Plan Vivo Project Design Document (PDD)

Extension of Trees for Global Benefits to Mount Elgon[1]

ECOTRUST
The Environmental Conservation Trust of Uganda

IN PARTENERSHIP WITH

Districts of Mbale, Manafwa and Bududa

May 2013

Empowering lives.
Resilient nations.

[1] Edited version of document submitted to TACC in 2012

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SECTION A. General Project Description

A.1 Title of project

Carbon Management Scheme for Rural Communities of Mt. Elgon as an Extension of "Trees for Global Benefits" *(a* Cooperative Community Land-Use Carbon Offset Project, Uganda)

A.2 Description of project aims and activities

A. 2.1 Background

"Trees for Global Benefits" (TGB) is a cooperative community – based carbon offset scheme with livelihood components, emphasising sustainable land-use practices. TGB is implemented by ECOTRUST, was initiated in Bushenyi (currently Mitooma and Rubirizi) District in 2003 and has since rolled-out to other districts within the Albertine Rift (Kasese, Hoima, Masindi, Gulu, Kitgum and Adjumani). TGB links small-scale landholder farmers to the voluntary carbon market using the Plan Vivo system. This scheme has inspired small-scale landholder farmers in the respective districts to work together towards protecting, restoring and improving the natural and productive landscapes on which they depend. Lessons generated from the TGB have raised considerable interest within Uganda concerning the potential of carbon trading to fund small-scale, farmer-led forestry projects.

It is upon this background that Territorial Approach to Climate Change (TACC) in the Mbale Region of Uganda Project funded a study to investigate the feasibility of and design a carbon sequestration scheme for communities in the Mt. Elgon area, specifically the districts of Mbale, Manafwa & Bududa. This concept for the extension of TGB to Mt. Elgon is based on the findings of the feasibility assessment.

A.2.2 Project aims

This project is being proposed as an extension of the Trees for Global Benefits programme, whose aim is to produce long-term, verifiable voluntary emission reductions by combining carbon sequestration with rural livelihood improvements through small-scale, farmer-led, forestry/agroforestry projects, while reducing pressure on natural resources in national parks and forest reserves.

A.2.3 Project activities

Carbon sequestration / emission reduction benefits will be generated by a suite of land-use activities within the coffee agroforestry landscape with several agroforestry configurations. Many of the targeted farmers have vast experience in coffee growing spanning more than a decade and have some experience with growing other trees. On most farms, coffee trees are planted in linear arrangement with efforts being made to maintain regular spacing, although it is also common to find coffee trees scattered randomly on some parts of the farms. The project will focus on developing agroforestry systems of mixed native and naturalized tree species on smallholder lands. Below are some agro-forestry systems that have been proposed:

i) **Dispersed interplanting with *Grevillea robusta and Maesopsis eminii:*** *Grevillea* spp. is the main species recommended for this planting system. Other than being used for timber, the communities have an option of using the small branches/stakes as support for the climbing plants such as beans. It is evident in some farms that some trees of *Grevillea* spp. have been pollarded for this purpose.

ii) Mixed Native woodlots of*, Prunus Africana*, Grevillea, *Mahogany, Croton, Premna, Ficus, Albizia,* and *Cordia:* This is mainly appropriate on the bare hills (e.g. Walanga and Bukoma) where the local government promoted indigenous tree planting on privately owned parcels of land*.*

iii) **Alley planting with *Albizia* spp, *Grevillea* and *Cordia* spp**. This is possible across the hill slopes of this very hilly terrain. This system will have several advantages to the communities and the wider environment. It will reduce run-off, acting as wind breaks and also enhance improvement in agricultural yields brought about as a result of maintenance and increase of soil fertility.

iv) **Boundary Planting** *Albizia*, *Grevillia* and *Cordia* tree species are also appropriate for this kind of planting system.

v) **Shade Coffee Agroforestry** – This is a farming system which is very much desired by the community. However, preliminary findings from the assessment indicate that the coffee farms seem to be already saturated with trees. The average number of coffee shade trees per farm of 124 trees implies familiarity with the practice of maintaining shade trees on the coffee gardens. Considering that household coffee gardens are hardly 2 acres, a density of about 100 shade trees per hectare can be assumed. Further investigations regarding the additionality of promoting this tree farming system needs to be further investigated.

A.2.4 Project baseline

The '**baseline carbon stock**' refers to carbon sequestered and stored in any existing vegetation (not including food crops) on project sites prior to project initiation. For any project to generate any Emission Reduction Units (ERU), it is vital to determine the carbon stocks at project inception. As part of the feasibility assessment, the project conducted an estimation of the baseline carbon stock in the proposed project area. No published tree growth data was available to calculate the carbon sink potential of the project activities, nor is it possible to measure every tree in the project area to determine the carbon baseline. The carbon pools measured as part of the assessment of the baseline carbon stocks included above ground biomass, mainly tree with stems >5cm dbh. An IPCC default value was used to determine the root biomass (IPCC 2006). The assessment did not include baseline carbon stocks in leaf litter, dead wood, non tree vegetation and soil. The study was done on farmlands (including coffee farms). From the data collected, the average baseline carbon stocks for the entire study area is estimated to be 4.5tC/ha. The assessment also examined vegetation changes over time using ArcView to generate land use maps over the years. The land use/cover was delineated to estimate changes between the years 1996, 2000 and 2005. The overall percentage change for the 10 year period, from 1996 to 2005 is shown in the table below.

Table 1: Percentage change in vegetation over 10 year period (1996-2005)

Vegetation type-Land Cover Classification	Area (ha) 1996	Area (ha) 2005	Change (ha)	Percentage change
Broad leaved tree plantation	253	150	-103	-41
Grassland	5,413	1,519	-3,894	-72
Small-scale farmland (non-uniform)	103,534	113,441	9,906	10
Woodland	12,402	4,591	-7,811	-63

Source: *Analysis of Landsat images*

The results of the Landsat images analysis indicate that area under broad – leaved plantation, grassland and woodland has reduced by 41%, 72% and 63% respectively while small-scale farmland has increased by 10%. The biomass stocks have been reducing over the past decade and this trend is unlikely to change in the absence of the proposed carbon project. The main reason for the decline in carbon stocks over time is the increasing population in the area, which is partially evidenced by the increase in area under agriculture. However, for purposes of arriving at conservative estimates, the project has adopted a static baseline (i.e. assumed that carbon stocks will remain constant over time).

A.2.5 Additionality analysis

The project conducted a socio-economic study to establish the relevance of a carbon project in this area. The study observed that there has been noticeable reduction in tree cover and tree species diversity in the project area, largely due to increased demands for agricultural land and fuel wood.

The continuous use and expansion of land for agriculture is leading to increased loss of vegetation cover.

Presently, there is very limited tree growing with deliberate planting of trees being more on croplands, homesteads and along farm boundaries. Fruit trees are dominant around homesteads, where they double as shade trees. Farmers are quite selective about their choice of tree species to retain on croplands and farm boundaries. Land shortage seldom allows for setting aside land exclusively for trees. However, the study also noted that there is clear preference among farmers, for fast growing exotics (e.g. *Eucalyptus spp.* and *Pinus spp.).* The experience is that the community groups are more attracted to the fast growing exotics such as pine and eucalyptus. Tree growing along contours is also not common, with planting of elephant grass the more pronounced practice. Some farmers cite the relatively high labor input required by farmers to dig contour bunds as the other major constraint preventing wide use of this practice.

The long gestation period of tree enterprises was often cited as a key disincentive for farmers to investment in trees growing (especially indigenous species). Carbon payments present an opportunity for farmers to diversify production strategies by offsetting some of the short-term costs, thus rendering investment in tree growing more attractive. Furthermore, the integration of native trees into agricultural landscapes can have very significant ancillary benefits to the farmers, a fact that the project will have to highlight. In addition, the project will provide the required technical support and training especially in the area sourcing quality seed and technical skills in collection and handling of the seed to raise good quality seedlings.

A.3 Project participants

Table 2 outlines the main groups of participants in the project and their respective roles.

Table 2: Project participants and their respective roles

Participant	Type of organization	Nationality	Role
ECOTRUST	Non Profit, Non Governmental Organisation	Ugandan	Project Developer responsible for project documentation, carbon modeling, baseline specification, coordinating third party verification & validation, Negotiating sales of Plan vivo Certificates. Intermediary, between buyers and producers and therefore responsible for producers as well as buyers' agreements. Technical support training Local government and producer organisations in planning and implementing project activities, Developing, reviewing and updating forestry and agroforestry systems (technical specifications); Project coordinator acting as fund manager, Administering and coordinating carbon offset activities as well as acting as a central archive and clearinghouse for all documentation and data generated by the project. Annual reporting: responsible for generating reports for submission to the Plan Vivo Foundation, which triggers certificate issuance

Bududa, Manafwa & Mbale Districts	Local Governments	Uganda	Farmer Recruitment including mobilising farmers, Registration, evaluation and recording of plan vivos Farmer Capacity Building continued workshops with participating farmers, Helping groups/individuals to demonstrate land-tenure, advising in opening bank accounts, dispute resolution Monitoring including Coordinating and recording the monitoring of Plan Vivos Extension Services through programmes e.g. NAADS the local government will provide technical support to farmers silvicultural practices, disease and pest control, quality seedlings Carbon Community Fund The local government at sub-county level will identify and support community projects benefiting from the carbon community fund
Farmer Groups	Community – Based Organisations	Uganda	Farmer recruitment: Mainly mobilisation for training, awareness raising
TACC Project with support from UNDP and DANIDA	Donor	Uganda	Financial support mainly project start up costs

A.4 Description of location and boundaries of the project

This concept is proposing to extend TGB into the Mount Elgon landscape, starting with the three districts of Mbale, Manafwa and Bududa. The three districts are located in eastern Uganda within longitudes 34°SE, 34°30'E and latitudes 0°45'N, 1°05'N and cover a combined area of 1,366 km^2 (The Mbale district state of environment report, 2004). The topography of this region is divided into three distinct types, i.e. the plain/terrace, the upland and the mountain landscapes. Altitude here ranges between 1,500 - 4,300m above sea level. The Mt Elgon landscape is bordered by Soronko district in the North, Bukedea in the North West, Budaka, Butaleja in the West and Tororo district in the South. Also, it shares its eastern border with the Republic of Kenya. Figure 1 shows the location of the target districts.

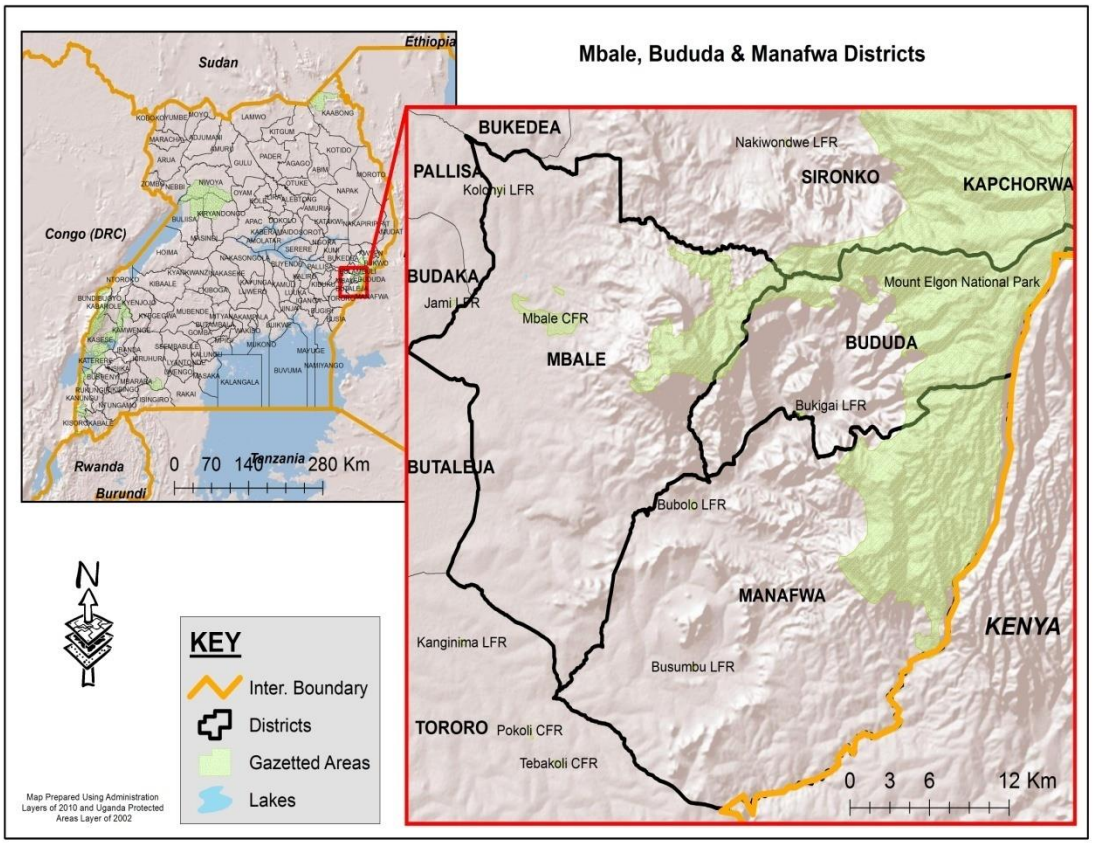


Figure 1: Location of Mbale, Manafwa and Bududa Districts in Uganda

A.5 Description of the project objectives and target groups

The aim of the Trees for Global Benefits project is to produce long-term, verifiable voluntary emission reductions by combining carbon sequestration with rural livelihood improvements through small-scale, farmer-led forestry/agroforestry projects. While working towards establishment of tree stands for carbon sequestration, the trees will at the same time provide multiple products to the farmers, thereby improving their incomes and livelihood security (e.g. through apiary, fruit production, medicinal extracts, fuel wood). The contribution of trees and tree products to the livelihood security of farmers cannot be overemphasized

The aim of extending TGB to Mt. Elgon area is to establish 5,000ha woodlots of mixed species in continuous plantation and 2,000ha under the coffee agroforestry system. The two technical specifications developed for the pilot only account for 3,000ha (2,000 woodlots of continuous plantation and 1,000 on farms). This will not necessarily be achieved within the life of the TACC project, but by extending TGB to this area, the TACC project will establish a financing mechanism to ensure this is achieved within 10 years of the start of the carbon sequestration scheme. The focus will be on establishment of woodlots of various tree configurations in a coffee growing system to improve incomes, provide increased access to fuelwood and building materials and reduce deforestation pressures.

In the Mt. Elgon region, TGB is targeting to work with farmers in a predominantly coffee growing landscape. The growing of coffee has long been a salient feature of the farming systems for a long period, with most smallholder households growing less than 2 acres of predominantly Arabica coffee. The pilot activities will be carried out on private small-scale land holdings as well as communally owned land on the currently bare hills that have been allocated to different households by the local government for purposes of tree planting. The farmers (mainly coffee growers) will grow the trees alongside other agricultural activities.

A.6 Description of the project area

A.6.1 Physical characteristics

Mt. Elgon is an extinct volcanic mountain standing 4,321 m above sea level and is the seventh highest mountain on the African continent (Lake Victoria Basin Commission, 2009). The mountain has a dome–shape, with altitudes ranging from 1,000m above sea level on the lower eastern and northern slopes to Wagagai, its highest peak. The mountain has an 8km-wide caldera which is a flat-topped depression on top of the mountain. Also, other unique features are evident and these include spurs, caves and valleys which give Mt. Elgon great scenic value.

The Mt. Elgon caldera has small lakes and moraine ridges, which are indicative of glaciations that occurred about 1,500,000 years ago. These subsequently cut low through the caldera as the melting waters heat at the streambeds of the weak volcanic ash, giving rise to various physical features e.g. the caldera, Endebess bluffs and the Elephant Platform. The Mt. Elgon ecosystem constitutes a major catchment area with its many tributaries draining into the major rivers that lead to large water bodies such as like Lakes Victoria and Kyoga, before finally joining the River Nile system. In addition, the region contains habitats that support unique and diverse fauna and flora; and is home to many rare species of extreme conservation importance. The World Conservation Union (IUCN) has listed 37 fauna species in the area as globally threatened (i.e. 22 mammals, 2 insects and 13 bird species) of which 9 species are endemic (IUCN, 1995). Owing to the rarity of some of its bird species, the region has been given the status of an Important Bird Area (IBA). It is also one of very few locations worldwide, where the Elgon Teak (*Olea capensis*) is found.

The Mount Elgon area is thus an ecologically valuable region in light of its ecological goods and services that include food, water, wood, fuel, nutrient recycling and climate amelioration. The key values of the region are natural heritage, biodiversity, water catchment, agricultural base and tourism. It is in light of these that Mount Elgon is being considered for nomination under the World Convention on Heritage Sites (Lake Victoria Basin Commission, 2009).

A.6.2 Climate

The Mt. Elgon climatic zone, as it is referred to, lies in the tropical region and experiences two rain seasons (i.e. March-May and then September–November). The average annual rainfall is 1,500mm. The peak rainy seasons occur in the months of April–June and August–November. The region also experiences a mean annual maximum temperature of 27^{o}C-32^{o}C and an annual minimum temperature between 15^{o}C and 17^{o}C. Average temperatures in the district range from 17^{o}–22^{o}C (Van Heist, 1994). [See other TACC project reports for information on the impacts of increasing weather variability and climate change on the region.]

A.6.3 Geology and soils

The geology in the Mt. Elgon region mainly comprises of the Pre-Cambrian rock system and Cenozoic rock formations. The Pre-Cambrian rock system is wholly granitic or high to medium metamorphosed formations consisting of undifferentiated gneisses and elements of partly granitic and metamorphosed formations. Cenozoic formations consist of Pleistocene to recent sediment, alluvium, black soils and moraines. The impermeable nature of these rocks makes the areas adjacent the Mount Elgon Park susceptible to landslides in the wet seasons. Generally, the soils in the highlands have clay properties, while those in the midlands and the lowlands are clay loam and sandy respectively (Mbale District State of Environment Report, 2004).

A.6.4 Drainage

Water resources in the Mt. Elgon districts of Mbale, Manafwa and Bududa, comprise of surface water (e.g. rivers and streams) and ground water (e.g. shallow and deep wells, springs). Precipitation occurs mainly in form of rainfall, with the peak rainy seasons occurring in the months of April–June and August–November. The Mt. Elgon forest reserve and peaks provide the dominant catchments for surface water to guarantee a continuous hydrological cycle.

The drainage system in this region is also characterized by a series of riverine wetlands associated with the Namatala, Manafwa, Lwere and the Lwakhakha systems that form part of the Lake Kyoga drainage system:

- *Namatala system:* This originates from the Wanale ridge and covers the sub counties of Bungokho and Nakaloke.
- *Lwere system:* This covers areas around the Mt Elgon national park and some lowlands in Nakaloke and boarders with Kumi district.
- *Lwakhakha system:* This begins from the Mt Elgon national park and covers Bumbo sub county;
- *Manafwa system:* This originates from the caldera and covers areas of Bulucheke, Bubiita, Bumayoka, Bukighai, and Bushika in Manjiya county; Bugobero, Buwabwala, Butiru, Buwagogo and Kaato sub counties in Bubulo county and descends to cover the lowlands of Bukhiende, Busoba and Bungokho sub counties in Bungokho county.

These drainage systems are impacted greatly by the farming landscape, as evidenced by continued impact on the wetlands through silting/sedimentation. This is brought about by poor farming practices of the communities cultivating upslope.

A.6.5 Vegetation

Forest and savannah are the main natural vegetation types in much of the Mt. Elgon landscape. Many of the forests now only remain as patches due to population pressure resulting in increased agricultural activities and human settlement. The forest reserves are categorized into the protected areas (Mt. Elgon National Park, Namatale Central and local forest reserves). Some farmers also have woodlots of especially *Eucalyptus sp.*, while others are increasingly practicing coffee agroforestry. Subsistence crop farms (farmlands) comprise the other main vegetation type.

A.6.6 Wildlife

The Mount Elgon National Park (MENP) management has the duty of conserving wildlife resources in the landscape. MENP is rich in biodiversity, most prominently for its endowment with numerous mammal and bird species of which some are endemic (UWA, 2000). Some of the mammal species in the park include Blue monkey, De Brazza's monkey, Black and white Colobus monkey, Leopard, African elephant Bush pig, Sitatunga, Common duiker (bush), Gambian sun squirrel, Red-legged sun squirrel, Geoffrey's ground squirrel African buffalo, Lord derby's flying squirrel, Arabian horseshoe bat, Banana bat, Forest pouched rat, Montane groove-toothed rat, Tropical groove-toothed rat, Mt. Elgon mole-rat, Common striped grass mouse, Pygmy mouse Rusty-nosed rat and others. The bird species include Madagascar Squacco Heron, Clapperton's Francolin, Mountain Buzzard, Tambourine Dove, Ayre's Hawk, Red-Headed Eagle, Giant Kingfisher, Cinnamon-Chested Bee-Eater, African Wood Owl, Red-Chested Owlet, Broad-Billed Roller, White-Headed Wood Pecker, Jackson's Francolin, Harrier Hawk, Moorland Francolin, Wattled Plover, Great Sparrowhawk, Scaly Francolin, Ovampo Sparrowhawk, African Goshawk, Helmeted Guineafowl, Lemon Dove, Verreax's Eagle, Olive Pigeon, Augur Buzzard, Bronze-Naped Pigeon, etc.

A.6.7 Land degradation

Over recent years, there has been noticeable reduction in tree cover and tree species diversity in the project area, largely due to increased demands for agricultural land and fuel wood. The main drivers of vegetation loss in the area are:

- Encroachment - land clearance for agriculture (mainly production of food for household use). This is observed to occur in the entire Mt. Elgon region and in particular the areas neighbouring Mt. Elgon National Park.
- Infrastructural developments - this is mainly due to urbanization - the small trading centres are growing much faster due to the increased rural-urban migration. Secondly there is expansion of roads system in the area.

The main driver for deforestation in this area is the high population density with an average of 526 people/km^2 for the entire region. Mbale district has the highest population density with 594 people/km^2, next is Manafwa with 493 persons/km^2 and Budada has the lowest with 450 people/km^2. The annual population growth rate of the region is about 2.5% (UBOS, 2002). Yet the area is neighboring the Mt. Elgon National Park, an area of high conservation value. This has put the park and other protected areas at great risk of deforestation (for fuel wood), park encroachment for cultivation and settlement. Table 3 summarises the population size of the Mt. Elgon region.

Table 3: Population size and density in the study district

District	Population	Total area (km^2)	Population density (persons/km^2)	Number of households
Mbale	332,571	559.9	594	76358
Manafwa	262,566	532.6	493	58,251
Bududa	123,102	273.6	450	27,909
Total	718,239	1,366.1	526	162,518

Source: *UBOS, 2002*

A.7 Description of socio-economic context and land tenure

A.7.1 Land use

Traditionally, farming systems in the proposed project area have been characterized by a combination of crop production and livestock rearing. Agricultural production, which accounts for the largest portions of the land use, is the major source of household subsistence. Livestock resources on the other hand are an important form of wealth accumulation and social security. For on-farm carbon farming to add value to existing livelihood systems, it is important that a clear understanding is gained of the existing crop and livestock production arrangements.

Many of the farmers have vast experience in coffee growing having practiced it for more than a decade. On most farms, coffee trees are planted in linear arrangement with efforts being made to maintain regular spacing, although it is also common to find coffee trees scattered randomly on some parts of the farms. Apparently, the shortage of land is likely compulsion for farmers to intercrop the coffee with both perennial (especially bananas) and annual crops (e.g. beans, maize, cassava etc.).

The average number of coffee shade trees per farm of 124 trees, which implies that land users are familiar with the practice of maintaining shade trees o the coffee gardens. Considering that household coffee gardens are hardly 2 acres, a density of about 100 shade trees per acre can be assumed.

A.7.2 Anticipated socio-economic benefits

Initiating a Plan Vivo system in Uganda will result in significant ancillary benefits beyond sequestering carbon. The focus is on agroforestry systems and small-scale plantations to improve incomes, provide increased access to fuelwood and building materials and reduce deforestation pressures on nearby forests. The contribution of trees and tree products to the livelihood security of farmers cannot be overemphasized. While working towards establishment of tree stands for carbon sequestration, the trees will at the same time provide multiple products to the farmers thereby improving their incomes and livelihood security.

Revenue generated through initial sales of carbon will largely offset start-up costs for small-scale forestry activities in Uganda, thus enabling rural communities to invest in sustainable resource management using income from environmental services. Participants will also gain access to local and national markets for timber, pole wood and fuel wood, fruit and fodder. Nursery establishment and production of seedlings will also provide additional income to rural communities. In addition, the project will build local capacity and develop generic carbon management systems that may be

replicated in other communities throughout the country. The project is also targeting to support other income generating activities within the carbon trees.

Furthermore, small-scale production of fuel wood and timber will alleviate pressure on nearby forest reserve and national park resources. Tree planting contributes to soil conservation and the intended emphasis on native tree planting will contribute to habitat restoration and protection in rural Uganda.

A.7.3 Land tenure

Generally, farmers enjoy sufficient security of tenure enshrined in the prevailing customary land tenure system. Registration of land, however, is not regarded as vital for consolidating tenure and proof of ownership over land is restricted to less formal documentation rather than official land titles. The project will be mindful of clan influences over land issues, as these determine farmers' ability to commit to long-term land use and involve them in the process of proving land ownership.

A.8 Description of the proposed Plan Vivo technical specifications (methodologies)

Carbon quantification is based on conservative estimates of the expected average increase in carbon stocks in above and below-ground woody biomass over 100 years (IPCC standard), adjusted in the case of the TFGB project for a fifty-year timeframe. The carbon benefits of each eligible land-use system are calculated using the relevant project technical specification. The technical specification for each land-use system specifies the carbon potential based on a simple carbon accounting model and the associated management regime. The project through a farmer led approach will identify the preferred farming systems and develop technical specifications for those systems. The actions required to develop each technical specifications will include baseline studies, biomass surveys, carbon modeling, training workshops and community meetings, and biodiversity and socioeconomic impact assessments. There is the possibility of applying five farming systems as follows;

a) Coffee agroforestry with long-term carbon storage is 34.3tC/ha);
b) Boundary planting (38.6tC/ha);
c) Alley farming (46.9tC/ha);
d) Dispersed intercropping (47.6);
e) Woodlots of mixed native species.

For the pilot phase, the project is submitting technical specifications for two farming systems to the Plan Vivo Foundation, which will confirm that the methodology for the land-use system is robust and compatible with Plan Vivo Standards. Technical specifications for other desired land use systems will be submitted to the Foundation as and when they are developed. Table 4 below provides a brief description of the submitted technical specifications.

Table 4: Summary of the Technical Specifications submitted

Title	Type of activity	Objectives	Brief Description	Target areas / groups
Woodlots of mixed native species –*not yet approved*	Afforestation and Reforestation	Timber, poles, firewood, medicinal	*Prunus Africana*, *Mahogany, Croton, Premna, Ficus, Cordia, Grevillea*. Thinning, pruning and other silvicultural practices are done for some species.	Small holder farmers- They grow coffee, potatoes, maize, bananas etc.
Dispersed inter-planting - *not yet approved*		Timber, firewood, poles	*Grevillea robusta, Albizia, and Cordia*	Small holder farmers- They grow coffee, potatoes, maize, bananas etc.

A.9 Description of land tenure in relation to the rights to provide carbon services

Land tenure is one of the key requirements for any potential carbon producer. Most people in the project area have individual or private land ownership. Generally, farmers enjoy sufficient security of tenure enshrined in the prevailing customary land tenure system. Registration of land, however, is not regarded as vital for consolidating tenure and proof of ownership over land which can be by less formal documentation rather than official land titles. The project will be mindful of clan influences over land issues, as these determine farmers' ability to commit long-term to a land use and involve them in the process of proving land ownership.

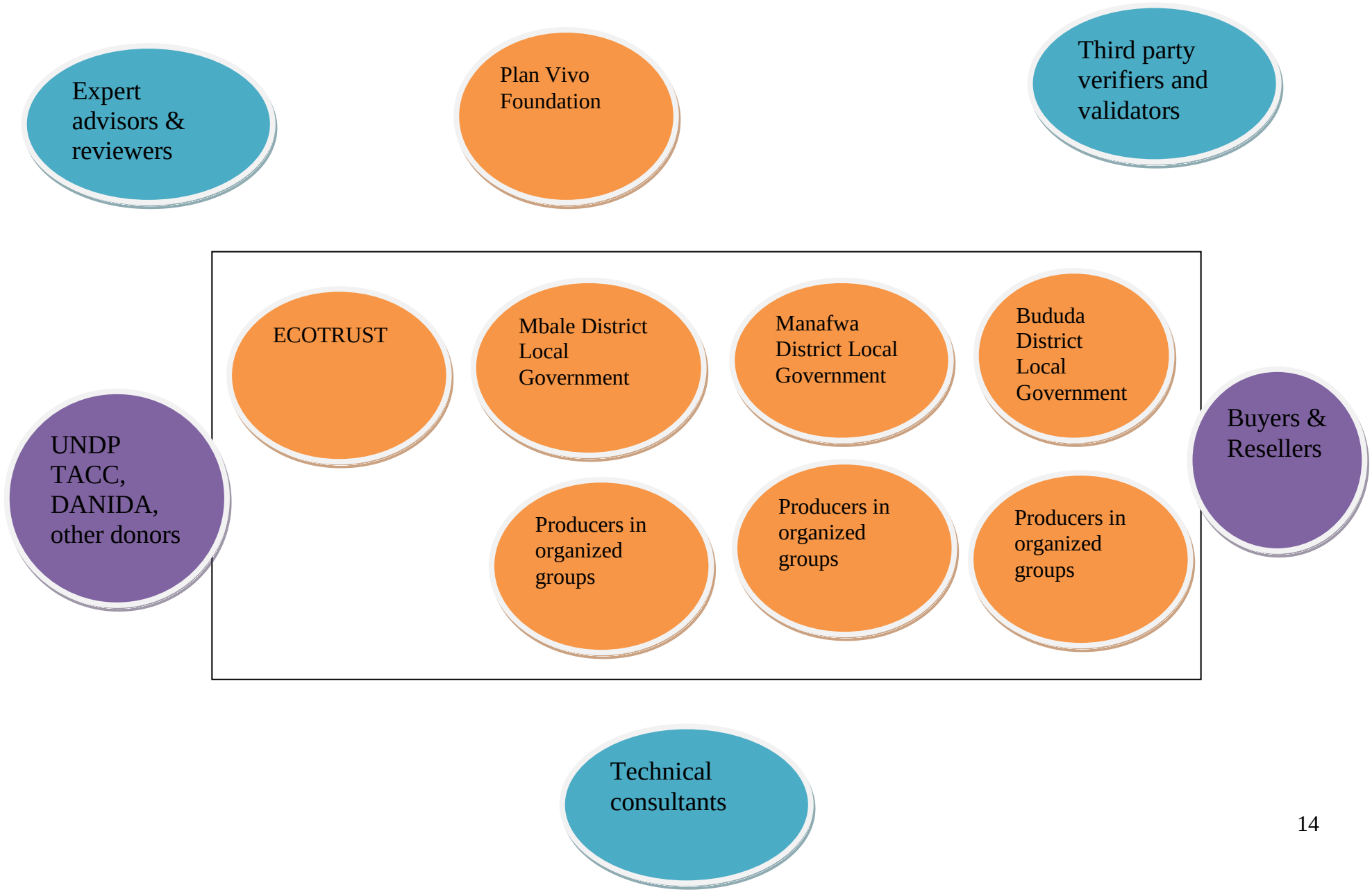
The project will ensure that each participant has the tenure to the trees, tree products and the carbon. The project will support the participants to demonstrate long-term ownership/rights to the land under carbon management. This will be evidenced by documents such as purchase agreement, land title or certificate of customary ownership. The project will work with clan heads and local leaders (political head of the village) to approve/consent that the land is for the applicant. The process of proving land tenure will be handled by the local government

In consideration for the acute shortage and fragmentation of land, the range of possible forestry configurations will be limited. The woodlots will mainly be applicable to the communal land that the local government has allocated to different households for purposes of tree planting. In this case, the project will work with the local government to ensure that the household to which the land has been allocated also own the tree, tree products and carbon rights.

A.10 Project organisational structure, governance and community participation

The proposed extension is a project originated by the district local governments intended to benefit the communities of Mbale, Manafwa and Bududa. The local governments, mainly through its Forest and Environment Officers as well as the Community Development Officers at Sub-county level, will be the main implementers of the project. The local government will mobilize communities through established of Community Based Organisations. ECOTRUST, the overall coordinator of the Trees for Global Benefits, will take on an intermediary role, responsible for project development and representing the project to all third parties (Plan Vivo Foundation, Third Party Validators, buyers). ECOTRUST is also responsible for building capacity for the project implementers

The project will establish a management structure which ensures that the producers meaningfully participate in the decision making of the project especially in selecting activities that suit their livelihood needs. The local government will hold regular meetings with the community through the CBOs. The table below presents the project organizational structure for the pilot phase.


Expert advisors & reviewers
Plan Vivo Foundation
Third party verifiers and validators
ECOTRUST
Mbale District Local Government
Manafwa District Local Government
Bududa District Local Government
UNDP TACC, DANIDA, other donors
Buyers & Resellers
Producers in organized groups
Producers in organized groups
Producers in organized groups
Technical consultants

A.11 Relationship to national organisations

The project is being implemented in collaboration with the district local government, as one of the initiatives to build the resilience of local communities to climate change. The project facilitates the development of a relationship between the community and government to improve livelihoods through improved community access to extension and financial services.

However, the current activities are on both privately owned land as well as government (sub-county) land. Where the activities are being implemented on government land, the project will work seek approval from the local government.

A.12 Technology transfer and training

The proposed extension has been designed as one of the avenues to transfer experiences gained from the implementation of the TGB from western Uganda to Eastern Uganda. The main role of ECOTRUST in this scheme is to build capacity for the local government and community based organization to engage in financing mechanisms similar to Trees for Global Benefits Programme. Pivotal to this extension, is the building of capacity for the local governments to engage in a carbon management scheme.

A.13 Project financial structure

A.13.1 Benefit sharing

The extension of TGB to the Mt. Elgon Area has been made possible with financial support from the UNDP TACC project. In conformity with the rest of the TGB, the finances from the sales of carbon credits will be managed in a transparent mechanism that involves all key stakeholders. Producers will receive performance-based incentives and the funds will be equitably shared among the different players (i.e. producers, project managers, third party payments). The proposed model will ensure that communities receive the majority share and that the project has sufficient funds to undertake the administrative responsibilities as outlined in Table 5.

Table 5: Benefit Sharing Model

Cost Area	%
Certificate issuance fees (Annual cost)	7
3rd party verification (once every 5years after the validation visit)	3
project admin, Monitoring & reporting (ECOTRUST & Local Government)	30
Staged payments to farmers	60
Total Price	**100**

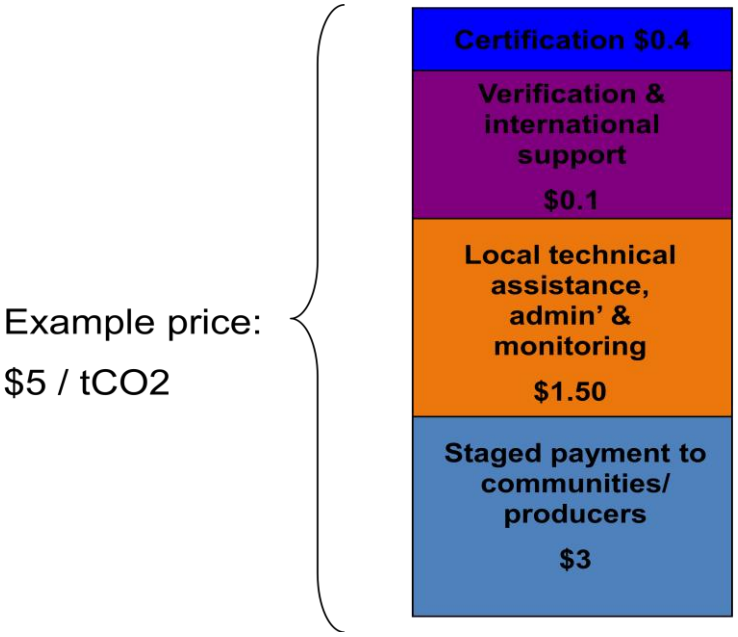
The project will, from time to time, review the pricing structure in consultation with the plan vivo foundation and other project stakeholders.

A.13.2 Funds Management

ECOTRUST will play an intermediary role, representing the project to all third party players including the operating standard (Plan Vivo Foundation), third party verifiers, carbon buyers, donors etc. ECOTRUST will therefore be responsible for distributing the funds to the project participants in the following framework:

* Funds from carbon sales will be received by ECOTRUST and ECOTRUST will deduct project administrative costs as well as the certification and all third party fees. The project administration fees (29% of the carbon price) will be split between ECOTRUST and the local government in a ratio of 10 (ECOTRUST):20 (Local Government). ECOTRUST

will also be responsible for paying third party verifiers (from the 3%) and certificate issuance (7%). The rest (60%) will go into the community; at least 90% directly to the farmers and some for community projects and this will also be managed by ECOTRUST. The figure below is an example of what the benefits will be distributed if the sale price is US$5 per tCO_2 (this has been the lowest TGB price in the last 5 years).



* The local government will meet the cost of service provision and monitoring from their admin fees. Likewise, ECOTRUST will meet all its administrative responsibilities from the admin fees. Each local government will enter a MoU clearly spelling out the roles and responsibilities as well as expected benefits and action in the event of default.
* The funds from the 60% community share will be channelled to the participating farmers based on the performance of individual farm in achieving the project milestones as indicated in the technical specifications. The producers will be paid by ECOTRUST upon the recommendation of the local government.

A.13.3 Carbon community fund

Although the funds (less admin costs) go directly to the individual farmers, the farmers will make a contribution from their share to the establishment of a Community Development Fund. This fund will be established to promote initiatives that are for the benefit of the general community where the project is operational. This is intended to create a spillover of the carbon benefits to other members of the community. However, the fund will also act as insurance for some of the risks to project permanency. The local government at sub-county level will coordinate the process of identifying community projects that will be supported by this fund.

A.14 Estimated amount of net anthropogenic GHG removals by sinks and avoided GHG emissions over the project lifetime

This section presents the estimated green house gases removals over the initial project cycle in terms of tones of carbon dioxide and carbon per hectare.

Table 6: Net carbon benefit per hectare under the proposed technical specifications

Technical specification	Sink (tC/ha)	Sink (tCO_2/ha)	Baseline tC/ha	Net C benefit tC/ha
Coffee agro forestry	34.3	125.9	4.5	29.8
Boundary planting	38.6	141.5	4.5	34.1
Mixed Native Woodlots	46.9	172	4.5	42.4
Dispersed Intercropping	46.7	171	4.5	42.1

Table 7 Estimated long – term potential carbon benefit for the submitted technical specifications

Technical Specification	Estimated long-term potential carbon benefit t CO_2e			
	Areas established in Year 1	Areas established in Year 2	Areas established in Year 3	Estimated realisable potential
Woodlots – mixed native - *not yet approved*	200ha	200ha	200ha	2,000ha established over the project's first ten years with an estimated 200,000 tCO_2 in 25years-
Dispersed inter-planting with *Grevillea robusta not yet approved*	50ha	100ha	150ha	1,000ha established over the project's first ten years with an estimated 100,000 tCO_2 in 20years-

SECTION B. Duration of the Project Activity and Crediting Period

B.1 Proposed duration of project activities and carbon benefits

This is a long term project with ex-ante carbon credits, which are calculated over 20 years crediting period in the case of the submitted technical specifications (Woodlots – mixed native and dispersed interplanting with *Grevillea robusta - both not yet approved).*

Although the submitted technical specifications account for 3,000ha over the first 10 years of the project, the aim of the project is to establish at least 5,000ha in that period. The sequestration potential of project activities from the two technical specifications will be approximately 300,000tCO_2 credits generated within the first 25 years from the establishment of the woodlots. The sequestration potential from all the project activities is therefore estimated to be 500,000000tCO_2 credits.

SECTION C. Technical Specifications to be Used

C.1 Estimated long-term carbon benefits for project activities, per hectare

It is anticipated that significant carbon credits can be generated through afforestation/reforestation activities in Uganda. The area planted each year is dependent on the number of farmers recruited annually. The pilot phase will begin with farmers from at least three sub-counties (at least one from each district) in addition to the two hills of Walanga and Bukoma that have been allocated to the local government.

The average net accumulated carbon uptake by year 25 is expected to be 172 tCO_2/ha for mixed native woodlots and 171 tCO_2/ha, dispersed interplanting technical specifications. All

the technical specifications aim at establishment and management of mixed native species timber woodlots on small farm plots.

SECTION D. Measures to Ensure Permanence and Address Leakage

D.1 Measures to address risks and ensure permanence

The project is subject to stringent leakage and permanence requirements, as detailed in the Plan Vivo Standards. The main risks faced by the project include pests and diseases, fires and natural disasters such as floods and drought. The project will support farmers to carefully select tree species that suit the local conditions. In addition, the project provides training in general agroforestry practices and supports communities to implement these measures. Moreover, the project has set up a Carbon Community Fund to provide some form of insurance to address unavoidable loss due to natural disasters. The table below describes some of the measures for each of the potential risk.

Table 8: Measures to address risks to permanence

Permanence Risks	Management Measures
Fire and natural disasters such as drought and floods	- The farmers will be supported with funds from the Carbon Community Fund to replace lost trees due to unavoidable natural disasters - Continued training of farmers in fire management practices such as establishment of fire lines, and fire resistant hedges
Pests and Diseases	- Careful selection of trees species that suit the local conditions - Supporting farmers to access extension services from local service providers - Group training in dealing with common pests and diseases
Destruction from grazing	- Protecting (esp saplings) with sticks around the plants - Replanting whenever some of the seedlings or saplings are destroyed - Farmers using the leaves from the trees as fodder to zero grazed animals as opposed to letting the animals graze in the woodlots
Raising land opportunity costs	- Supporting additional tree – based enterprises e.g. apiary, fruits, fodder

D.2 Measures to address leakage

Leakage is unintended loss of carbon stocks outside the boundaries of the project resulting directly from project activity. There are two potential sources of leakage envisaged in this project and these are; displacement of agricultural activity and emissions due to project management activities.

The project is a participatory project that involves working with the farmers to develop a plan (P*lan Vivo*) for their land or community land. The process puts into consideration the potential for displacement of agricultural activities by assisting the farmer to ensure that adequate land has been set aside for food production. This is expected to minimize the risk of leakage due to displacement for agricultural activity. For the leakage as a result of project management, it is anticipated that ECOTRUST staff will be visiting the project area at least

four (4) times a year (twice a year for training and twice a year for monitoring). It is expected therefore that a total of 500lts (8km per liter of fuel for 1,000km four times a year) will be consumed for the four trips. This amount multiplied by the IPCC emission coefficient of diesel (0.934kgCO_2 per litre) comes to 0.467tCO_2 annually. This amount if spread over the approximately 100ha that will be recruited annually becomes 0.00467tCO_2 per ha and is negligible.

Table 9: Measures to address leakage risks

Leakage Risks	Management Measures
Displacement of agricultural activity	Code of conduct for producers, which limits involvement in deforestation Technical support in the development of farm plan to ensure that the farmers have sufficient land for agriculture productivity over and above tree planting. Regular socio-economic assessments to monitor land use changes within the project area
Carbon emissions due to Project management and monitoring Travel	Minimizing travel through working with organized groups Estimation included in the risk buffer

SECTION E. Monitoring and Technical Support Plan

E.1 Monitoring of carbon indicators

ECOTRUST will work with the local government to take on different monitoring roles. The local government staff will be responsible for the monitoring of the carbon indicators and submit a report to ECOTRUST indicating producer performance. This activity is conducted in collaboration with the community group coordinators and project technicians. The group members are also involved in the monitoring activities. ECOTRUST will verify the correctness of the information submitted by the local government. It is the submission and subsequent approval of this report that triggers farmer payments. A guidance document will be developed to guide the project technicians at the local governments and Community – based Organisations.

E.2 Verification of monitoring

Plan Vivo Foundation, through the annual report review as well as occasional field visits, will be reviewing the monitoring. There will be a third party validation visit in 2013 following the approval of this concept and thereafter the project will be subjected to a third party verification starting in year 5 (five). Currently, the third party verification is being provided by the Rainforest Alliance – SmartWood.

E.3 Technical support and review

Technical Specifications

Due to the different socio-economic setting between the Mt Elgon and the Albertine Rift, the project has developed additional technical specifications to suit the needs and aspirations of the targeted beneficiaries. The technical specifications have been developed by ECOTRUST working with local experts. The assumptions and calculations used in each project technical specification will be independently reviewed and the Plan Vivo Foundation will confirm that the methodology for the land-use system is robust and compatible with Plan Vivo Standards.

The actions required to develop them have included baseline studies, biomass surveys, carbon modeling, training workshops and community meetings, and biodiversity and socioeconomic impact assessments.

Tree Nursery and Woodlot Management

In order to enhance farmers' skills in tree nursery management and tree planting, all the tree nurseries will be managed by the farmers themselves and local commercial nursery operators. A group nursery or individual nurseries may be established depending on the farmers' interest. However, the bottom line is production of high quality seedlings in their required amounts. Production of seedlings by farmers themselves has several advantages including promotion of sustainability in the long-term. ECOTRUST and its partners will provide all the technical backstopping to the groups/individuals and build their capacity in the process. This is in line with the trend of having farmers being in control of their production systems leaving the service providers to provide technical guidance. This could even enable farmers to access resources from other sources to fund some nursery operations.

E.4 Administrative support

E.4.1 Farmer selection

This is a cooperative offset scheme targeting farmers in organized groups, whose group formation is motivated by participation in collaborative natural resource management**.** Communities are engaged by the local government through the Plan Vivo process of community consultation and participatory meetings with farmer coordinators. ECOTRUST will build capacity for the local government and local community based organizations to handle the process. The project will give the farmers an opportunity for self selection with every farmer joining the project as and when they feel ready. The project will work with already existing Community Based Organisations such as coffee cooperatives. ECOTRUST has through its grants management programme worked with some of these CBOs and they are also registered with the local government.

It is important to work with farmers who belong to an organised group for ease in administration and communication. However, each individual farmer will join the programme voluntarily and will have an individual agreement with ECOTRUST the project coordinator.

E.4.2 Database management

ECOTRUST will designate a programme officer responsible for the administration of *Plan Vivos,* including recruitment and training of farmers, supervising project technicians as well as monitoring of the performance. All selected farmers will apply through the field coordinator who then reports to the ECOTRUST programme officers. The programme officer will be responsible for the database management and preparation of annual reports.

SECTION F. Environmental Impacts of the Proposed Activities

F.1 Expected environmental impacts of the proposed activities

The carbon sequestration project is targeting those areas that were formerly forested but have been transformed into farmland over the decades. The project seeks to promote the growing of Uganda's indigenous tree species, contributing to their conservation. Special attention will be given to those species whose populations and genetic variety has been greatly reduced by the overexploitation of forest resources in this area. The project will be promoted in areas neighboring protected areas (particularly Mt. Elgon National Park), to provide an alternative source of wood and thus reducing pressure from the protected areas.

In addition, there are several other environmental benefits associated with the growing of indigenous tree species in this area.

Furthermore, the targeted area is very prone to environmental disasters mainly in form of landslides that have become more common over the years leading to displacement and even deaths. The growing of trees along the slopes in expected to contribute to soil stabilization and therefore reducing the landslides

As a result of their position in the landscape, riverine forests play a critical role in the ecosystem, disproportionately large for their sizes in buffering potential impacts on water quality of rivers from disturbance in upland ecosystems and as wildlife corridors that enhance sustenance of species.

Tree planting contributes to soil conservation, and the intended emphasis on native tree planting will contribute to habitat restoration and protection in rural Uganda. Furthermore, by increasing tree cover in this area, the project will contribute to the improvement of the watershed functions. Specifically, the following biodiversity benefits are envisaged:

* Promotion of indigenous tree species and expansion of native islands and corridors;
* Restoration, protection and management of degraded and threatened ecosystems;
* Improved protection of protected areas through provision of alternative sources of wood;
* Regulation of micro-climates;
* Water purification;
* Soil stabilisation and improved moisture retention on slopes.

SECTION G. Socio-Economic Impacts of the Proposed Activities

G.1 Expected socio-economic impacts of the proposed activities

Initiating a Plan Vivo system in the Mt Elgon region of Uganda will result in significant ancillary benefits beyond offsetting CO_2 emissions. The focus will be on agroforestry systems and small-scale plantations to improve incomes; provide increased access to fuel wood and building materials, and reduce deforestation pressures.

Revenue generated through initial sales of carbon will largely offset start up costs for small-scale forestry activities in Uganda, thus enabling rural communities to invest in sustainable resource management using income from environmental services.

Furthermore, participants will gain access to local and national markets for timber, pole wood and fuel wood, fruit and fodder. Nursery establishment and production of seedlings will also provide additional income to rural communities.

The project will build local and regional capacity and develop generic carbon management systems that may be replicated in other communities throughout the country.

Furthermore, small-scale production of fuel wood and timber will alleviate pressure on nearby forest reserve and national park resources.

How will the carbon development fund be of benefit? It could open opportunities for community interventions that address their needs.