    - Climate\*\*
  - Play into risk perception and siting issues?



# Liability

- Mechanisms to manage long term liability
  - Contractual – negotiable
    - Climate – Carbon credits
  - Tort – damage to groundwater, hydrocarbon resources,, public health, induced seismicity (?)
- Different models for liability
  - Operational liability assumed by injecting party today
  - Long-term (+5, +10, +30 years?) assumed by
    - Public?
    - Private fund?
    - Special insurance?
- How to pay for liability (de Fig)?
  - Compensation fund to cover damage/remediation?



# Overarching questions

- How do we ensure site integrity for both accounting and liability purposes?
- How do we develop accounting and liability mechanisms given imperfect storage?
- What type of baseline approach will provide satisfy both public and private needs? What are the implications of different types of baseline approaches?
- How to account for leakage to surface? At what point
- What are the implications of different accounting frameworks on system cost, reliability, transparency, and integrity?
- What additional mechanisms are needed to manage potential *in situ* liability?
  - Harm to hydrocarbons, potable water supplies, induced seismicity, crops, humans, etc...
  - Leakage to atmosphere
  - Long term liability