Sofala Community Carbon Project

Distinctive features

The Sofala community carbon project is located in the central region of Mozambique in Sofala province. The project proponent is Envirotrade Carbon Limited. Envirotrade Mozambique Limitada (EML) was set up to administer the project, while a trust fund, the Mozambique Carbon Livelihoods Trust (MCLT), manages the carbon funds. A portion of the income in MCLT goes to farmers directly for agro-forestry payments. Another proportion is paid to the community trust fund dependant on compliance with REDD management. After the contractual payments are made through MCLT any balance may be used by the community trust fund for community projects such as school building. Three schools have been built.

The project zone is split into two sites, the Gorongosa and Zambezi Delta sites. The project overlaps with two buffer zones around the Gorongosa National Park and the Marromeu National Park. The total area of these sites is 511,392 ha. Of this, 9,599 ha are managed by communities and households for REDD, while some other areas are managed for sequestration through agroforestry. The most widespread vegetation type within the project area is Miombo woodlands. 2/3rds of the project area is High Conservation Value Forest (HCVF), as set out by the ProForest HCVF-toolkit. Subsistence farming is allowed in the buffer zone, but no other commercial activity, including hunting or extraction of forest products for commercial production, is allowed except under license. Community land is managed by the communities under the Land Act which allows subsistence farming, charcoal production, fishing and hunting.

Most people in the project region farm using shifting cultivation with no application of manure or fertilizers and no access to irrigation. Productivity is low and crop failure is high, meaning living standards are low. The main drivers of deforestation are agricultural encroachment and charcoal manufacture. Burning and logging also drive deforestation. Without the project, a high rate of deforestation is expected to continue as a result of population growth and in-migration.

The project promotes the adoption of sustainable land use management to rural smallholders. Individual smallholders can choose to adopt mitigation activities from a menu of 9 different land use systems (7 agro-forestry, 1 agricultural and 1 forestry). The systems that are carried out to sequester and protect carbon are: homestead planting, Faidherbia dispersed interplanting, Gliricidia dispersed interplanting, non-burning of agri-residues, field boundary planting, mango orchard growing, cashew orchard growing, woodlot creation and REDD. For each system that a producer decides to adopt, a contract is established between him or her and the project

developer. The agro-forestry and agricultural systems have been widely adopted. In total, 1,834 farmers have signed 4,573 contracts.

REDD areas may be private land where a farmer owns part of the bush which his or her family have the right to clear under traditional law. The smallest REDD area is 2 ha, the largest is 5,249 ha. The largest areas are owned communally. Community members sign contracts with the community association to patrol and make fire breaks in the REDD areas. Annual monitoring is carried out by community technicians who are subject to checks by the University of Eduardo Mondlane. The project also supports various micro-business enterprises, including bee keeping, guinea fowl raising, etc.

	Heading	Explanation
Locational factors		
	**Location**	Sofala province, Mozambique
	Spatial boundaries	Project area: 9,599 ha (refers only to the REDD activity of the project) Reference area: 55,877 ha (limited to Gorongosa project site as REDD only implemented at this site) Leakage monitoring area: Leakage monitoring not discussed in Plan Vivo design document Leakage management area: Not specified
	Land cover	Woodland mosaic including Miombo woodlands, Combretum woodlands, riverine woodland and dry forest
	Agents and drivers of forest cover change	Agents: Not clearly described in project design document Underlying drivers: Increase in population; Migration; Local markets for charcoal; Markets for luxury wood Proximate causes: Mainly agricultural encroachment and charcoal manufacture. Also burning and logging.
Basic project features		
	**Objectives**	▪ Develop sustainable land use practices in participation with community to provide socio-economic benefits and protect and restore forest resources ▪ Produce research outputs that contribute to implementation of above objective ▪ Build capacity in provincial organizations to advise on land use activities and assess potential carbon benefits ▪ Uplift the community through environmental education and extension, improved infrastructure, health and schools, employment diversification.
	Proponent/s	▪ Envirotrade Carbon Limited (ECL)

	Actors involved in project design and implementation and their roles	▪ Project developer: Envirotrade Carbon Limited (ECL) – responsible for carbon marketing, research, administration and developing new projects ▪ Project operator (subsidiary of ECL): Envirotrade Mozambique Limitada (EML) – responsible for project technical operations and full administration ▪ Mozambique Carbon Livelihoods Trust (MCLT) – responsible for management of carbon funds ▪ Univ. of Eduardo Mondlane – responsible for monitoring fire ▪ Univ. of Edinburgh – responsible for research and carbon monitoring ▪ Gorongosa National Park Park Administration – cooperates with project on fire management, conservation enforcement and environmental education program
	Tenure and Carbon rights holder/s	Tenure: Individually managed land (machambas (forest land that has been cleared for fields around homesteads) of between 0.5 and 7 ha with an average of 1.03 ha scattered in the landscape); REDD sites are either wooded community areas or woodland owned by an individual community member. Carbon rights: Communities and households
	Upfront financing	EU grant, Investment by Envirotrade
	Start date	2003
	Crediting period	100 years
	Baseline emissions	
	**Methodology**	Own *Note: Baselines and net emissions for the with-project scenario are presented in the project documents for all the project mitigation activities – REDD, agro-forestry, no burning of agri-residues. This profile only presents the work on the REDD component of the project.*
	Reference data (unplanned deforestation/degradation)	Reference period: 1999-2007 Types of data used: SPOT imagery used to analyse the historical deforestation rate
	Reference data (planned deforestation/degradation)	Not applicable
	Stratification of project area	5 strata: Degraded Miombo, Machamba (fields), Miombo, Riverine Savannah
	Deforestation rate and location	**Historical** 2.4%

		Projected 2.4% **Likely baseline scenario** Deforestation and unsustainable land use continue unimpeded across project region **Modelling procedure** Deforestation rates assumed to be constant at average historical rate. Attempt to build a statistical model to predict deforestation was not successful and was able to explain only 17% of deforestation using available drivers.
	Carbon pools	**Carbon pools included** ▪Aboveground tree biomass ✓ ▪Belowground tree biomass ✓ ▪Non-tree woody biomass × ▪Litter × ▪Dead wood × ▪Soil × ▪Wood products × **Estimation method** ▪87 tree inventories of between 0.21 and 1.00 ha used to determine carbon stocks of five vegetation types. ▪Root: Stem ratio used to estimate belowground biomass and derived from sampling 23 trees. ▪For post-deforestation land use, allometric equation was derived from 32 inventories of individual *machambas*, and this was used to calculate the above and below ground biomass.
	Carbon stock changes	Deforestation assumed to be constant across different vegetation types. Forest assumed to be replaced by *machamba*, with average C stock of 2.77 tC/ha.
	GHG emissions	Excluded (considered insignificant)
	Net emissions without project	▪ 1,178,195 tCO2e (estimated from figures provided in PDD; between 2006 and 2048)
Project GHG emissions reduction strategy		
	**Scope**	Avoid unplanned deforestation, enhance forest carbon stocks
	Activities	▪ Offers smallholders a menu of 9 sustainable landuse management options that provide mitigation benefits to choose from (homestead planting, Faidherbia dispersed interplanting, Gliricidia dispersed interplanting, non-burning of agri-residues, field boundary planting, mango orchard growing, cashew orchard growing, woodlot creation and REDD). 1,834 farmers have signed 4,573 contracts. ▪ REDD activity: REDD areas may be private land where a

		farmer owns part of the bush which his or her family have the right to clear under traditional law. The smallest REDD area is 2 ha, the largest is 5,249 ha. REDD incentive finance is provided directly into trust fund per hectare of land protected. ▪ Timber utilization and sustainable harvesting activity: Sustainable community saw mill set up with forest managed according to maximum sustainable yield. ▪ Agro-forestry activity: Reforestation of agricultural land carried out as part of boundary planting, intercropping and woodlot systems. ▪ Drip irrigation and bush meat activity: Drip irrigation for cash crops run as small micro-businesses by community members. 59 people are keeping guinea fowl, a bush meat substitute, from eggs received from Project. ▪ NTFPs activity: A bee keeping programme is being implemented.
	Leakage mitigation strategy	▪ Adoption of sustainable land management to reduce need for shifting agriculture. ▪ Sustainable charcoal making industry based on woodlots. ▪ Agro-forestry to provide fuel wood or poles for building.
	Non-permanence risk mitigation strategy	▪ Operations management is planned taking flood risk into account. ▪ Reduce risk of social instability by building trust with communities, building community institutions, and ensuring communities are fully involved in project design. ▪ Reduce risk of fire through community training and physical means (e.g. fire breaks). ▪ Maintain close relationship with government and support local institutions to ensure ongoing support. ▪ Delivery primary health services to the community to reduce HIV, Aids and other health risks. ▪ Maximise environmental and social benefits to ensure necessary financial flows to maintain the project.
	Additionality	▪Barrier analysis: Farmers in the region do not have access to capital to invest in agro-forestry or forest management. ▪ Farmers lack expertise to restore agricultural productivity by adopting agro-forestry, mulching or other sustainable land management practices.
With-project emissions		
	**Effectiveness of measures**	Assumption: 75% reduction in deforestation
	Carbon stock	Net project benefits are calculated from avoided

	changes	deforestation and burning, plus carbon sequestered by tree planting (woodlots, homestead planting, orchards, etc.)
	GHG emissions	Excluded (found insignificant)
	Leakage	**Types** Activity shifting: Potential leakage risks include: - Displacement of agricultural development - Displacement of charcoal making - Displacement of wood fuel collection **Deduction** 0
	Non-permanence risk	**Buffer** 10%
	Ex-ante estimated net greenhouse gas emissions reductions	**Total over crediting period**: 796,005 tCO_2e **Annual average:** 7960.05 tCO_2e. **Annual average per ha:** 0.83 tCO_2e
	Monitoring of carbon stock changes and emissions	**Data and parameters** ▪i.Data and parameters for trees planted trees in agroforestry systems ▪ii.Data and parameters for REDD+ areas ▪iii. Data and parameters for leakage ▪iv. Project emissions (power generation on site, vehicle use, flights by international staff and possible burning of nitrogen rich legumes) **Methods** ▪i. Visual inspection and measurement by technicians ▪ii. Patrolling by community teams; Visual inspection using satellite imagery; Ground based inventories ▪iii. monitored using satellite imagery ▪iv. Records of fuel use and numbers of flight; field monitoring for burning of legumes **Frequency** ▪i. 2 times a year ▪ii. Patrolling?; others annually ▪iii. Annually ▪iv. Once every 2 years for fuel use and no. of flights; close ongoing monitoring for burning of legumes
Stakeholder identification and engagement		
	**Stakeholders identified**	In final project phase: communities and their elected representatives, individual producers who are contracted to the project, the Mozambique government and departments who are operating in the target communities, the MCLT, Envirotrade, clients who have purchased carbon from the project and the Standards to

		which the project has aligned itself.
	Identification process	Identified through their involvement in the previous 3 phases of the project and plans for the final phase.
Full and effective participation		
	**Access to information and consultation**	The project: set up a functioning communication platform for different stakeholders; set up a website to provide access to project-specific documents and to information which is of public interest; has translated a number of key documents into Portuguese; is documenting minutes from all stakeholder meetings which are available on site. PDD summary in Portuguese disseminated to community leaders and government. Feedback used to improve project outcomes is generated through: 1. Quarterly reports 2. Report backs to Community 3. Meetings with Management committee 4. Visits to the project 5. Inspections by independent bodies.
	Participation in design and implementation	▪ Communities involved in project design and implementation through: 1. Scoping study (January/February 2002) 2. Consultations with stakeholders (January –December 2002) 3. Stakeholder summit at Chitengo (August 2003) 4. Community briefings (08 December 2003 process launched, since then ongoing) 5. Traditional ceremony with Régulo (August 2003) 6. Meetings with interest groups (ongoing) 7. Meetings with government departments (ongoing). ▪ Community associations involved in project activities from signing contracts to managing the trust fund. ▪ Communities and households managed forests for REDD, plant trees, manage microenterprises, etc. The Project provides majority of permanent jobs for local people living.
	Feedback and grievance redress procedures	Three types of dispute defined, each resolved in different manner. 1. Disputes between Project staff and Envirotrade are resolved by labour syndicate which represents workforce. Procedures where disputes relate to harassment are documented. 2. Disputes between Community and Envirotrade are resolved by consultation and discussion. Mediation is provided by District Administrator, where required. 3. Disputes between Individuals and Envirotrade are

		resolved dependant on the concern. If individual has broken contract with Envirotrade then there are clear guidelines in the contract as to how to proceed. If there is any other dispute between Envirotrade and the individual, a combination of traditional and civil authorities will act as mediators. Community chiefs and sub-chiefs represent traditional authority and the Community Association represents the civil, elected authority.
	Worker relations	Means of resolving disputes between employees and employer are documented. Health and safety practices include providing safety equipment, employing an on-site nurse, providing safety equipment and training on safety as part of sawmill, bee keeping and carpentry training, taking steps to avoid wild animal attacks during forest inventory, etc.
	Communities	
	**Without-project scenario**	Baseline established in Nhambita Livelihood Assessment Study conducted in 2004. Sustainable Rural Livelihoods (SRL) approach used as monitoring framework. To differentiate between project impact and macroeconomic changes or wider policies, project participants and control group outside project monitored. Household survey in 2008 and planned for 2012 using baseline variables. The variables in the baseline survey are: Social assets - Land tenure and property rights, Status of traditional institutions, Presence/absence of local leadership Physical assets - Status of infrastructure, Sources of energy, Access to drinking water Human assets – Literacy levels, Access to health facilities, Land use practices, Awareness on agriculture and forestry practices, Gender division of labour Natural assets – Average land productivity, Access to irrigation, Benefits from forests Financial assets – Income sources, Area of commercial crops, Livestock ownership, Ownership of durable items (bicycle, etc.) Description: Local incomes will remain low irregular and unstable; Commercial activities unlikely to increase; Agricultural productivity remains low and food security endangered; Unsustainable swidden agriculture threatens natural resources; High poverty levels associated with lack of employment opportunities for women.
	With-project scenario	**Expected net benefits** ▪ Household income increases through enterprises and

		carbon payments. ▪ Local food security and agricultural productivity increase. ▪ Women benefit through training and income generation. **Possible negative impacts on other stakeholders and mitigation strategy** Not expected.
	Impact monitoring	**Indicators** Local incomes; Local food production (quantity and diversity of crops, and local sales); Gender; Literacy levels; Access to alternative livelihoods **Methodologies** Household survey using standard questionnaire **Frequency** Periodic
Biodiversity and ecosystem services		
	**Without–project scenario**	Application of ProForest High Conservation Value Forest. HCVF assessment used field plots, discussions with community leaders, vector data giving roads, rivers, and national park boundaries, and radar and optical satellite data. Variables discussed include species diversity (Shannon Index) and threats. Description Further loss of Miombo woodland; Increasing risk to threatened animal species; Reduced species abundance and viability due to deforestation and forest fragmentation and loss of connectivity; Loss associated with increased hunting and use of fire.
	With-project scenario	**Expected net benefits** Land-use systems reduce pressure to deforest national parks and forest reserves by increasing food security and protecting buffer zone from deforestation which contributes to biodiversity conservation. Hunting decreases. Indigenous trees species planted in machambas. Agro-forestry systems increase habitat quality and area for arboreal species. **Possible negative offsite impacts and mitigation strategy** Not expected.
	Impact monitoring	**Indicators** Fragmentation and degradation of landscape; Floristic composition and status of vegetation types; Bird life (Other environmental values) Water availability (rainfall, irrigation well levels, tree survival rates); Soil conservation (carbon and nitrogen levels compared with

		baseline data) **Methodologies** Interpretation of satellite imagery; Ground inventory; Bird distance sampling **Frequency** Mostly annual
Progress		
	**Validation**	Plan Vivo validation: Registered with Plan Vivo on 01 January 2007 CCBA validation report issue date: 1 12 2010, CCB Standards Second Edition Gold level
	Verification	Plan Vivo verification: Annual reports submitted each year for year 2006 to year 2013 CCBA verification: Not verified
	Credits issued	Number: 420,525 As of: 01 March 2016
Further information		
		▪Plan Vivo projects http://www.planvivo.org/projects/registeredprojects/sofala-community-carbon-mozambique/ ▪CCBA Projects http://www.climate-standards.org/?s=sofala

Documents reviewed

Plan Vivo project design document and project webpage; CCBA project design document