



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



Climate Change Policy Partnership

Major Issues for Forest Carbon Offsets- Technical Overview

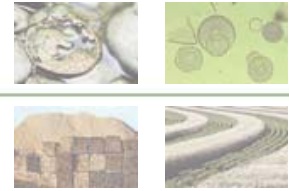
Christopher Galik

Lydia Olander

Forest Climate Working Group

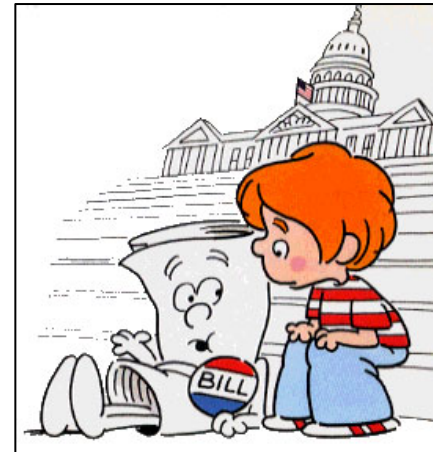
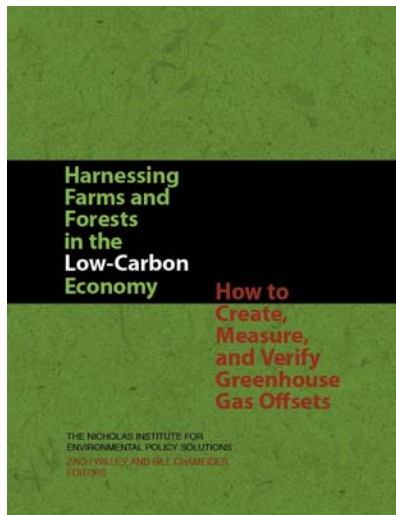
April 3, 2008





Background - Harnessing Farms & Forests

- Guidelines developed by independent scientists & other experts

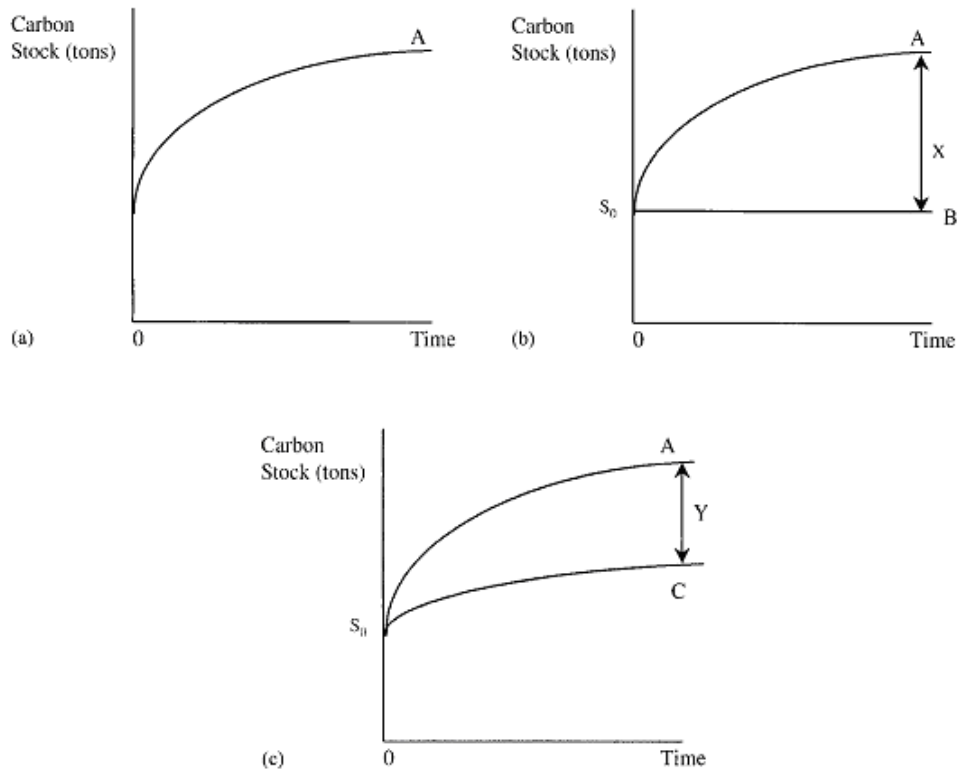


(not a focus today, but welcome later opportunities)





Forest Offsets – Baseline



Source: Richards, K., and K. Andersson (2001) *Climate Policy* 1: 41-54

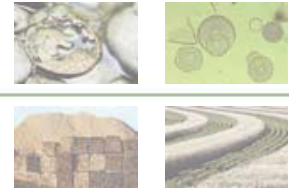




Forest Offsets – Additionality

Additionality Test	General Description
Legal or Regulatory	Better than any required actions.
Initiation Date	Must be initiated before set date. Test often used in combination with another.
Proportional	Credit for only the proportion of project that is additional.
Common Practice	A practice better than common practice, better than business-as-usual is used.
Performance Benchmark	Better than pre-determined benchmark of emissions or sequestration.
Barriers	Implementation barrier that is not faced by the alternative action.
Technology	New technology, not the business-as-usual is used.





Forest Offsets – Estimating Leakage

- Project-Based
 - Tables
 - Equations

Project Action	Leakage Risk	Leakage Credit Adjustment
Reduced impact logging with no effect or minimal effect on total timber harvest volumes	None	0
Extend rotations moderately, (5-10 years) leading to a shift in harvests across time periods but minimal change in total timber harvest over time	Low	10%

Source: VCS (2007) AFOLU Guidance

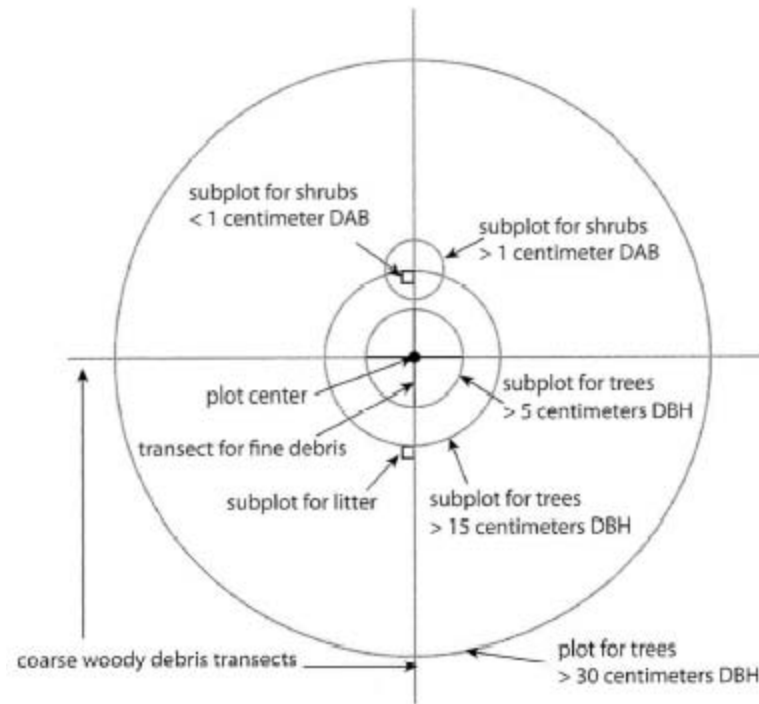
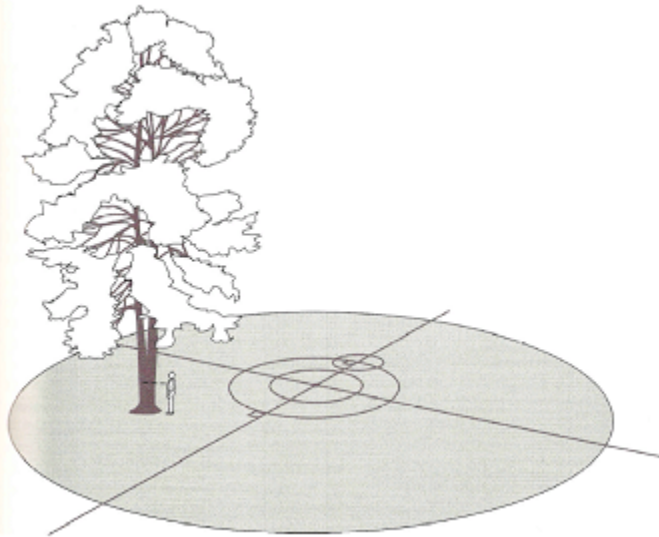
- National Model (FASOM-GHG)





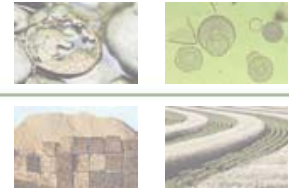
Forest Offsets – Measurement

- Direct Sampling



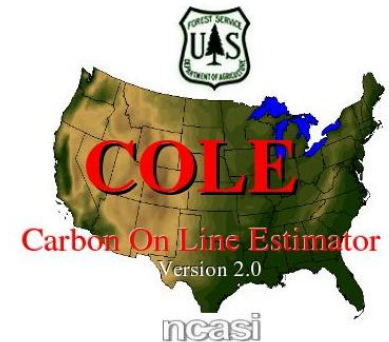
Source: Willey, Z., and B. Chameides (eds.) (2007) *Harnessing Farms and Forests in the Low-Carbon Economy*





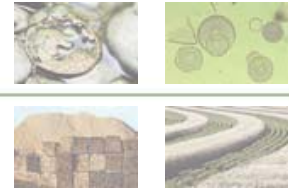
Forest Offsets – Measurement

- Other existing tools may be used, improved, adapted...
 - Equations, look-up tables, etc.
 - RAPCOE
 - COLE
 - COMET-VR



Reforestation Afforestation Project Carbon On-Line Estimator





Forest Offsets – Wood Products

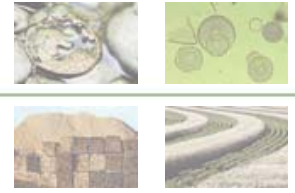
- **Stock Change**
 - Annual reporting of change in pool
- **100-Year**
 - Reporting at-harvest of fraction remaining after 100 years

Half lives for specific end uses in the U.S.

End use for forest products	Half-life of carbon (years)
Single-family homes (pre-1980)	80
Single-family homes (post-1980)	100
Multifamily homes	70
Mobile homes	20
Nonresidential construction	67
Pallets	6
Manufacturing	12
Furniture	30
Railroad ties	30
Paper (free sheet)	6
Paper (all others)	1

Source: Skog, K., and G. Nicholson (1998) *Forest Products Journal* 48: 75-83

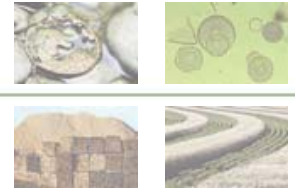




Forest Offsets – Permanence & Liability

- Liability (Buyer, Seller, None)
- Reporting (As-needed, Annual, None)
- Assurance Requirements (Insurance, Buffers)
- Timing (In Perpetuity, Long-term, Temporary)





Forest Offsets – Management Requirements

- Includes
 - Conservation Easements
 - Certification
 - Management Plans
- Promotes multiple objectives
 - Permanence (GHG)
 - Environmental Amenities (Non-GHG)

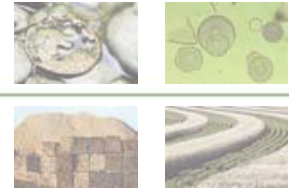




Forest Offsets – National Accounting

- A national-level accounting of the forest sector
- Establishes a benchmark, allowing for a “true-up” if projects or accounting are underperforming.

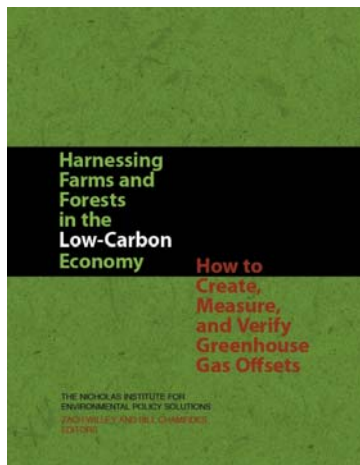




Further Questions

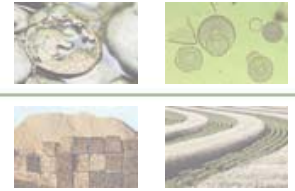
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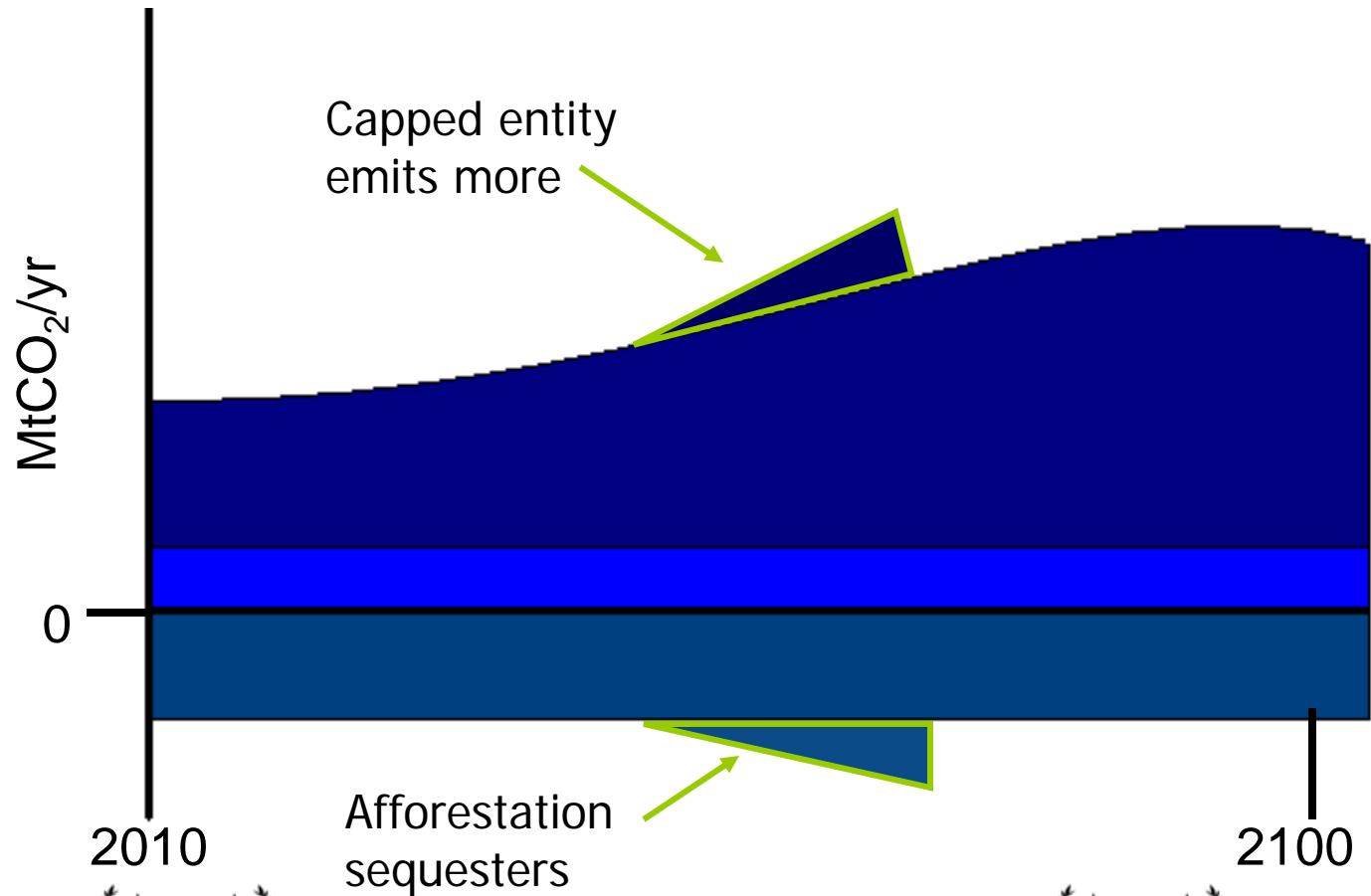


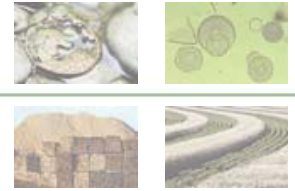
<http://www.env.duke.edu/institute/ghgoffsetsguide/index.html>



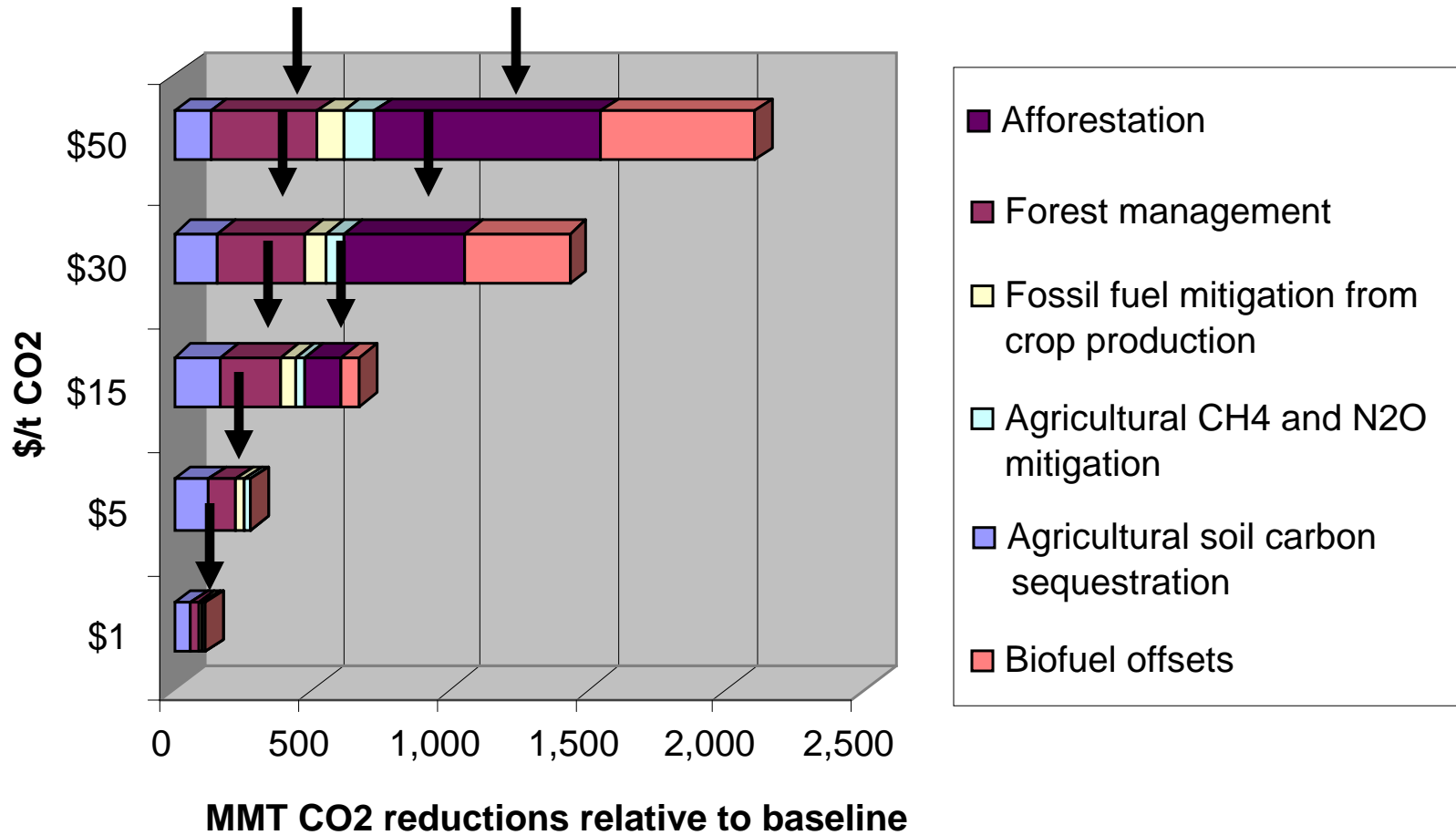


Additional Material – Offsets Explained





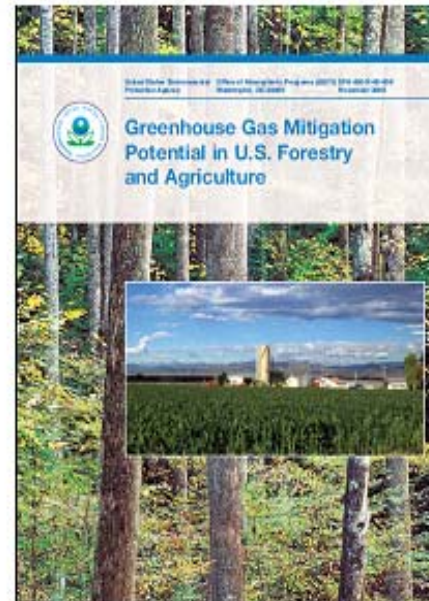
Additional Material – Offsets Potential





Additional Material – Offsets Potential

- Identify mitigation options in forestry and ag
- Estimate economic potential
- Examine policy design and implementation issues
- Assess environmental co-effects (water quality, biodiversity)



Published 12/05. Posted at http://www.epa.gov/sequestration/greenhouse_gas.html

