WESTCARB Annual Business Meeting

Perspectives of a Terrestrial Sequestration "Offset Project" Funder

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Importance of Forests for Climate Change Mitigation

- Human-induced degradation of forests has been a major reason (over 1/3) for the buildup of greenhouse gases
  - ≈500 billion metric tons of CO_2 emitted from deforestation during last 150 years
  - This source is second only to the combustion of fossil fuels
- ≈1,500 billion metric tons of CO_2 in current standing stock of carbon in forest vegetation
  - 1.6% change in this stock = global annual CO_2 emissions from fossil fuels
  - Small proportional increases in global stock of carbon in forests have the potential to contribute to mitigation efforts

Approaches to Reducing Greenhouse Gas Emissions

- Regulations vs. incentives
- Significant potential exists to increase the amount of carbon sequestered in forests with a combination of regulatory and incentive policy approaches
- Current international, national, regional, and state climate regimes favor market-based environmental regulations
  - "cap and trade" vs. "command and control"

Market-Based GHG Regulatory Systems

- Existence is relatively new, but they typically allow four mechanisms for regulatory compliance:
  - Internal emissions reductions
  - Purchasing allowances in an auction
  - Trading of allowances
  - Purchasing of project-based emission reductions
    - aka "carbon offsets" or "carbon credits"
- Potential exists for compliance using carbon offsets to be generated from terrestrial sequestration

Understanding Carbon Offsets

- Offsets result from projects that reduce, avoid, or sequester carbon dioxide
  - "GHG Offsets" used to encompass all gases
- Two basic strategies of offset projects:
  - Preventing the creation or release of emissions
    - Promoting energy efficiency and conservation
    - Shifting to lower-carbon intensity energy sources
  - Sequestering emissions
- Types of projects include:
  - Energy efficiency, renewable energy, cogeneration, capturing emissions, etc.

Existing and Emerging Markets and Mechanisms for Emission Reductions

- The Kyoto Protocol
  - European Trading Scheme
- Markets in the U.S. and Non-Kyoto Countries
  - Oregon CO_2 Standard
  - RGGI
  - California
- The Voluntary Carbon Market

Types of Forestry-Related Offsets

- Land Management–Based Offsets
  - Forest Conservation
    - e.g., avoided deforestation
  - Afforestation
  - Reforestation
  - Forest Management
    - e.g., extending rotations, forest thinning
- Product Substitution–Based Offsets
  - Material substitution
  - Energy substitution

Challenges to Forestry-Based Carbon Offsets

- Permanence, which addresses whether emission reductions last forever
  - e.g., a wind farm vs. a reforestation project
- Quantification of offsets
  - Establishing baselines and M&V are challenging
- Ownership and Legal Title of Offsets
  - Clear “chain of custody” is needed
- Timing of offset delivery
  - Slow buildup for reforestation and afforestation projects
- Market leakage

Potential Forestry-Based Offsets to Consider

- Fuel-management expands possibilities for sequestration offsets
- Offsets could be generated from:
  - fuel switching
  - enhanced forest biomass
  - prevention of catastrophic fires

Offsets Generated from Fuel Switching

- Fuel-treatment activity produces a renewable energy fuel that could be used at a biomass power plant
  - Base-case scenario: grid-based electricity
  - Project case: net-zero-carbon electricity
- Amount of offsets is equal to the amount of kWh generated at the plant multiplied by the carbon intensity of the electricity grid
  - Potential ownership issues exist under certain regulatory schemes

Offsets Generated from Increased Forest Biomass

- Forest thinning reduces competition in a forest stand; large diameter trees sequester more CO_2 than small diameter ones
  - Base case: Forest stand left alone, more competition
  - Project case: Forest stand managed, more large diameter tree growth
- Number of offsets is equal to the amount of increased carbon sequestered in large diameter trees compared to base-case growth

Offsets Generated from the Suppression of Catastrophic Forest Fires

- Catastrophic forest fires lead to initial 'pulse' of carbon release as well as decadal decomposition
  - 2002 Biscuit fire in Oregon release ≈40 million tons
    - equal to 10% of the annual emissions from all coal-fire power plants in the U.S.
- Base case: forest fire, no management
- Project case: fire prevention resulting from fuel-management practices
- Offsets could be determined by calculating amount of CO_2 that would remain in forest stands

Who Is The Climate Trust? Independent 501(c)(3) Buyer of GHG Offsets

Market Leader

- One of the largest, most experienced offset buyers in U.S. and world markets
- Only state-recognized offset provider in the U.S.
  - Portfolio: 14 projects, $6.5 million, 2.2 million metric tons CO_2
  - Pipeline: Placing $5 million more now
- Serving U.S. and international markets, both regulatory and voluntary
  - First Verified Emission Reductions (VER) sale into Europe

Role of The Climate Trust Under WESTCARB

- Evaluate the potential for generating offsets from fuel-treatment activities
- Give “market buyer’s perspective”
- Review and assess WESTCARB terrestrial pilot projects for eligibility as offset projects
  - Lake County, OR, and Shasta County, CA
    - evaluated in the context of a Climate Trust RFP

WESTCARB Process and Deliverables

- Develop methodology for assessing Lake County and Shasta County pilot projects
- Initial pilot project assessment
- Final pilot project assessment
- Final paper
  - Evaluate the pilot project's methodologies
  - Appraise adequacy of current Climate Trust protocols for fuel-treatment-type sequestration projects
  - Assess the 3 potential forestry-based offsets for attractiveness in the offset market
    - Recommend approaches for making them more attractive

Thank You!