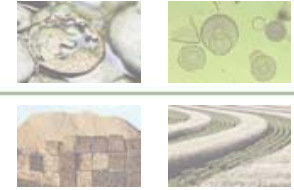




Nicholas Institute for Environmental Policy Solutions
Nicholas School of the Environment and Earth Sciences • Duke University



Permanence and Reversal Risk in Agriculture, Land Use Change and Forest Carbon Projects

Brian C. Murray
Director for Economic Analysis
Nicholas Institute for Environmental Policy Solutions
Duke University

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Permanence, Reversal and Why this is a problem

- **Permanence:** Extent to which biologically sequestered carbon remains in place
- **Reversal:** Re-emission of stored carbon into atmosphere after it has been credited as sequestration
- **Problem:** Breaks equivalence of sequestration (credit) and the *permanent* emission increase (debit) that was allowed by the offset trade
 - Not a clean offset





Reversal Risks *During* an Ag, Forest, Land Use Project

Activity	Unintentional reversal	Intentional reversal
Agricultural soil carbon management	Flooding, fire	Reversion to conventional tillage practice
Grassland conversion	Flooding, fire	Reversion to crops
Afforestation/ Reforestation	Fire, pests, disease, storm damage	Harvesting
Forest management	Fire, pests, disease, storm damage	Reversion of conventional forest management, rotation lengths, harvesting practices



Reversal risk at end of contract

- Projects have a finite life.
- Is storage liability assigned at the end of the contract?
- If not, there is risk of reversal since there is no further incentive to keep sequestered





Ways to Address Reversal in Accounting

- “Pay as you Go”
- Temporary Crediting
- Mandatory Risk Buffering





"Pay as you Go"

- Features
 - Balances sequestration (credits) and emissions (debits) as they occur over time
- Pros
 - Consistent with basic accounting principles/national GHG accounting
- Cons
 - Liability incurred when reversal occurs





Temporary Crediting

- Features
 - Credits must be replaced after finite time period
 - E.g., 5 years under CDM of Kyoto Protocol
 - Guards automatically against reversal when time period ends
 - Can re-register old credits if verified
- Pros
 - Eliminates post-project risk
- Cons
 - Substantially devalues the credits





Mandatory Risk Buffering

- Features
 - Sets aside % of credits in a risk buffer pool that can be used to cover reversals within the system
 - Consideration – waive requirement if private insurance is obtained
 - E.g. Voluntary Carbon Standard and Lieberman-Warner
- Pros
 - Transfers liability from the individual project to the system
 - Lowers transaction costs
- Cons
 - Moral hazard possibilities
 - Risk of systemwide failure





Summary points

- “Pay as you Go”, alone, generally considered too risky
- Temporary crediting one way to address permanence and reversal issues, but could be too restrictive
- Some sort of insurance-based approach, whether systemwide buffer requirements or private insurance may be a cost-effective solution, but still must deal avoid underestimating systemwide risk and default.

