



Wildlife Conservation Society Takamanda Mone REDD+ feasibility Assessment Phase 1

A Potential Reduced Emissions from Degradation and Deforestation Project (REDD+)

The main objective of the Takamanda Mone REDD project is to contribute to the national REDD+ readiness preparation in Cameroon through the enhancement of forest resources conservation, biodiversity protection and sustainable rural development in the Takamanda Mone Landscape. The goal of the feasibility assessment is to provide the main stakeholders in the landscape with more detailed information about the current drivers and underlying causes of deforestation and forest degradation and to evaluate options for different land uses including REDD+ activities that contribute to local development, biodiversity conservation, and climate change mitigation.

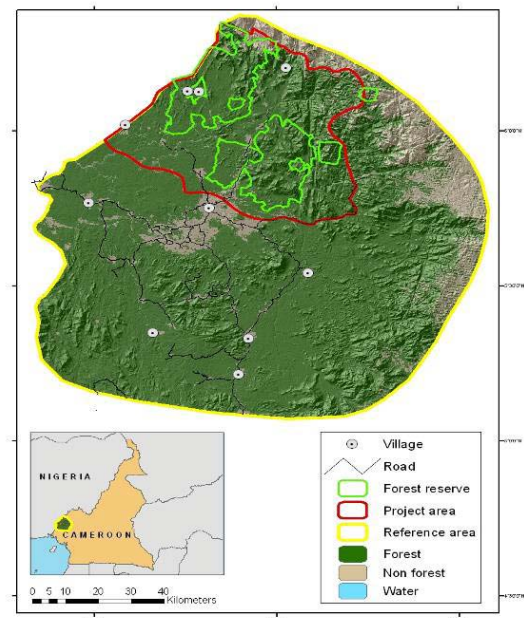
Project Location: Cameroon

The 12,000 km² Takamanda Mone landscape straddles the border of Cameroon and Nigeria and encompasses an important array of biological and cultural diversity. On the Cameroonian side, the 4,300km² Takamanda-Mone Technical Operations Unit (TOU) consists of different land-use zones, including the recently created Takamanda National Park, the Mone River Forest Reserve, the remote Mbulu montane forest highlands, several active forest concessions, and different zones of increasingly rapid agricultural expansion.

Project Area: 326 000 ha

Reference Area: 1.28 million ha

Project duration: 20 years



Project Description

WCS is conducting a feasibility study for integrating REDD into the on-going landscape planning process in the Takamanda-Mone landscape on the Cameroonian side that includes the most intact remaining forest in the landscape.

The study examines current and future threats and the potential implementation of different types of emissions reduction activities (such as improved forest management, avoided planned and unplanned deforestation, etc.), as well as reforestation (in the form of forest plantations, agroforestry, etc.) in a spatially coherent way that takes full account of local development needs. Below is an analysis of the current and future deforestation and degradation threats in the landscape.

Current Deforestation and Degradation Threats

- **Small-scale agriculture:** The main driver of deforestation currently is small-scale agricultural production for subsistence consumption and to a limited extent for commercial crops (cocoa especially) occurring around villages.
- **Illegal Logging:** Degradation from illegal logging seems to occur across the landscape, particularly in proximity to rivers. It is especially prevalent outside Takamanda National Park. The trend seems to be an increase in the occurrence of illegal logging, also driven by demand from close-by Nigeria where little exploitable timber volume remains. Illegal removals also seem to occur in the Mone Reserve and the impact on commercially valuable timber species may be significant.



Figure 2: Illegal logs are transported to Nigeria in makeshift rafts



Figure 3: Logs are converted into planks on site

Future Deforestation and Degradation Threats

- **Road construction and improvements:** A small road in very poor condition that links Mamfe in the south and Akwaya in the north is slated for improvements and upgrade to a secondary (non-paved) road. Ministry of public works has planned to link Bamenda to Akwaya first before completing Akwaya-Mamfe. The completion of this road upgrade would presumably trigger an expansion of small-scale commercial agriculture (different production patterns already exist compared to areas in the vicinity that do not have road access). Depending on market conditions, main crops could be cocoa, fruit trees, and possibly oil palm. Avoided unplanned deforestation along the Mamfe-Akwaya road is thus one of the most viable scenarios for the feasibility study and has been modeled.
- **Commercial legal logging:** Commercial logging is ongoing in several concessions in the landscape, mainly in the south. Two main companies are TRC (replaced by Boitex) and WIJMA. Options for Improved Forest Management, set asides, and community forestry will be deeply evaluated in the phase 2 of the feasibility study.
- **Mining:** Although quantified data is lacking, current artisanal mining activities seems to have a negligible impact on forest cover at present. However, there is a potential for future mining efforts in the area. The company Soft Rock has been granted an exploration permit, although it is unclear which area exactly is covered by this and what types of minerals are hoped for.

Commercial agriculture: A proposal and preliminary planning permit (with dubious origins) exists for a large-scale oil palm project south of the landscape. This would concern a maximum of 80,000 ha, although this number is not based on an in-depth analysis of available land areas and economic potential. For the TM landscape itself, no such plans exist and no discussions seem ongoing. However, cocoa agroforestry is spreading seriously in the project area.



Figure 4: harvesting of bush mango in cocoa plantation



Figure 6: Palm plantation around Nguti (reference area)

Methods

The two main categories of information (land use change and carbon stock data) are essential to calculate potential future emissions from REDD projects.

For the land use change analysis, we used the post classification comparison method, where multiple dates of satellite images were first classified into land cover images and then compared to assess changes in land cover over time. To begin three dates of Landsat imagery, from 1986, 2000 and 2008, were obtained through the US Geological Survey GLOVIS WEB based data service (glovis.usgs.gov). For the early dates, 1986 and 2000, Landsat 5 TM images were used. For the 2008 date, two Landsat 7 ETM+ images were obtained, one from 2008 and one from 2009.

To estimate above ground biomass, we used Chave et al (2005) equations for moist forests. No direct measured data on the below ground and litter carbon pool was available for the feasibility assessment and thus we used the default IPCC values of 4% and 5% respectively.

Baseline analysis

Based on the analysis of historic trends, we developed emission reference levels for different emission sources in the landscape in the baseline or business as usual case. The following emission sources have been analyzed over the entire landscape:

1) Emissions from unplanned deforestation: We modeled future emissions from unplanned deforestation in the landscape based on historic deforestation rates as well as expected changes in deforestation factors such as the road network. Estimated baseline emissions amount to about 8 million tons of CO₂-e over a potential 20-year project period (see maps in annex).

2) Emissions from planned forest degradation due to legal logging: We estimated prospective

emissions from forest based on already planned concession leases in Mone Forest reserve and other potential areas in the landscape and using data from the GAF-AG study and other studies conducted in Central Africa on the impact of conventional legal logging operations on carbon stocks. Estimated baseline emissions amount to 1.6 million tons CO₂-e over the assumed 20-year project period.

3) Emission from unplanned forest degradation due to illegal logging: This emission source could only be evaluated in a qualitative way due to a lack of quantitative data necessary for estimating baseline emissions.

These calculations demonstrate that in absence of specific measures for reducing deforestation and forest degradation in the Takamanda Mone landscape, deforestation and forest degradation would generate at least 450'000 t CO₂-e of greenhouse gas emissions per year.

Then we evaluated the feasibility of each of these REDD options based on socio-economic, political, technical, methodological, and economic factors believed to have an impact on the intensity and the location of deforestation and forest degradation activities (see figure 7 below). Of the project options, the most feasible appears to be avoiding emissions from unplanned deforestation. Degradation options, such as avoided planned degradation from avoided legal logging, could be deemed feasible but depend on political support and value of the generated carbon credits on the market.

Based on the above, three potential project scenarios combining different options to reduce emissions from deforestation and forest degradation have been developed and analyzed regarding their emission reductions potential.

Protection scenario: Activities under this scenario would focus on the creation and sustainable management of a network of existing and future protection areas in the landscape, as well as on law enforcement and agriculture intensification for leakage management. Emission reductions are estimated at about 1 million t CO₂-e over 20 years.

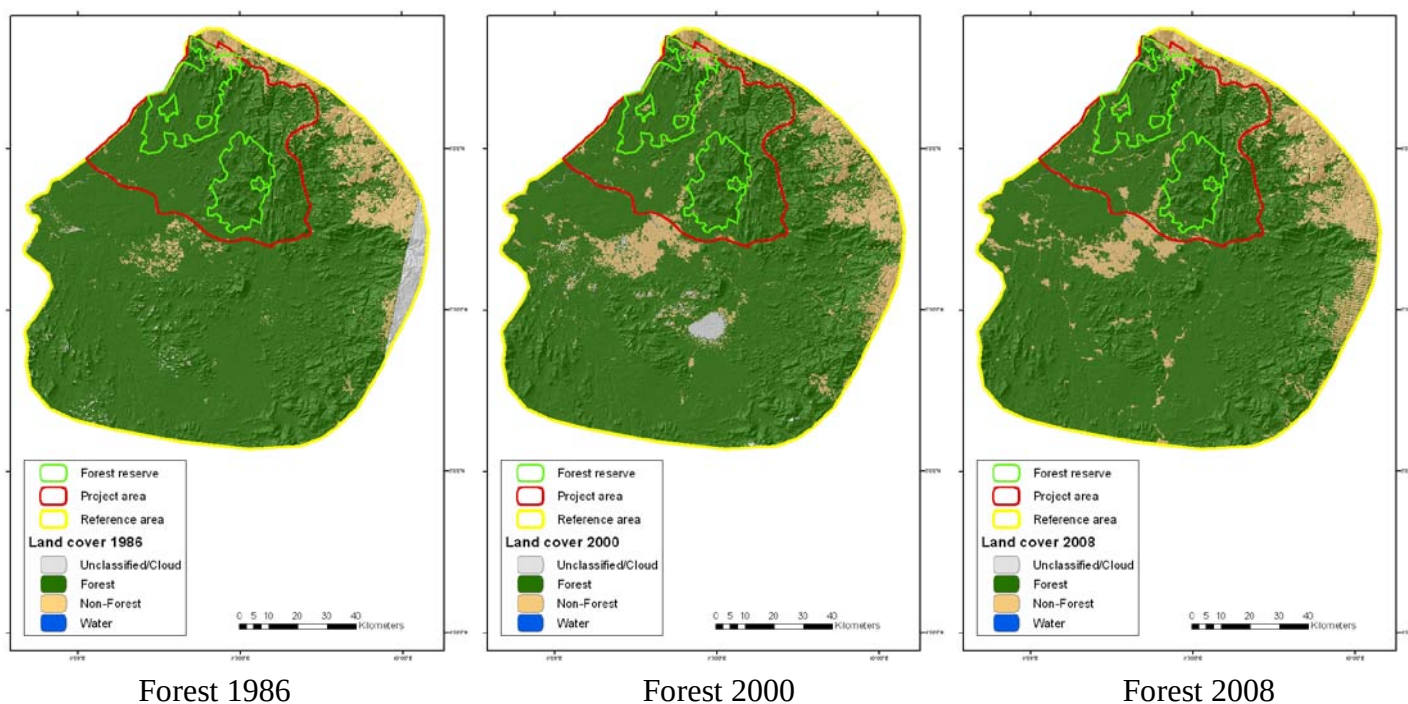
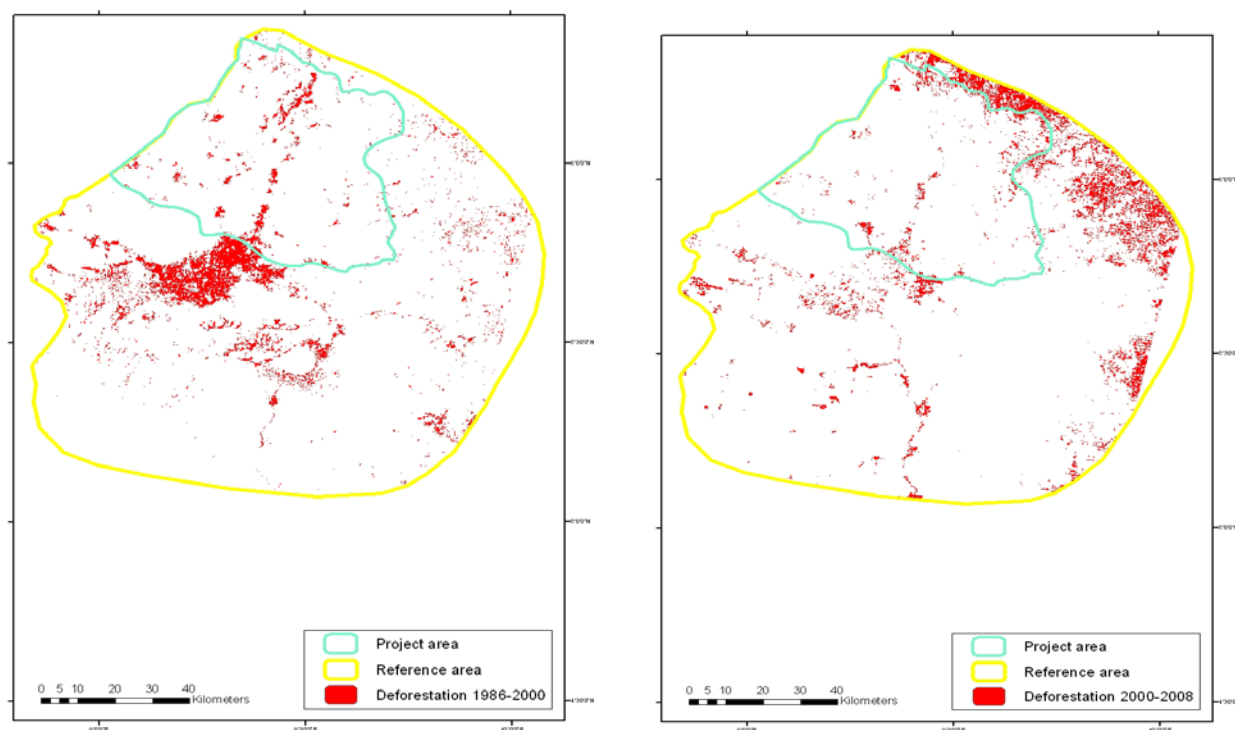
Sustainable use scenario: This scenario would be focused on fostering sustainable management of forest resources in the landscape by local communities and private operators. Emission reductions are estimated at almost 4 million t CO₂-e over 20 years.

Integrated scenario: This scenario would combine the two previous scenarios and thus focus on protection and sustainable management of all forest resources in the landscape by local communities, NGOs and private operators. Emission reductions are estimated at 5.5 million t CO₂-e over 20 years.

This scenario appears to be the best option for Takamanda-mone future REDD+ project.

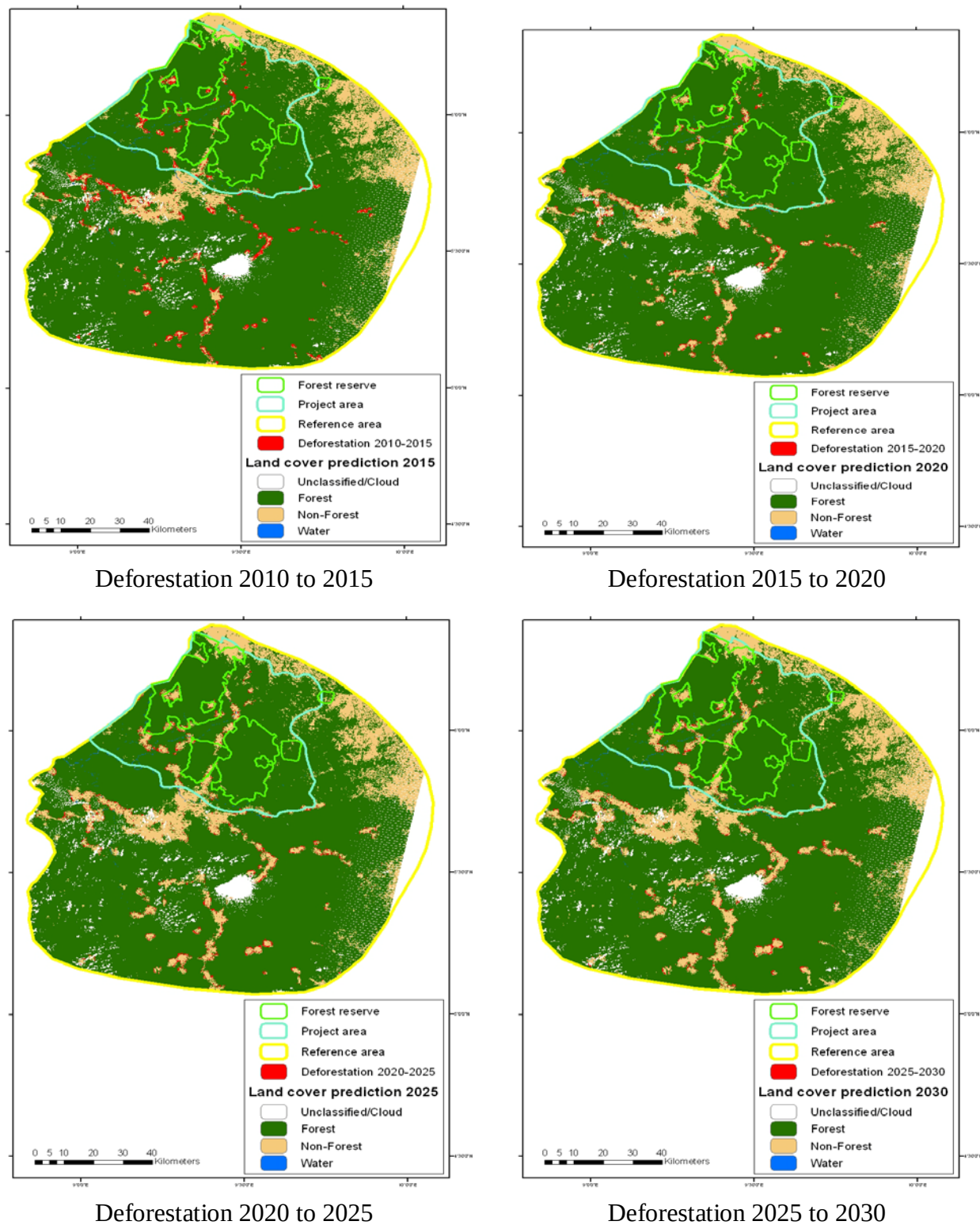
Figure 7: Feasibility and expected impact on GHG emissions of the three discussed REDD project scenarios

1. Conservation Scenario	2. Sustainable Management Scenario	3. Integrated Scenario
Evaluation: ✓ Technically feasible ✗ Political resistance ✓ Co-benefits (biodiversity and ecosystem services) ✗ Limited to HCV areas and PAs Potential Emission Reductions: • Avoided Deforest.: 729,400 tCO₂-e • Avoided Degrad.: 241,800 tCO₂-e	Evaluation: ✓ Politically and technically feasible ✗ Expensive and long-term ✓ Co-benefits (SFM) ✗ Methodology issues ✗ Limited to community and concession areas Potential Emission Reductions : • Avoided Deforest.: 3,079,985 tCO₂-e • Avoided Degrad.: 806,010 tCO₂-e	Evaluation: ✓ Technically feasible ✓ Politically interesting ✓ Optimal contribution to national REDD ✓ Co-benefits ✓ Entire landscape ✗ Some methodology issues Potential Emission Reductions : • Avoided Deforest.: 4,636,537 tCO₂-e • Avoided Degrad.: 886,612 tCO₂-e

Figure 8: Forest cover maps developed for 1986, 2000 and 2008**Figure 9:** Historic deforestation in the reference area for 2 time periods, 1986-2000 and 2000-2008

Deforestation 1986 to 2000

Deforestation 2000 to 2010

Figure 10: Deforestation predictions for 2015, 2020, 2025 and 2025

Recommendations

Given uncertainty of offset market for REDD+ at this stage, the increased interest in scaling up REDD+ efforts to larger sub national scales with financial compensation through payments for performance, and the potential for different mitigation activities, we recommend the adoption of a sub-national approach to REDD+ in the landscape that combines participatory land use planning, community consultation, piloting of mitigation activities, with regional MRV. This approach could serve as a national pilot for Cameroon, and strengthen previous work to gazette areas of conservation importance.

Summary of the next step main components

In the second phase of the feasibility study we will be focused on main points as detailed as follow:

1. Improved land tenure through integrated land use planning on landscape level defining zones for protection, sustainable management and restoration of forest resources and agricultural zones, as well as management modalities.
2. Improved protection of biodiversity, especially Cross River Gorilla populations and important habitats, through sustainable management of protection zones and connectivity corridors based on the integrated land use plan.
3. Support regional stakeholders, especially local communities, government agents and private operators, in implementing activities to reduce deforestation and forest degradation in the Takamanda Mone Landscape.
4. Develop sustainable funding mechanisms for biodiversity protection and forest conservation in the landscape based on ecosystem services, sustainable use of forest resources and eco-tourism.

Our partners and sponsors



LifeWeb
Partnerships for financing
protected areas



**GREAT APES SURVIVAL
PARTNERSHIP**



GOBIERNO
DE ESPAÑA

MINISTERIO
DE AGRICULTURA, ALIMENTACIÓN
Y MEDIO AMBIENTE



Our contacts:

WCS Cameroon: BP. 3055 Messa Yaoundé, Cameroon

Tel/Fax: 22202645 Email: wscam@aol.com

Project resource personals: Roger Fotso, Christian Burren, Olivier Séné

E-mail: rfotso@wcs.org; cburren@wcs.org; olivier_sene@yahoo.fr