BioCarbon Fund in Agriculture

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Food and Agricultural Organization
Rome, Italy, April 19-20, 2010
World Bank Carbon Funds & Facilities
Funds pledged = US$ 2.3 billion (22 governments, 66 firms)


- **Community Development Carbon Fund.** $128.6 million (closed). Multi-shareholder. Small-scale CDM energy projects.

- **BioCarbon Fund.** $89.9 million (Tranche One closed totaling $53.8 million). Multi-shareholder. CDM and JI LULUCF projects.

- **Italian Carbon Fund.** $155.6 million (closed). Multi-shareholder (from Italy only). Multipurpose.

- **Netherlands European Carbon Facility** - $N.A.- (closed). Netherlands Ministry of Economic affairs. JI projects.

- **Spanish Carbon Fund.** $308 million (closed). Multi-shareholder (from Spain only). Multipurpose.

- **Danish Carbon Fund.** $81.2 million (closed). Multi-shareholder (from Denmark only). Multipurpose.

- **Umbrella Carbon Facility.** $737.6 million (Tranche One closed). 2 HFC-23 projects in China.

- **Carbon Fund for Europe.** $70 million. Multi-shareholder. Multi-purpose.

- **Forest Carbon Partnership Facility.** $200 million target. Multi-participants. For national REDD+ (Readiness Fund & Carbon Fund)
Carbon Funds and Facilities in Land Use Sector

- **BioCarbon Fund Windows 1 & 2**
  - Tranche 1: A/R + Project-level “REDD”
  - Tranche 2: A/R + REDD, Agricultural soils
  - Tranche 3: Under development

- **Forest Carbon Partnership Facility**
  - Requested by developing and industrialized countries
  - 37 REDD countries participating
  - Initial focus is on readiness and helping countries prepare national approach
  - Carbon Fund envisaged but not yet operational
  - In line with UNFCCC process - REDD+ plus
BioCarbon Fund Goals

- **Improve livelihoods**
- **Sequester Carbon in Biological Systems**
- **Adapt to climate change**
- **Restore ecosystems**
- **Provide access to carbon market**
Contribution of BioCarbon Fund

- Contribution to climate mitigation in land use sector
  - Played a pioneering role in promoting the LULUCF in the carbon market
  - Promoted investments in ecosystem conservation and climate change mitigation
  - Supported training and local capacity for implementing climate change mitigation projects in land use sector
  - Expanded initiatives for afforestation and reforestation, reduction in deforestation and degradation, management of agricultural soils and restoration of wetlands

- Contribution to methodologies and tools
  - Supported the development of 6 out of 10 large scale approved AR CDM methodologies,
  - Initiated the development of methodologies for REDD and agricultural soils
  - Developed Tool for ex ante estimation of carbon stock changes in Afforestation/Reforestation projects (TARAM)
  - Developing Simplified monitoring of afforestation and reforestation tool (SMART)

- Communication with UNFCCC and VCS regulatory bodies
  - Organized meetings involving the stakeholders of UNFCCC and VCS mechanisms
  - Submitted technical inputs concerning rule making on land use sector projects and programs
BioCarbon Fund
Two Windows

First Window

• Kyoto regime
• “Kyoto-grade” credits (tCERs, lCERs, ERUs)
• CDM: Afforestation & Reforestation
• JI: All LULUCF

Second Window

• Non-Kyoto regimes
• Exploration & demonstration. Rules may change after 2012
• Non-CDM: REDD, Revegetation, Forest Management, Agriculture & Soil Management
<table>
<thead>
<tr>
<th>Name</th>
<th>Technology Distribution</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Albania</strong>: Assisted Natural Regeneration</td>
<td>Assisted Regeneration</td>
<td>Europe &amp; Central Asia</td>
</tr>
<tr>
<td><strong>China</strong>: Pearl River Watershed Management</td>
<td>Environmental Restoration</td>
<td>East Asia &amp; Pacific</td>
</tr>
<tr>
<td><strong>Colombia</strong>: San Nicolás Agroforestry</td>
<td>Agroforestry</td>
<td>Latin America &amp; Caribbean</td>
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<tr>
<td><strong>Colombia</strong>: Caribbean Savannah</td>
<td>Silvopastoral</td>
<td>Latin America &amp; Caribbean</td>
</tr>
<tr>
<td><strong>Costa Rica</strong>: Coopeagri Forestry</td>
<td>Agroforestry</td>
<td>Latin America &amp; Caribbean</td>
</tr>
<tr>
<td><strong>Ethiopia</strong>: Humbo Community Managed Natural Regeneration</td>
<td>Assisted Regeneration</td>
<td>Africa</td>
</tr>
<tr>
<td><strong>Honduras</strong>: Pico Bonito Forestry</td>
<td>Agroforestry</td>
<td>Latin America &amp; Caribbean</td>
</tr>
<tr>
<td><strong>India</strong>: Improving Rural Livelihoods</td>
<td>Farm forestry</td>
<td>South Asia</td>
</tr>
<tr>
<td><strong>Kenya</strong>: Greenbelt Movement</td>
<td>Community Reforestation</td>
<td>Africa</td>
</tr>
<tr>
<td><strong>Madagascar</strong>: Biodiversity Corridor Restoration</td>
<td>Environmental Restoration</td>
<td>Africa</td>
</tr>
<tr>
<td><strong>Moldova</strong>: Soil Conservation</td>
<td>Environmental Restoration</td>
<td>Europe &amp; Central Asia</td>
</tr>
<tr>
<td><strong>Nicaragua</strong>: Precious Woods</td>
<td>Plantations</td>
<td>Latin America &amp; Caribbean</td>
</tr>
<tr>
<td><strong>Niger</strong>: Acacia Community Plantations</td>
<td>Community Reforestation</td>
<td>Africa</td>
</tr>
<tr>
<td><strong>Moldova</strong>: Community Forestry Development Project</td>
<td>Community Reforestation</td>
<td>Europe &amp; Central Asia</td>
</tr>
<tr>
<td><strong>Uganda</strong>: Nile Basin Reforestation</td>
<td>Community Reforestation</td>
<td>Africa</td>
</tr>
<tr>
<td><strong>Trinidad and Tobago</strong>: Nariva Wetland Restoration Project</td>
<td>Environmental Restoration</td>
<td>Latin America &amp; Caribbean</td>
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<tr>
<td><strong>Colombia</strong>: San Nicolás REDD</td>
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<td><strong>Madagascar</strong>: Biodiversity Corridor Conservation</td>
<td>REDD</td>
<td>Africa</td>
</tr>
<tr>
<td><strong>Kenya</strong>: Smallholder Agricultural Carbon Project</td>
<td>Soil Carbon Sequestration</td>
<td>Africa</td>
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</table>
Experience of BioCarbon Fund

- LULUCF projects can be put into practice – well beyond theory and rules

- LULUCF projects are neither easy nor cheap to prepare
  - Sustainability conditions and incentives must be built in, which takes times
  - Market for LULUCF credits less developed

- Inclusion of rural communities
  - 1/3 of BioCF portfolio is associated with project activities involving rural communities
  - Scale up of community participation through agroforestry, farm forestry, silvopastoral and agricultural soils

- Biological carbon sequestration takes time
  - Growth rates are not linear
  - A small delay at the beginning of the project translates in higher ER loss before 2012 or even 2017
  - Purchases till 2017. No more than 50-60% of BioCF needs before 2012

- Financing is a big constraint
  - Price for carbon sequestration is paid upon delivery of credits
  - Advance payments partially support investment costs

- Methodologies
  - Requires time in the approval of methodologies, which meant a slow start;
  - Consolidation of AR methodologies is happening; tools are available to aid project developers

- Regulation
  - Time required for the evolution of regulatory process cannot be underestimated
Market context
- <1% of total CERs and ERUs
- A small fraction of the cap (1% of 1990 emissions)

Reason for Challenges
- Rule making was late
- Some rules are not conducive
- Demand restricted: exclusion from EU ETS deters private sector
- Slow biological sequestration

What can still be done before 2012?
- Changes adopted now will pave way for post-2012
- Countries speaking up in the negotiations process
Focus of BioCF on Climate Mitigation Potential of Sustainable Agricultural Technologies

- **Agronomy**
  - Species, growth (annual/perennial)
  - Inter crop (strip, alley, relay)
  - Rotation (multi-cropping)
  - Biomass (green manure)

- **Tillage and residue**
  - Reduced tillage (No till)
  - Residue management

- **Nutrient Management**
  - Improved fallow
  - Manure management
  - Composting
  - Fertilization (time, placement)

- **Multi-enterprise**
  - Agroforestry
  - Silvipatorial
Focus on Latin America: Adoption of No Till Agriculture

<table>
<thead>
<tr>
<th>Country</th>
<th>Area (Million ha)</th>
<th>Country</th>
<th>Area (Million ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>25.3</td>
<td>Spain</td>
<td>0.3</td>
</tr>
<tr>
<td>Brazil</td>
<td>23.6</td>
<td>Venezuela</td>
<td>0.3</td>
</tr>
<tr>
<td>Argentina</td>
<td>18.3</td>
<td>Uruguay</td>
<td>0.3</td>
</tr>
<tr>
<td>Canada</td>
<td>12.5</td>
<td>New Zealand</td>
<td>0.2</td>
</tr>
<tr>
<td>Australia</td>
<td>9.0</td>
<td>France</td>
<td>0.2</td>
</tr>
<tr>
<td>Paraguay</td>
<td>1.7</td>
<td>Chile</td>
<td>0.1</td>
</tr>
<tr>
<td>India</td>
<td>1.9</td>
<td>China</td>
<td>0.1</td>
</tr>
<tr>
<td>Bolivia</td>
<td>0.6</td>
<td>Columbia</td>
<td>0.1</td>
</tr>
<tr>
<td>South Africa</td>
<td>0.4</td>
<td>Others</td>
<td>1.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>96.0</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
No-till Agriculture in Brazil (1972 – 2006)

Source: www.febrapdp.org.br (Brazilian No-till Federation), 2008
Focus on Africa: Potential for Food Production and Carbon Sequestration (with an increase of 1 tonne C/ha/yr soil organic carbon)

<table>
<thead>
<tr>
<th>Type</th>
<th>Annual Increase (Million tonnes/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food grain</td>
<td>3.3 - 5.4</td>
</tr>
<tr>
<td>Roots and Tubers</td>
<td>3.0 - 6.2</td>
</tr>
<tr>
<td>Total</td>
<td>6.3 - 11.6</td>
</tr>
</tbody>
</table>

**Note:** One tonne of carbon removes 3.667 tonnes of CO$_2$e
## Kenya: Climate Mitigation Potential of Agricultural Soils

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mixed cropping systems</th>
<th>Maize</th>
<th>Bio-fuels</th>
<th>Coffee</th>
<th>Sugarcane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area available in ha (million)</td>
<td>3</td>
<td>1.6</td>
<td>0.9</td>
<td>0.15</td>
<td>0.14</td>
</tr>
<tr>
<td>GHG mitigation potential in t CO₂e/ha/y.</td>
<td>2 - 5</td>
<td>0.5</td>
<td>a) 1-12 b) 2.5-5.0</td>
<td>3 – 6</td>
<td>6-8</td>
</tr>
</tbody>
</table>
Kenya:
Agricultural Soil Carbon Pilot projects

Western Kenya Smallholder Agriculture Carbon Finance Project

Kenya Coffee Sector Agricultural Carbon Finance Project
### Agricultural Soil Carbon Projects in Kenya

#### Characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Kenya Smallholder Agricultural Carbon Project</th>
<th>Kenya Smallholder Coffee Carbon Project</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objectives</strong></td>
<td>Restoring soil productivity, farm enterprise approach, carbon sequestration</td>
<td>Improved practices for production of specialty coffee, carbon sequestration</td>
</tr>
<tr>
<td><strong>Project area</strong></td>
<td>Kisumu &amp; Kitale in Western Kenya; 80,000 ha</td>
<td>Near Mt. Kenya in Central Kenya</td>
</tr>
<tr>
<td><strong>Project entity</strong></td>
<td>VI Swedish Cooperative Center</td>
<td>ECOM Agro-industrial Corporation</td>
</tr>
<tr>
<td><strong>Aggregator</strong></td>
<td>Farmers Associations; 60,000 farms</td>
<td>Komothai smallholder farmers cooperative; 9000 farms</td>
</tr>
<tr>
<td><strong>Emission Reductions in 20 years (t CO2e/ha/y)</strong></td>
<td>134,000</td>
<td>31,000</td>
</tr>
</tbody>
</table>
Copenhagen COP:
Improved Scope for Climate Mitigation in Land Use Sector

COP 15 requested for consideration of additional LULUCF options:
- Revegetation
- Forest management
- Cropland management
- Grazing land management
- Wetland management
Evolving Market for Agricultural Soil Carbon

United States: Chicago Climate Exchange

- Land use categories
  - **Conservation tillage:** Continuous no-till, low till ridge till
  - **Grass planting:** projects initiated after January 1, 1999 in CCX eligible counties
  - **Rangeland management:** stocking, rotational grazing
  - **Aggregators:** Public sector (Farm Bureaus, cooperatives); private sector
  - **Volume:** ~16 million tons over past 4 years, growing market
  - Focus on improving protocols for soil carbon assessment.

Canada: Alberta

- **Tillage system management protocol:** technically rigorous, permanence assurance estimates, baseline assessments by region

Australia:

-- **Carbon pollution reduction scheme:** proposal for inclusion of agriculture offset generation under the scheme


- Small number of developing country soil carbon projects (e.g., Kenya)
- Voluntary Carbon Standard (VCS) methodologies soil carbon sequestration are in development
Proposals for Improvement

**Afforestation and Reforestation**

- Permit afforestation/reforestation to supply more than 1% of Annex I 1990 emissions
- Allow A/R on land deforested after December 31, 1989
- Reconsider the replacement of temporary credits after 60 years

**Agriculture**

- Inclusion of agricultural soil carbon sequestration under UNFCCC
- Scaling up carbon market access through programmatic approaches
- Cost effective methodologies for assessing soil carbon sequestration in different agro-ecological zones
- Linking agricultural productivity and environmental services at landscape level to enable farmers to receive additional revenue
- Strengthening policy linkages on rural credit, extension and agricultural technology
- Policies for conservation agriculture that will reduce intensive inputs, improve soil carbon and biodiversity
- Payment for environmental services to strengthen sustainable agriculture and promote incentive payments for carbon sequestration
Thank you!

www.carbonfinance.org

www.biocarbonfund.org

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