



Toolbox for Carbon Modelling, Measurement and Monitoring in GEF SLM projects

Dr. Gemma Shepherd, UNEP

*Side Event at the UNFCCC Subsidiary Body for Scientific
and Technological Advice 34th Session (SBSTA 34), 16 June 2011*





Introduction

- Land use and land use change contribute 30% of greenhouse gas emissions
- Sustainable land management projects have potential to:
 - reduce GHG emissions
 - sequester carbon
- GEF need a standardized way of assessing carbon benefits & smallholders could benefit through carbon credits



The Carbon Benefits Project: Modelling, Measurement and Monitoring

Aims to develop scientifically rigorous, cost-effective tools to establish carbon benefits of sustainable land management interventions in terms of protected or enhanced carbon stocks and reduced greenhouse-gas emissions.

- (1) estimate and model carbon stocks and flows and GHG emissions under present and alternative management, and
- (2) measure and monitor carbon changes under specified land use and management





The Carbon Benefits Project: Modelling, Measurement and Monitoring

- A suite of tools, with instructions on how to use them, available from a single website.
- Applicable to all projects involving interventions in natural resources management, such as forestry, agroforestry, agriculture and pasture management, in all climate zones, soils types and land uses.





Carbon Benefits Project

Home

About

Modelling

Measurement

Partners

Contacts

Log in to register and access tools

Carbon Benefits Project: Modelling, Measurement and Monitoring



Approximately 30% of greenhouse gas (GHG) emissions come from land use and land use change. Sustainable land management (SLM) projects have the potential to not only reduce GHG emissions, by reducing emissions from biomass burning, biomass decomposition and the decomposition of soil organic matter, but also to sequester carbon (C) through practices that increase biomass production and promote the build up of soil organic matter and therefore provide global environmental benefits.

Problem

The GEF finances a wide range of SLM activities in developing countries from reforestation and agroforestry projects to projects that protect wetlands or foster sustainable farming methods. The carbon benefits of these and other non GEF SLM projects are likely to be considerable. However, at the moment it is difficult

to compare the C benefits of different land management interventions as a range of different methods are used to measure them. Equally, it is difficult for SLM activities in developing countries to gain the financial rewards they deserve from emerging carbon markets.

Opportunity

GEF and other SLM projects need to know if SLM interventions affect C stocks or GHG emissions. A protocol is needed which guides the user through all stages of delivering an SLM intervention in terms of proving C benefits, from forecasting at the planning stage, monitoring and verification at the implementation stage, to long term projection of future impacts. The CBP is developing such a protocol.

Product

The product of the effort will be a modular, web-based system that allows the user to collate, store, analyze, report and project carbon and total GHG benefits in a standard and comprehensive manner.

Potential Application

A standardized C benefits protocol will allow the comparison of different SLM projects by the GEF and other donors. It would also bring developing countries closer to being able to gain reward for land management activities that sequester carbon.

Project Benefits

These include:

- Measurement of terrestrial carbon in heterogeneous landscapes with many land cover types that include smallholders in developing countries.
- A cost effective and accurate system documenting the mitigation of atmospheric carbon levels as a global environmental public good and thus providing a way to compare and document project performance in climate change mitigation (a global environmental public good).
- The system will facilitate projects that create climate adaptation, mitigation and conservation benefits by reinforcing their ability to demonstrate carbon benefits, thus making projects that include a carbon component more attractive.
- The system will assist land use carbon project developers in selecting methods that combine livelihood benefits with climate change mitigation benefits.

<http://www.unep.org/climatechange/carbon-benefits/>



UNEP in the Regions:

- Africa: Nairobi, Kenya
- Asia: Bangkok, Thailand
- Europe: Geneva, Switzerland
- Latin America and the Caribbean: Panama City, Panama
- North America: Washington DC, USA
- West Asia: Manama, Bahrain

Resources for:

- Business Persons
- Children & Youth
- Civil Society
- Governments
- Journalists
- Scientists
- Contact us
- Resource Kit
- Site locator
- Support UNEP
- UN and the Environment
- UNEP intranet



Follow Us



Carbon Benefits Project: Modelling, Measurement and Monitoring

Please Login [Not Yet Registered?](#)

Help

E-mail

Password

[Forgot your password?](#)

☐ Remember me?

Login >>



Copyright © United Nations Environment Programme [[Privacy](#)] [[Terms and Conditions](#)] [[Site Locator](#)]

Carbon Benefits Project: Modelling, Measurement and Monitoring

Create New Project

[Help](#)

1 Please Enter Basic Project Information

Project Name

Project ID Code

Project Status

Proposal

Project Start Date

MM/DD/YY

Project Duration

Years

Project Country (Countries)

Hold CTRL, then click to select multiple countries

Afghanistan
Aksai Chin
Albania
Algeria

Project Region

Communities/Countries/Provinces Involved

Project Activities

Brief Summary of Project Goal

Summary of any C/GHG Benefit Goals (Optional)

2 Is this a GEF co-funded project?

☐ Yes ☐ No

Cancel

Create

View Current Projects and Reports

1 Current Projects

Project Name	GEF Project Code	Status	Start Date	Edit	Reports	Go to...
Sustainable Parkland Management	234	Active	6/1/2011	Edit	View	Toolkit Advisor
Mount Kenya Carbon Inventory	123	Proposal	1/1/2012	Edit	View	Toolkit Advisor

Add New Project

Continue as a guest user + (not enabled)

2 Available Reports

To view a report, click on [View](#) in the [Reports](#) column above.



Carbon Benefits Project: Modelling, Measurement and Monitoring

Select Modelling or Measurement Tools

[Help](#)

[Simple Assessment](#) of the impact of a project on carbon stock and greenhouse gas emissions. Requires information on land use changes and/or livestock production in the project area. Suitable for a quick assessment at any stage including proposals. Uses standard information on GHG emission rates. [More Details](#)

[Detailed Assessment](#) of the impact projects have on carbon stocks and greenhouse gas emissions. Requires information on land use changes and/or livestock production in the project area plus can utilize local and project specific field measurements and other local datasets. Suitable for detailed reporting in projects with a reasonable focus on climate change mitigation. [More Details](#)

[Dynamic Modelling](#) utilizes the Century Model to assess soil and biomass carbon stock changes. For users with a scientific background who wish to model carbon stock changes in projects with a carbon focus. [More Details](#)

[Direct Measurement](#) provides a general protocol and specific methodologies for field, laboratory and remote sensing measurements of carbon and other GHGs. Requires extensive field measurements and remote sensing analysis to measure carbon stocks in soil and biomass and monitor their changes over time in the project area. Displays project spatial information in an online information system to manage measurement data in carbon projects. Project indicators display a results framework of social, biodiversity and environmental indicators of carbon benefits in the project area. The data derived from measurements can be used directly for reporting GHG emissions or the measurement data may be used as inputs for CBP modelling assessments. [More Details](#)