Kariba REDD+ Project

Distinctive features

The Kariba REDD+ Project is located in northwestern Zimbabwe, partly along the southern shore of Lake Kariba, the largest artificial lake in the world by volume. The project area of 784,987 hectares consists of woodland and open woodlands that spans four provinces. The main causes of deforestation are socio-economic (subsistence agriculture, the collection of firewood and poaching activities) and settlements. In the absence of active protection that creates sustainable economic alternatives for communities, the proponent expects that the land in the project area will be cleared for non-sustainable land use.

The proponent is Carbon Green Investments (CGI), a Guernsey based company established to facilitate the generation of carbon credits through REDD projects. The project aims to lead to the protection of both unlogged forest and previously logged forest that has the regenerative capacity to reach a mature, 'old growth' state. The project aims to decrease deforestation through activities that significantly improve the livelihoods of locals, such as improved agriculture, beekeeping, investments in health and education, fuel wood plantations and fire management. In addition, a share of the project's carbon income will be channelled through the project's Community and Project Sustainability Fund to benefit whole communities, specifically the poorest members of society. The fund will be used to improve health and education in the project area.

The project activities to stop deforestation and degradation are expected to be financially self-sufficient in the long run. By opening new sources of income, and after initial investments have been made and capacity reaches a certain level, the local population are expected to continue with the project activities as it will be in their self-interest to do so.

	Heading	Explanation
Locational factors		
	**Location**	Northwestern Zimbabwe, partly along the southern shore of Lake Kariba
	Spatial boundaries	Project area: 784,987 ha Reference area: 1,907,410 ha of which 802,192.05 ha were forested in 2011 Leakage monitoring area: [established and mapped but size not given in VCS PD] Leakage management area: [no leakage anticipated]
	Land cover	Woodland and Open Woodland
	Agents and drivers of forest cover change	Agents: Community members Underlying drivers: Food insecurity associated with political instability placing pressure to convert forests for agriculture Proximate causes: Subsistence agriculture; use of fuel wood for households and tobacco curing; timber for poles used in construction
Basic project features		
	**Objectives**	▪Reduce emissions from deforestation and forest degradation in the project area in a way that can be measured, reported and verified. ▪Ensure sustained availability of wood supply for domestic use to the local population while providing alternatives to wood harvested from natural forests. ▪Provide a new source of revenue to local communities from the sale of carbon credits and other income sources. ▪Increase social, educational and health services. ▪Build capacity to improve natural resource management and cope with climate change. ▪Sustain and enhance biodiversity by reducing the pressure on the vegetation. ▪Create a successful example that can be replicated in Zimbabwe and elsewhere. ▪Ensure major benefits are sustained.
	Proponent/s	Carbon Green Investments Guernsey (CGI) – a Guernsey based company established to facilitate the generation of carbon credits through REDD projects.
	Actors involved in project design	▪Carbon Green Investments Guernsey (CGI) - responsible for project management, development, implementation and operation ▪South Pole Carbon Asset Management (South Pole) - elaborates and oversees the development of appropriate

		project design and monitoring techniques ▪Environment Africa (EA) - implements activities that protect forested wilderness areas ▪Black Crystal Consulting (Black Crystal) - supports the biodiversity component of the project and is involved in the on-the-ground assessment of carbon stocks.
	Tenure and Carbon rights holder/s	Tenure: ▪Land is communal and administered by the local government. Carbon rights: ▪Rural District Councils (RDC)s have, jointly with the management of all soil and above-soil natural assets including trees and biomass, the right to environmental goods and services in the area. The project's agreements with each RDC transfer carbon rights to project proponents.
	Upfront financing	Carbon Green Investments has to date injected more than 750,000 USD in the project and has access to a further 500,000 USD.
	Start date	1 July 2011
	Crediting period	30 years, 1 July 2011 – 30 June 2041
		Baseline emissions
	**Methodology**	VM0009 - Methodology for Avoided Mosaic Deforestation of Tropical Forests, v1.1
	Reference data (unplanned deforestation/degradation)	Reference period: 2003-2011 Types of data used: Landsat images from 2000, 2001, 2003, 2006, 2009, 2011 used (LS5 TM, LS7 ETM+) Official population census between 1992 and 2002
	Reference data (planned deforestation/degradation)	Not applicable
	Stratification of project area	Open Woodland; Woodland
	Deforestation rate and location	**Historical** 0.89% **Projected** *See modelling procedure* "As re-immigration into the reference area and close to the project area is slowing down but has not yet fully stopped and high population growth rates above 2 per cent per year persist, we have confidence that the average deforestation rate established over the entire reference period is a realistic predictor for future

	deforestation" **Likely baseline scenario** Scenario for all selected carbon pools is the complete removal from the project area. **Modelling procedure** ▪To determine the final sample size of the observations of forest state first a pilot sample of 327 points were distributed over the reference area in a regular grid with random origin. 15,9350bservation states were interpreted over the five time steps. Observation of forest states via visual interpretation by single interpreter conducted, while a second one reviewed it. ▪To fit the Cumulative Deforestation Model, equations were solved, fitted with the observed increased of the proportion of deforested area observed from the of forest state transition sample points over time in reference period. Socioeconomic covariate data were collected to estimate the linear predictor. Population was considered a possible covariate to estimate the linear predictor but found to be insignificant. Linear function selected ($F_{DF}(t) = 0.03188 * t$; where t = time) as it was found to predict deforestation consistently more conservatively than the logistic function.
Carbon pools	**Carbon pools included** ▪Aboveground tree biomass ✓ ▪Belowground tree biomass ✓ (including non-tress) ▪Non-tree woody biomass ✓ ▪Litter × ▪Dead wood ✓ (standing including; lying excluded, as insignificant) ▪Soil ✓ ▪Wood products × **Estimation method** ▪8.9 or 9 m radius circular PSPs located randomly for tree sampling. For thicket woodlands, 6 m x 42 m sampling transects used. Species, DBH and height recorded. ▪Soil sampled at two places in each biomass plot. ▪Allometric equations from peer-reviewed literature derived from similar project locations used. When possible, species-specific equations used from similar locations. ▪Carbon stock in standing dead wood measured and calculated using VCS approved methodology.
Carbon stock changes	▪Loss of carbon in the baseline assumed to be 100% of the starting inventory for deforested area ▪Default mean rate used for soil carbon loss
GHG emissions	Non-CO2 GHGs omitted

	Net emissions without project	196,513,929 tCO_2
Project GHG emissions reduction strategy		
	**Scope**	Avoid deforestation and degradation
	Activities	▪Improved Agriculture: (i) teaching agriculture techniques that have the potential to increase the agricultural output of given plots and thus reduce the need for rotational agriculture, (ii) the use of alternative high-value crops such as garlic and chili instead of tobacco will be promoted, (iii) community gardens will be established ▪Beekeeping: beekeeping will increase the value of the standing forest as "cultivated" beehives can generate incomes of 500-1000 USD/year. Honey processing centres will also be set up. ▪Fuel wood Plantations: sustainably-managed fuel wood plantations reduce the pressure on natural forests and makes labour force available that would otherwise be needed to collect fuel wood. The multipurpose tree Moringa (*Moringa oleifera*) will be promoted for nutritional purposes ▪Social Forestry – Indigenous Knowledge Systems: indigenous knowledge in forest conservation and management will be documented and shared across the project areas. ▪Fire Management: fire breaks next to roads will be established and maintained. Controlled burning will be carried out by the project's on-the-ground management teams. ▪Alternative and sustainable building materials: the Hydraform technology will be promoted as an alternative to traditional wood or bricks, which requires less wood resources. ▪Community and Project Sustainability Fund: a fund will be created. The board governing the fund will comprise Carbon Green Africa (CGA) Trust members in conjunction with selected members of the community and council from each RDC. Oversight will be given by CGI. ▪Health: targeted clinics will be improved; practitioners quality and number will be assessed with salaries subsidised if necessary; targeted clinics will be stocked with basic dressings and drugs; healthcare officer will be appointed ▪Education: targeted schools will be improved; teacher quality and number will be assessed with salaries subsidised if necessary; targeted schools will have a bursary initiative; environmental topics will be added to

		the curriculum; education officer will be appointed ▪Newsletter: published on a quarterly basis in English and local languages Shona and Tonga
	Leakage mitigation strategy	No leakage is expected from the project.
	Non-permanence risk mitigation strategy	▪Risk of failure is considered low due to local support. ▪Only risk is government reneging on their written agreement, which is considered low.
	Additionality	▪Alternative land use scenarios: 3 scenarios identified. Subsistence and small-scale farming (in the form of conversion of forestland to cropland or grazing land, fuelwood collection for tobacco curing) is the most likely baseline land use. ▪Investment analysis: Simple cost analysis found that apart from carbon offset sales there is no revenue to cover the significant costs of project activities to mitigate deforestation ▪Common practice analysis / barrier analysis: It is not common practice for private companies that are not donor funded, such as the present project proponent, to protect forested wilderness in Africa for financial return in the absence of AFOLU revenues
With-project emissions		
	**Effectiveness of measures**	Assumed that effectiveness of measures to reduce deforestation increases over time, starting at 10% in year one and levelling off at 70% in year 7.
	Carbon stock changes	[Calculated as for baseline]
	GHG omissions	Project emissions for any monitoring period are estimated by the events of woody biomass consumption. Non-CO_2 GHGs omitted.
	Leakage	**Types** Activity shifting: Assumed unlikely Market effects: Assumed unlikely **Deduction** None
	Non-permanence risk	**Buffer** 16.5%
	Ex-ante estimated net greenhouse gas emissions reductions	**Total over crediting period:** 196,513,929 tCO_2e **Annual average:** 6,550,464 tCO_2e **Annual average per ha:** 8.3 tCO_2e
	Monitoring of carbon stock changes and	**Parameters** ▪ i. Parameters associated with carbon stocks in project and leakage areas

	emissions	▪ ii. Parameters associated with extent of each land use of the project, reference and leakage area **Methods** ▪ i. PSPs ▪ ii. Landsat imagery and the classification scheme applied for historic land use analysis used for establishment of the baseline **Frequency** ▪ i. PSPs re-measured at least every five years ▪ ii. Five-year intervals
Stakeholder identification and engagement		
	**Stakeholders identified**	▪Community members affected by the project ▪Community leaders, including: ▪Representatives of local associations ▪Representatives of RDC administration and RDC councils ▪Traditional leaders (Chiefs) ▪Local NGOs working on related projects
	Identification process	*Not directly stated, but appears self-selecting through attendance at public meetings*
Full and effective participation		
	**Access to information and consultation**	▪Local consultations held at each RDC at early stage in design process. Invitations to public advertised 2 weeks in advance. ▪A quarterly newsletter will be published in English and local languages Shona and Tonga.
	Participation in design and implementation	▪Virtually all project activities aim on improving the local communities' livelihoods and providing attractive alternatives to the unsustainable use of natural resources. ▪20% of net profits go into the Community and Project Sustainability Fund. Fund's use is decided by a board that includes selected members of the Community and Council from each RDC.
	Feedback and grievance redress procedures	CGI is committed to provide written feedback to grievances within 30 days. All grievances and feedback to it are to be published in the project's newsletter. Grievances (written or oral) can be communicated through the council; on the ground teams; liaison officers.
	Worker relations and safety	Workers will be informed of their rights at beginning of employment and will be encouraged to form workers Committees. Trade Union visits to the site is encouraged.
Communities		

	**Without-project scenario**	Questionnaires and focus group discussions used for assessment and variables discussed include education, female headed households, and household income sources. ▪Most people belong to Tonga or the Shona ethnic groups. The Tonga tribe traditionally cultivates small gardens in fertile areas along the rivers. The Shona traditionally engage in pasture farming and agriculture. ▪Most people have primary education; ~50% went to secondary school; 15% are female headed households; field crops are the most important source of income, but the amount of income is low.
	With-project scenario	Sustainable livelihoods approached used to analyse net community benefits **Expected net benefits** Health and education; knowledge and skills; infrastructure; tools and technology; investment; employment; water resources; forest and non-timber forest products; biodiversity; wildlife; desertification **Possible negative impacts on other stakeholders and mitigation strategy** *No potential project risks to communities or other stakeholders identified*
	Impact monitoring	**Indicators** ▪Direct - Improved agriculture; beekeeping; fuel wood plantations; social forestry; brick making; on-the-ground management teams; community fund; newsletter ▪Indirect - annual income, employment ▪Employees and beneficiaries –annual income, education, knowledge on sustainable natural resource management, work dangers and training on these, grievances **Methodologies** ▪Numeric monitoring of the variables (number participants, fund spent, etc.) ▪Sampling of households **Frequency** ▪Fuel wood plantations; social forestry; brick making; on the ground management teams (total employees); newsletter – 5 yearly monitoring and reporting ▪Improved agriculture; beekeeping; on-the-ground management teams (number of man days spent on patrolling, fire management) ▪Community fund – continuous monitoring, 5 yearly reporting.
Biodiversity and ecosystem services		
	**Without–project**	Published literature used for assessment. Ecosystems,

scenario	endangered species, and common species discussed. ▪Important wildlife area, showing significant populations of African elephants, lions, impalas, hippos and crocodiles along with a wide variety of birds, including the IUCN red list vulnerable species Southern Ground Hornbill, Lappet-faced Vulture, and White-headed Vulture. ▪Under the baseline scenario, agricultural expansion will continue. Species that can be hunted will suffer from massive additional pressure due to uncontrolled poaching.
With-project scenario	**Expected net benefits** ▪Reduction of agricultural expansion and prevention of poaching leading to conservation and increase of wildlife. ▪Serve as a wildlife corridor between existing national parks **Possible negative offsite impacts and mitigation strategy** No negative offsite biodiversity impacts identified
Impact monitoring	**Indicators** ▪Pressure (number of wire snares, poached games) ▪State (number of big game, endangered species encountered, number of tree species on monitoring plots) ▪Response (number of patrols, man days patrolling, arresting poachers) **Methodologies** Observations during patrols and information from biomass plots **Frequency** All variables will be monitored continuously, but reported upon verification (every 5 years)

Progress

Validation	VCS validation report issue date: 19 August 2013 CCBA validation report issue date: 8 February 2013 (Gold Level)
Verification	VCS verification period and report issue date: 01 July 2011 to 30 June 2012; 19 August 2013 (conducted together with validation) 1 July 2012 – 30 June 2014; 4 May 2015 CCBA verification period and report issue date: 1 July 2011 – 31 January 2014 (period covered in Project Implementation Report); 24 July 2014
Credits issued	Number: 4,337,279

		As of: 21 February 2016

Further information

- Carbon Green Africa:
  http://www.carbongreenafrica.net/
- VCS Database:
  https://vcsprojectdatabase2.apx.com/myModule/Interactive.asp?Tab=Projects&a=2&i=902&lat=-16.8184067184111&lon=28.7615526227228&bp=1
- CCBA Database:
  http://www.climate-standards.org/2011/10/17/kariba-redd-project/

Documents reviewed

VCS and CCBA websites: PD, PDD, Validation and Verification reports