

The REDD Cameroon Pilot Project (2008-2010)

Key Achievements



Cameroon has been actively involved in the REDD process since its inception in the UNFCCC COP negotiations in 2005. The country has made progress in terms of technical and organisational developments for the implementation of REDD. The Ministry of Environment and Nature Protection (MINEP) in collaboration with the Ministry of Forestry and Wildlife (MINFOF) are co-ordinating REDD activities nationally. Since 2007, the country has encouraged the development of REDD pilots to assess the feasibility of a potential REDD mechanism. It is in this light that the REDD Cameroon pilot project was initiated in 2007, after consultation between MINEP and GAF AG an international remote sensing company based in Germany. The REDD Pilot Project was designed to integrate itself fully in the overall REDD Readiness efforts of the Government of Cameroon.

The general objective of the project was to address methodological issues in the application of Earth Observation (EO) for deforestation and forest degradation assessment in Cameroon, as well as the implementation of a terrestrial survey for carbon accounting in forest management areas. The project encouraged a south-south corporation by applying experiences obtained in deforestation monitoring and carbon stock accounting in Bolivia to Cameroon. Technology transfer in the project was undertaken via capacity building of local counterparts.



REDD Pilot Study Area - Cameroon

Throughout the implementation of the project the main guidelines for provision of the technical activities was based on the Intergovernmental Panel on Climate Change (IPCC), Good Practice Guidance (GPG) of 2006, as recommended in the SBSTA and COP meetings.

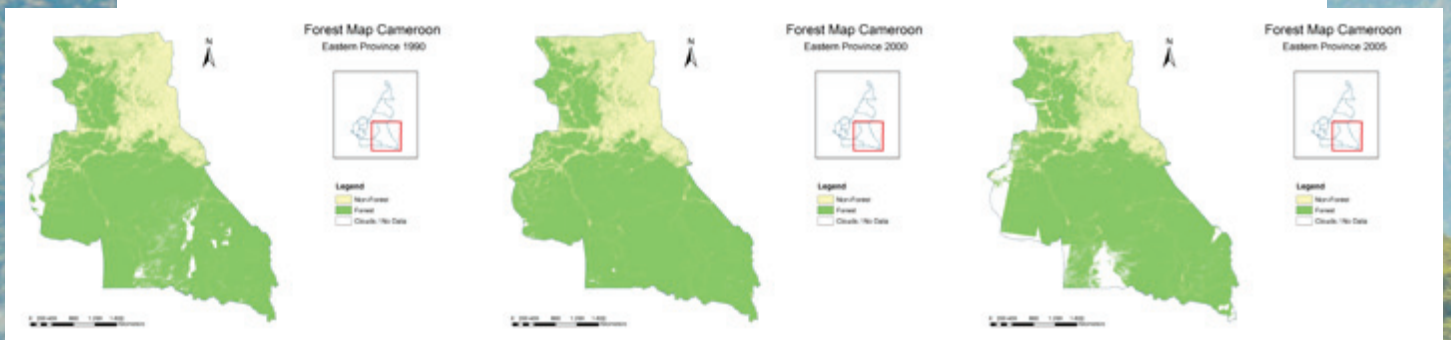




Monitoring of Forest Cover Change

The issues of deforestation and degradation are central to the REDD process, and was a key focus of the REDD Pilot Project in Cameroon. The overall aim of the deforestation mapping activity for the REDD Pilot in Cameroon was to develop and test a cost-effective method for continuous forest cover and forest cover change monitoring in a future REDD framework.

To attain these objectives, forest cover was assessed using available optical satellite imagery in a wall-to-wall analysis for three epochs: 1990, 2000, and 2005. Landsat TM/ETM (1990 and 2000) and Disaster Monitoring Constellation-DMC (2005) satellite images were acquired, pre-processed and clouded areas masked out. Supplementary data (GLS2005, ASTER) were used to optimise cloud free wall-to-wall coverages.



*Forest / Non-Forest Cover Maps (Cloudy Areas in White Colour),
Years 1990; 2000 and 2005, Eastern Province in Cameroon.*

A minimum mapping unit of 5 hectares was applied due to time and cost constraints, and in the absence of a national forest definition for the REDD process, a minimum crown cover threshold of 10% was used in accordance with IPCC guidelines. A multi-temporal segmentation approach was the basis of the classification of time series imagery into forest/non-forest and the subsequent detection of changes for the periods 1990-2000 and 2000-2005.

The change areas were further classified into the 5 IPCC compliant land cover classes: cropland, grassland, wetland, settlement and others.



Measuring the Direction of a Felled Tree in CIZ Plot



Carbon Emission Accounting

The NGO Fundacion Amigos de la Naturaleza (FAN) from Bolivia collaborated with the Government of Cameroon and GAF in implementing technical activities for Carbon Accounting in the REDD Pilot. FAN had been a lead co-ordinator in the internationally known Noel Kempff Mercado Climate Action Project in Bolivia, which is the world's first certified CDM. The carbon monitoring and verification protocols for the Noel Kempff project that were implemented in Bolivia (Brown et al. 2003)¹ were adapted for the REDD Cameroon pilot project. As stratification of the forest into areas with similar carbon characteristics improves the accuracy of carbon accounting, this was implemented using Tier 1 and Tier 2 datasets for Cameroon.

Based on these protocols a study was carried out in collaboration with technical staffs from the Ministry of Environment and Nature Protection (MINEP) and the Ministry of Forestry and Wildlife (MINFOF) to assess biomass and carbon impacts by selective logging in the most predominant forest management systems – Forest Management Unit (FMU). In order to evaluate the effect of forest certification on carbon impacts due to logging, two FMUs (certified and uncertified) situated in the closed evergreen forest stratum were compared with each other.

67 carbon impact zone (CIZ) plots were installed and measured in the logging gaps of a recently harvested forest² of the certified forest concession. To estimate carbon stocks in mature forests, 67 paired (or witness) plots were installed and measured at 50 m from each CIZ plot. Furthermore, to assess the impact of logging roads, skid trails, and log landings on carbon stocks, their respective surface areas were measured.



Installing a CIZ Plot and Measuring Dead Wood

Similar measurements were performed on the site of an uncertified forest concession to assess the impact of wood extraction. A total of 78 Carbon Impact Zone (CIZ), 15 circular plots were installed and the corresponding parameters measured. The surface areas of logging roads, and skid trails were also measured.

Mean biomass stock in closed evergreen lowland forest was estimated to be 326.12 tC/ha due to the high number of trees per plot and the high average tree diameter. Carbon impacts by logging were estimated at a damage factor of 1.34 tC/m³ extracted in the certified forest concession while in the uncertified forest concession the damage factor was estimated at 1.99 tC/m³ extracted. The results indicate that collateral damage due to wood extraction is higher in the uncertified FMU than in the certified FMU. Increasing forest certification will lead to significant reductions in carbon impacts and consequently emissions.

¹ S. Brown, S., Delaney, M. and Pearson, T. 2003. Carbon Monitoring and Verification Protocols for the Noel Kempff Climate Action Project. Winrock International, Arlington, VA.

² Damaged is assessed in gaps that had been harvested not more than 3 months

Capacity Building and Technology Transfer

The technology transfer in the project was undertaken via capacity building of the principal stakeholders (MINEP and MINFOF) in both satellite based forest cover/forest cover change mapping, and carbon accounting in the scope of REDD. The target group constituted technicians from both Ministries and whenever possible academic institutions and NGOs were involved. Training was organized through on-the job training; workshops, seminars and meetings. Concurrent to the theory training, field missions were organized to train staff on the acquisition of ground truth data for image interpretation and validation of image interpretation results; as well training on biomass measurements also constituted a central theme in the capacity building training in the REDD Cameroon pilot project.



EO, GIS and Carbon Accounting Training - classroom and field

Concluding Comments

The experiences gathered in estimating forest cover change and carbon stock in the framework of the REDD pilot project indicates that it is possible to implement a full REDD scheme in Cameroon using Tier 1 and 2 levels of accuracy. The methodological frameworks designed and tested will facilitate an operational REDD process at a national level. Thus the next stage of the programme is to extrapolate activities to a national level programme, which can also become a prototype for the Congo Basin region.

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