

UNCCD Second Scientific Conference
Bonn, Germany
9-12 April 2013

SPECIAL SESSION – 1½ hours

GLOBAL ENVIRONMENT FACILITY SPECIAL SESSION
Carbon Sequestration – A Valuable Global Benefit of Sustainable Land Management

Outline Agenda and Notes

This Special Session supports the two conference topic themes of (1) Economic and social impacts of DLDD; (2) Costs and benefits of policies and practices addressing DLDD.

Therefore, we shall identify the following themes in our Special Session:

- the significant investments already being made in the GEF LD Strategy and their impact
- how a focus on carbon – above- and below-ground – could add value, economically and socially, to future GEF investments
- how we can track and measure the benefits of SLM in terms of carbon sequestered
- the policies and practices that will enhance the benefits brought by carbon in future GEF strategies

Our objectives are to:

- (1) demonstrate the importance of the current work of the Land Degradation Focal Area of the Global Environment Facility, with special reference to Sustainable Land Management – SLM - and the potential benefits derived from above- and below-ground sequestration of carbon;
- (2) show how GEF investments and strategic planning support the UNCCD;
- (3) consult the scientific community on issues related to SLM that might be included in future GEF Strategic plans

Presentations

(1) Sustainable Land Management in the Global Environment Facility – Enhancing Ecosystem Services in Production Landscapes (Presenter - Mohamed Bakarr) – 15 minutes.

ABSTRACT

Mohamed I Bakarr

The Global Environment Facility serves as financial mechanism of the UNCCD and provides financing through the Land Degradation Focal area, which focuses on addressing desertification and deforestation in production landscapes (agriculture, rangelands, and forest landscapes). Over the last two decades, the GEF has invested close to \$500 million in sustainable land management (SLM) projects in more than 50 countries, and leveraged more than \$3 billion in co-financing through bilateral, multilateral and private sector sources. The focal area investment also leverages GEF financing through other windows to maximize potential for global environment benefits at scale. This is exemplified by the Sahel and West Africa Program in support of the Great Green Wall Initiative, a country-driven initiative for integrated natural resource management in the Sahel and broader West Africa region. The program, to be implemented by the World Bank, utilized a total of \$108 million in GEF resources from

multiple windows and builds on a series of planned sustainable development investments of nearly \$1.8 billion in 12 countries. It will lead to the sustainable management of land, water and vegetation on up to two million hectares of production landscapes per country, protection against erosion and desertification, and the potential for sequestering 0.5 to 3.1 million tons of carbon per year. By financing interventions that improve soil fertility, enhance soil and water conservation, increase vegetative cover, reduce soil erosion and run-off, millions of hectares of production landscapes can be successfully transformed to enhance sustainable flow of ecosystem services for human well-being. Monitoring and quantifying these ecosystems services is crucial, especially in light of the need to manage potential tradeoffs and maximize synergies for sustained productivity of soils in the landscapes.

(2) A New Tracking Tool for Carbon Benefits (Presenters: Eleanor Milne and Carlos Cerri) – 15 minutes

ABSTRACT

Eleanor Milne, Stoecio Malta

The Global Environment Facility's Carbon Benefits Project has developed a suite of tools for land management projects to monitor, measure and model the impact of a project on carbon stock changes and greenhouse gas emissions (carbon benefits). The tools are freely available online with options for projects with different remits, resources and expertise. The Simple Assessment is suited to projects with few resources for carbon monitoring and reporting or those developing project proposals. It uses pre-populated information in drop down menus and is available in five languages. Able to be used via a web portal, it requires information on land management activities and where they occur under a baseline and a project scenario. The Detailed Assessment has the extra functionality of allowing the user to create their own grassland, forest, cropland or agroforestry type. In addition users can replace 'factors' used in the calculations with their own project-specific measures. This reduces the uncertainty of the estimated carbon benefit. It is suitable for projects with more emphasis on carbon reporting. The third option uses a dynamic model and is suited to users with a scientific background who wish to model carbon stock changes in projects with a carbon focus. Some knowledge of ecosystem modelling and geographical information systems is required.

We use the example of "The South West Amazonia Project" in Brazil which considers the environmental impact of agricultural expansion in the Amazon frontier area to demonstrate: 1) How the Simple Assessment can be used in an ex-ante capacity to explore the impacts of different land use scenarios, 2) How the Detailed Assessment runs with project specific emission factors to reduce uncertainty 3) Application of the dynamic modelling option to estimate the long-term impacts of agricultural expansion on soil carbon stocks in the region.

(3) Soil organic carbon management for global benefits – A review for STAP (Presenter - Gerard Govers) – 15 minutes

ABSTRACT

Gerard Govers, Roel Merckx, Kristof Van Oost, Bas van Wesemael

The total global Soil Organic Carbon (SOC) reservoir exceeds 2000 Pg. Sound management of this natural carbon reservoir is critical, both with respect to the mitigation of global climate

change and also the maintenance and improvement of soil quality for sustainable land management. In this review we analyze the existing literature on SOC dynamics and derive principles to guide strategy for SOC management for global benefits. We also identify important knowledge gaps that should be addressed to improve understanding of the potential response of the SOC reservoir to both natural (climatic) and management practice changes. SOC management requires an integrated approach, considering the system/landscape level to account for important Organic Carbon transfers between different landscape components of agricultural systems. While the use of adequate fertilization is a prerequisite to the increase of the SOC storage on arable land, it is far from sufficient: initiatives focusing on improving SOC storage and management should not only assess how local social economic conditions may affect SOC management projects but should also assess the socio-economic implications of such projects. SOC stocks can indeed be increased through sound management but realistic targets should be set, based on both socio-economic and biophysical constraints. Scientifically, there is a great need for a better understanding of the (interacting) effects of changes in temperature, moisture regime and land use on the SOC stock, to reduce the uncertainty of predictions on the future evolution of the global carbon stock. Furthermore, we should capitalize as strongly as possible on technical advances in SOC measurement to develop monitoring techniques that are both more rapid and more accurate, as we will need to assess management-induced SOC changes against the backdrop of a baseline that is continuously changing in response to both climatic change and increasing atmospheric CO₂ concentrations.

(4) The Value of Soil Organic Carbon: the case for biochar (Presenter - Annette Cowie) – 15 minutes

ABSTRACT

Annette Cowie, Bhupinderpal Singh and Lukas Van Zwieten

Biochar is a potential contributor to climate change mitigation and land management. The global technical potential for abatement of greenhouse gas emissions through biochar has been estimated at 6 Gt CO₂-e annually; biochar has been shown to stimulate plant growth by up to 100%, and enhance soil water holding capacity. However, sustainability concerns have been identified: demand for biochar could encourage deforestation or inappropriate removal of crop residues, exacerbating land degradation; biochar may contain toxic components, which could contaminate soil; biochar production may contribute to air pollution. Also, biochar systems may deliver lower emissions abatement than alternative uses of biomass.

New knowledge of biochar properties and interactions with soil, plants and microorganisms gives greater understanding of the benefits and risks of biochar. Biochar properties are dependent on the biomass feedstock and the production process: biochars from wood residues have greater mitigation value and stability than biochars from manures; biochar systems utilising existing biomass residues have greater benefit than systems based on purpose-grown biomass crops. At higher pyrolysis temperatures the biochar produced has greater stability in soil but there is a lower biochar yield. Life cycle assessment studies have estimated net abatement for biochars based on residue feedstocks ranging from 1.7 to 3.1 t CO₂e per t dry feedstock. The major contributions to abatement arise from organic matter stabilisation, avoided nitrous oxide and methane emissions, and displacement of fossil fuel emissions. The total abatement can be greater than the CO₂ sequestered in biomass, and can be greater than if the biomass was used solely for bioenergy.

Current research is developing methods to characterise key properties of biochar and allow matching to crop and soil requirements. Sustainability guidelines, which could be applied within a domestic or international certification scheme, are being developed to manage identified risks.

(5) Looking to the Future – a New Land Degradation Strategy. Audience and Panel Discussion (Moderator – Michael Stocking) – 30 minutes

ABSTRACT

Michael Stocking and Five Panel Members (to be nominated)

The current (GEF-5) Land Degradation Focal Area Strategy continues to 2014. It has successfully catalysed investments to promote system-wide change necessary to control the increasing severity and extent of land degradation. Nevertheless, there is recognition that with the current approach the scale of resources necessary to achieve lasting wide-scale benefits is far greater than can be provided. New approaches that address ecosystems and natural resources as multi-functional units providing co-benefits for the environment and for human development need to be developed. This Special Session has suggested that Soil Organic Carbon presents one opportunity to meet the challenge. Our final segment of this Session will invite dialogue between the audience and presenters on issues and approaches that should be included in the new GEF Land Degradation Strategy. Questions to be posed will include:

- What technologies bring most benefits; and under what conditions?
- Are there pilot approaches worth replicating?
- Do we need new or enhanced support systems to support the choice of approach and technology?
- What policies and incentives will be required to deliver truly global benefits?