



Reducing Emissions from Deforestation and Forest Degradation in the Yaeda Valley, Northern Tanzania

Improving the livelihoods of indigenous hunter-gatherer and pastoralist communities by protecting land from conversion while delivering substantial social and biological co-benefits



**Technical Specifications
Plan Vivo Application**

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Abbreviations and Acronyms

AGB	Aboveground Biomass
AMSL	Above Mean Sea Level
BGB	Belowground Biomass
CITIES	Convention on the International Trade in Endangered Species
CO ₂ e	Carbon Dioxide Equivalent
CT	Carbon Tanzania
dbh	Diameter at Breast Height
GCA	Game Controlled Area
GPS	Global Positioning System
IBA	Important Bird Area
IUCN	International Union for the Conservation of Nature
PDD	Project Design Document
PES	Payment for Ecosystem Services
REDD	Reducing Emissions from Deforestation and Forest Degradation
tC/ha	Tonnes Carbon per Hectare
tCO ₂ e/ha	Tonnes Carbon Dioxide Equivalent per Hectare
TSC	Timed Species Count
UCRT	Ujamaa Community Resource Team

A. Summary of Technical Specifications

1. Project Activities and Objectives

This project works with hunter-gatherer Hadzabe and pastoralist communities in Mongo Wa Mono and Domanga villages. By working in conjunction with traditional leaders, the elected village governments and a team of community members, Carbon Tanzania (CT) and Ujamaa Community Resource Team (UCRT) aim to establish a system of results-based payments for ecosystem services (PES) through the sale of certified carbon offset credits. This REDD project strengthens land tenure, management capacity and local natural resource management, enhances and diversifies local incomes, and contributes to local, national and global environmental conservation aims. Successful avoided deforestation will be achieved through a series of interventions including reinforcing the implementation of the approved village land use plan and associated village by-laws, improving forest conservation and management activities and addressing the primary driver of deforestation, slash and burn agriculture.

Reducing Emissions from Deforestation and Forest Degradation (REDD) means different things to different people. In the context of this project, REDD refers to avoiding deforestation and forest degradation while promoting sustainable natural resource use on the part of land users and managers. This REDD project, planned with the indigenous Hadzabe community, delivers significant socioeconomic co-benefits to the participants and surrounding populations as well as positive biodiversity impacts to the larger ecosystem that the project area helps to support.

2. Scope and Land Type Targeted

The project area covers 20,790 ha of *Acacia-Commiphora* woodland collectively owned by the Hadzabe of Mongo Wa Mono and Domanga. After years of encroachment and displacement, village members created a land use plan denoting the project area as protected for the utilization for cultural livelihoods by the Hadzabe. The Hadzabe are one of Tanzania's most unique and threatened human cultures, with a deep reservoir of indigenous knowledge pertaining to natural resource use. The Hadzabe communities within the villages of Mongo Wa Mono and Domanga collectively own this land under the land laws of Tanzania.

3. Baseline and Monitoring Methodology

The baseline, or without project scenario, was established from the historical deforestation rate determined through analysis of ground-truthed Landsat and Google Earth imagery, with technical assistance from The Nature Conservancy, and calculation of the carbon content from aboveground biomass (AGB) surveys following the Winrock methodology. Monitoring of carbon stocks will be carried out on an annual basis using aerial photography and AGB surveys on permanent plots.

4. Carbon Benefit

The project applied species and genus specific allometric equations to the AGB data and determined the belowground biomass (BGB) from a root-to-shoot ratio for woodland provided in the IPCC Good Practices Guidance for Land Use Land Use Change and Forestry document. The carbon content of the project area is 33.4 tC/ha, or 122.5 tCO₂e/ha. The project's total carbon benefit eligible for crediting has been calculated at 304,795 tCO₂e over the 20-year crediting period with an annual carbon benefit of 15,240 tCO₂e.

B. Scope of Project

1. Description of Project Area

The East African country of Tanzania covers 970,000 km² of land, of which approximately 38%¹ is forested². The villages of Mongo Wa Mono and Domanga are situated at 34°30'E/03°30'S in the Central Rift Valley, at an altitude of 1200-1400 m AMSL, in the southwest of Mbulu District, Manyara Region, Northern Tanzania (see map, Figure 1).

Figure 1. Map of Northern Tanzania

The red circle indicates the project area situated on the southwest corner of Lake Eyasi.



Mbulu District has areas with semi-arid and sub-humid climates that receive annual rainfall of <400 mm and >1200 mm, respectively. The long rainy season occurs from March to mid-May and the short rainy period occurs from November to December. Relative humidity ranges from 55 to 75% and mean annual temperature ranges from 15 to 24°C. The natural habitat within Mongo Wa Mono and Domanga is dominated by *Acacia-Commiphora* woodland, specifically *Acacia tortillis*, *Acacia kirkii* (lower areas), *Acacia mellifera*, *Commiphora* Spp, *Grewia* species and *Combretum* species, interspersed with areas of savanna grasslands and *Adansonia digitata* (Baobab) woodland.

¹ FAO, 2011, State of the World's Forests

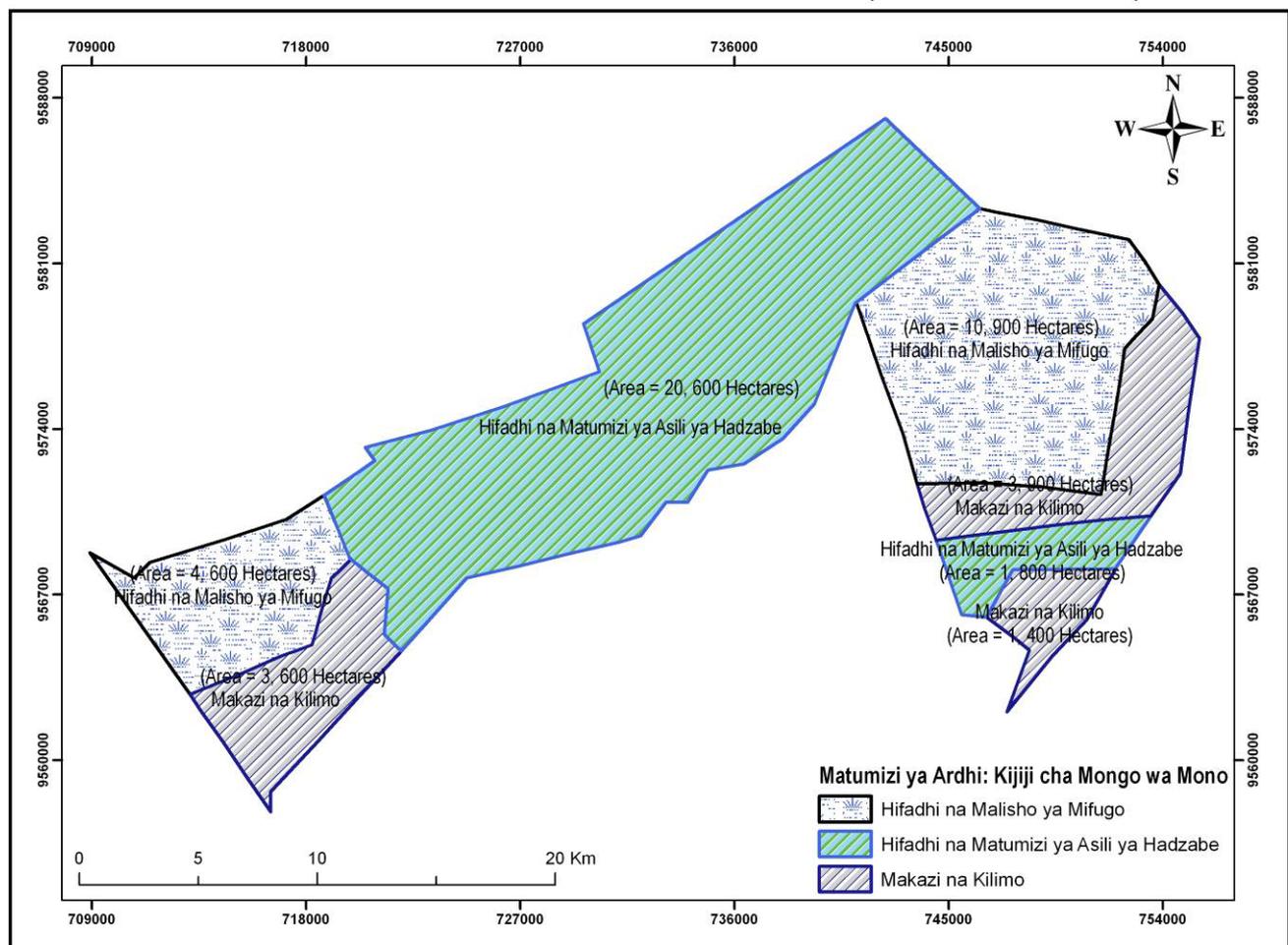
² The Forest Act (2002) defines forest as any area of land with at least 10% tree crown cover and includes all forest reserves regardless of tree cover or vegetation. In reality much of Tanzania's 'forest' is woodland ranging from dry *Acacia-Commiphora* in the North of the country to *Brachystegia* woodland in the South and West of Tanzania.

The adjacent villages of Mongo Wa Mono and Domanga cover a total area of 46,800 ha (468 km²). A land use plan, developed by the villages³, divides the area into seven land use zones each designated as one of three land use types: housing and farming, grazing, and protected areas⁴. The project boundary is the 20,600 ha⁵ *Acacia-Commiphora* woodland denoted as protected area for utilization for cultural livelihoods by the Hadzabe in Figure 2.

Figure 2. Land use plan for the villages of Mongo Wa Mono and Domanga

The key below the map shows the translation from Swahili to English.

MATUMIZI YA ARDHI: KIJIKI CHA MONGO WA MONO (WILAYA YA MBULU)



Map datum and Projection: WGS 1984, Zone 36 S: Map drawn by UCRT, 2010

Key	
Hifadhi na malisho ya mifugo	(Protected area with grazing for domesticated animals)
Hifadhi na matumizi va Asili va Hadza	(Protected area for utilization for cultural livelihoods by Hadza)
Makazi na kilimo	(Area designated for housing and farming)

³ The villages of Mongo Wa Mono and Domanga constituted a single village at the time when the land use plan was created. The plan endured after they became two separate entities.

⁴ These areas are designated as protected for the utilization by Hadza at a village level and should not be confused with any nationally designated protected areas such as national parks or game reserves, which are under central government authority.

⁵ The government resurveyed the land prior to issuing the land deed and the area was determined then to be 20,790 ha.

Several rare and threatened large mammal species have been recorded within the project area. Wild Dog *Lycaeon pictus* (IUCN⁶ Endangered) are regular visitors. This species is known to have a large home range and may be part of the same population that is found within the Maswa Game Controlled Area (GCA) and Ngorongoro Conservation Area to the northwest of Mongo Wa Mono and Domanga. Leopard *Panthera pardus* (IUCN Near Threatened) are resident to the area, and both Lion *Panthera leo* (IUCN Vulnerable) and Cheetah *Acinonyx jubatus* (IUCN Endangered) have been recorded but there is no data to support the presence of resident populations. All these large mammals are listed by CITES⁷ and protected under national and international laws. The project area supports seasonal populations of ungulates, including Thomson's Gazelle, Wildebeest, Impala, Zebra, Giraffe, Eland, Elephant (IUCN Vulnerable), and Cape Buffalo. Coke's hartebeest are also found in the area, but at very low numbers and are close to extirpation due to illegal hunting.

A total of 433 species of birds have been recorded within the reference area and adjacent wetlands, two of these species of birds are endemic to Tanzania; Ashy Starling *Cosmopsarus unicolor*, which is restricted to central Tanzania and north thereof and Grey-breasted Spurfowl *Francolinus rufopictu*, which is restricted to *Acacia-Commiphora* woodland in northern Tanzania. The project area borders the Yaeda Chini seasonal wetland, which is designated as an Important Bird Area (IBA) (IBA 79) by BirdLife International due to the presence of resident globally threatened species⁸. North of the project area is Lake Eyasi. With an area of 116,000 ha, this is one of the largest soda lakes in the Rift Valley complex and an important area for palearctic migrants. Lake Eyasi is also designated as an IBA (IBA 23) due to the presence of Lesser Flamingo (IUCN: Near threatened) and has 1% biogeographical population levels of eight resident and migratory wetland bird species, a criterion for designation as a Ramsar⁹ site. Above the rift, 35 km to the north/northwest is the Ngorongoro Conservation Area, a UNESCO World Heritage Site and world famous tourist destination. Bordering this is the Serengeti National Park, a 14,700 km² fully protected area and also a UNESCO World Heritage Site.

This project will promote the protection of indigenous species according to the national laws of Tanzania and international conventions to which Tanzania is a signatory. The strengthening of local boundaries, according to the land use plan and village by-laws, creates an enabling environment for local enforcement and protection of indigenous and endangered species from poachers. By preventing animal poaching, this project and the Hadzabe are helping to promote and conserve the natural ecosystems and mammal populations on which their way of life depends.

2. Description of Target and Surrounding Communities

The Hadzabe are one of Tanzania's most unique and threatened human cultures, with a deep reservoir of indigenous knowledge pertaining to natural resource use, which has enabled them to survive in a challenging environment. The Hadzabe are strictly hunter-gatherers and do not raise any livestock, although some do keep fields of domestic crops, mainly in Domanga village. As a group, the Hadzabe have been gradually displaced to remote and relatively inhospitable semi-arid areas, as other groups (or tribes) of people have taken over more productive lands and converted them to agriculture; this displacement and conversion has been most pronounced over the last century. Currently a total of approximately 1,000 Hadzabe survive in fragmented areas of Northern Tanzania. Mongo Wa Mono (meaning 'the mother of all villages') is the core of the Hadzabe lands and population.

⁶ IUCN (International Union for the Conservation of Nature) Red list of threatened species www.iucnredlist.org

⁷ CITES – Convention on the International Trade in Endangered Species. Species are listed according to population status, rate of decline and ability of range state to manage the population.

⁸ Baker N.E. and Baker E.M. (2002) Important Bird Areas in Tanzania: A First Inventory. Wildlife Conservation Society of Tanzania.

⁹ Ramsar is an internationally recognized designation for wetlands of global importance named after Ramsar, Iran where the Convention on Wetlands of International Importance was signed in 1971.

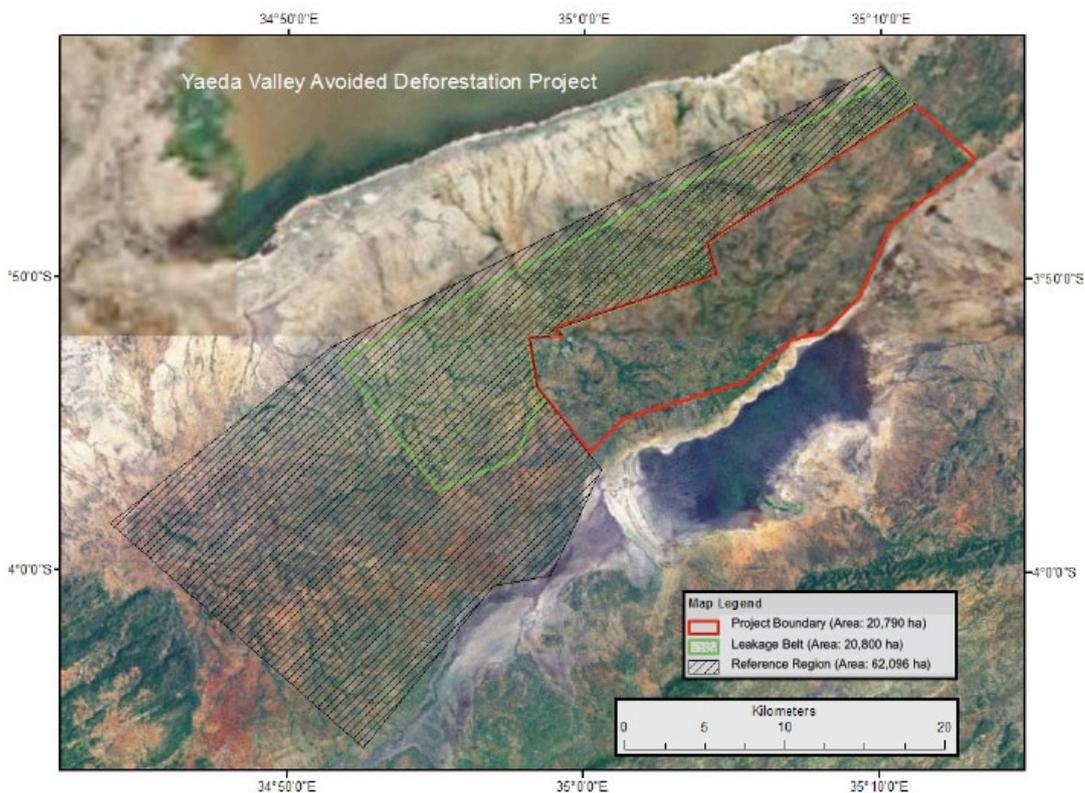
Accurate demographic information on the Hadzabe is scarce and, in the context of money, difficult to quantify, however the Hadzabe are living at the extreme end of the poverty scale within Tanzania with no form of stable economic activities or income (significantly less than 1 USD/day). As a community, they are reliant on the environment for the majority of their daily needs, gathering honey and hunting for meat for subsistence. The Hadzabe's way of life only minimally impacts the environment that they occupy as they today continue their historical practices of sustainable natural resource use. The Hadzabe follow a spiritually based, minimalist religion which involves and relies on environmental connectivity.

According to the most recent Tanzanian Census of 2002, the average growth rate in Mbulu District is 3%, which is on par with the national average of 2.9%. The villages of Mongo Wa Mono and Domanga are mostly populated by people identifying themselves as Hadzabe and Sukuma, the latter of which being predominantly agropastoralists. The surrounding villages of Eshkesh and Yaeda Chini are populated by multiple tribal groups: Barabaig, Iraqu and Hadzabe. Barabaig and Iraqu are pastoralists and agropastoralists, respectively. These different groups live together without conflict.

3. Local Drivers of Deforestation

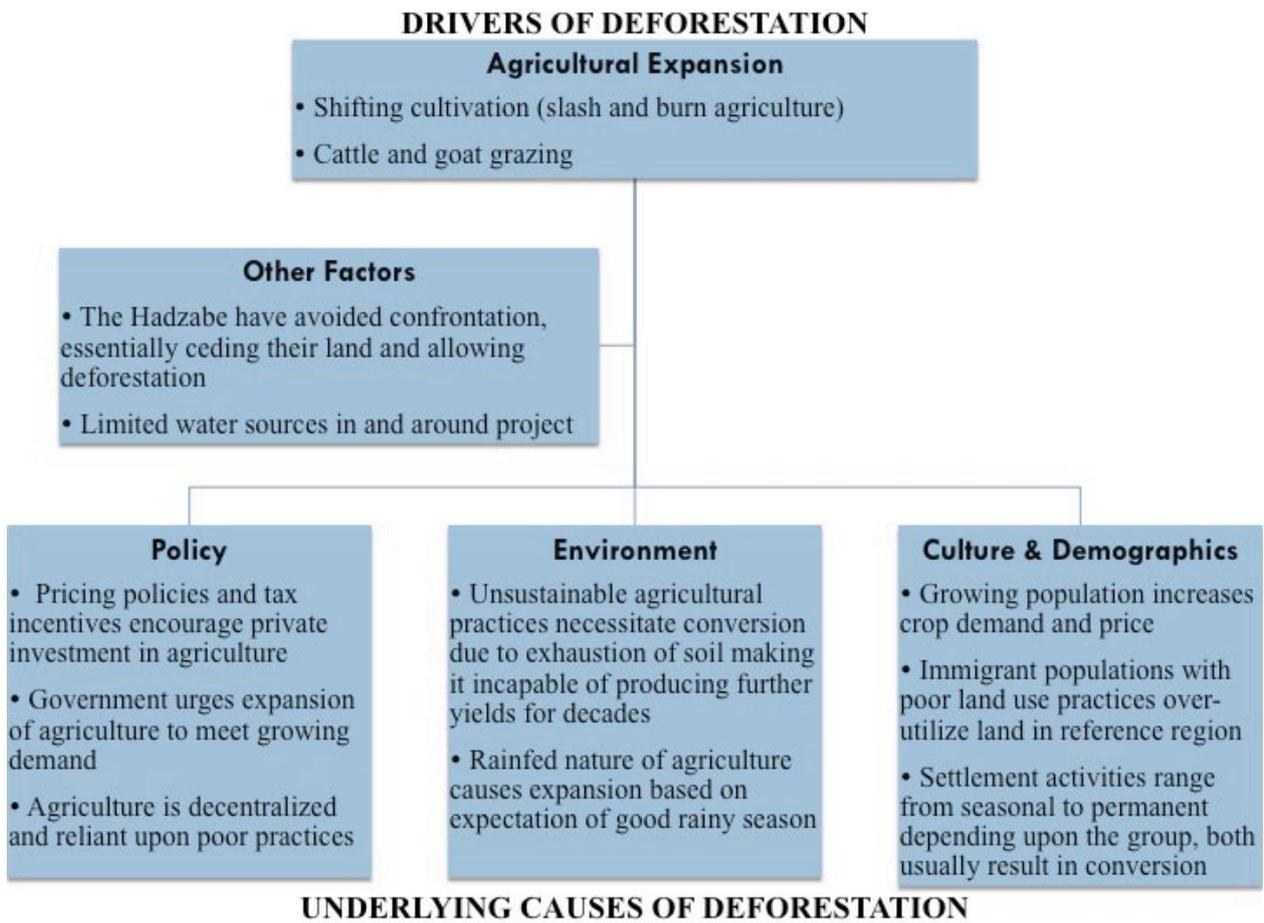
Recent land use change within the project area consists predominantly of conversion from *Acacia-Commiphora* woodland to a form of slash and burn agriculture. This land intrusion, conversion and resulting deforestation are contrary to the village by-laws, the village land use plan and national laws governing land acquisition and utilization within Tanzania. The encroachment originates from outside the villages of Mongo Wa Mono and Domanga, from the neighboring villages of Eshkesh and Yaeda Chini (also spelt Yaida Chini) but mostly from more densely populated areas to the west (Meatu District), south (Mbulu District) and north (Karatu District). These areas are captured in the established leakage belt and reference region depicted in Figure 3.

Figure 3. Map of project area, reference region and leakage belt



A causal model identifying drivers and underlying causes of deforestation in the reference region is depicted in Figure 4.

Figure 4. Causal model of deforestation

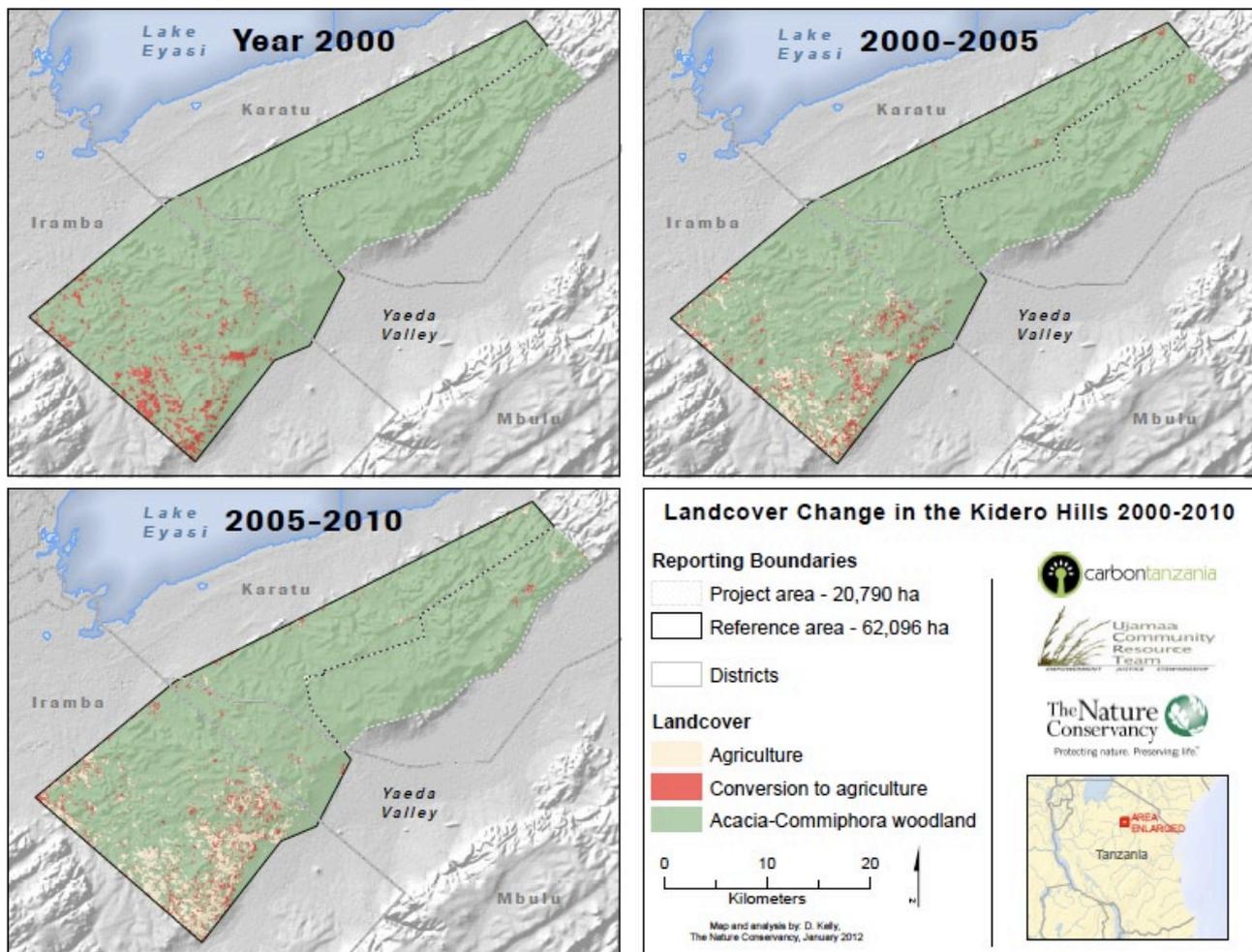


C. Baseline and Baseline Scenario

1. Analysis of Deforestation Rate & Baseline Scenario

The deforestation rate in the reference region, which includes the leakage belt, was determined through analysis of ground-truthed Landsat and Google Earth imagery with technical assistance from The Nature Conservancy¹⁰. The total land area of the reference region is 62,096 ha. Of this area, 58,838.4 ha of *Acacia-Commiphora* woodland existed in 2000 which was then reduced to 53,380.8 ha by 2010 (see analyzed satellite imagery, Figure 5) due to conversion and expansion of agriculture. This average annual loss of 545.8 ha reflects a historical deforestation rate of 0.93%¹¹.

Figure 5: Analyzed satellite imagery



The baseline, or without project scenario, was determined by applying the historical rate of deforestation in the reference area to the land within the project area that is likely to be cleared without the intervention. The assumption that the deforestation rate going forward would remain at least as high as the historical rate is justified by the following:

- 1) The deforestation rate was calculated by averaging the total loss over ten years even though the conversion rate has been increasing over that period.
- 2) The demand for agricultural land is intense, demonstrated by the conversion of woodland to agriculture in the reference region despite the generally poor soil prevalent throughout the area, and is expected to increase as demand for food grows along with the population.

¹⁰ The Nature Conservancy is a U.S. based not-for-profit organization operating in more than 30 countries around the globe. The Tanzanian division of TNC provides technical support to a variety of community-based conservation efforts.

¹¹ The Tanzanian national deforestation rate is 1.2% equating to a loss of 412,000 ha annually. (United Republic of Tanzania, 2009)

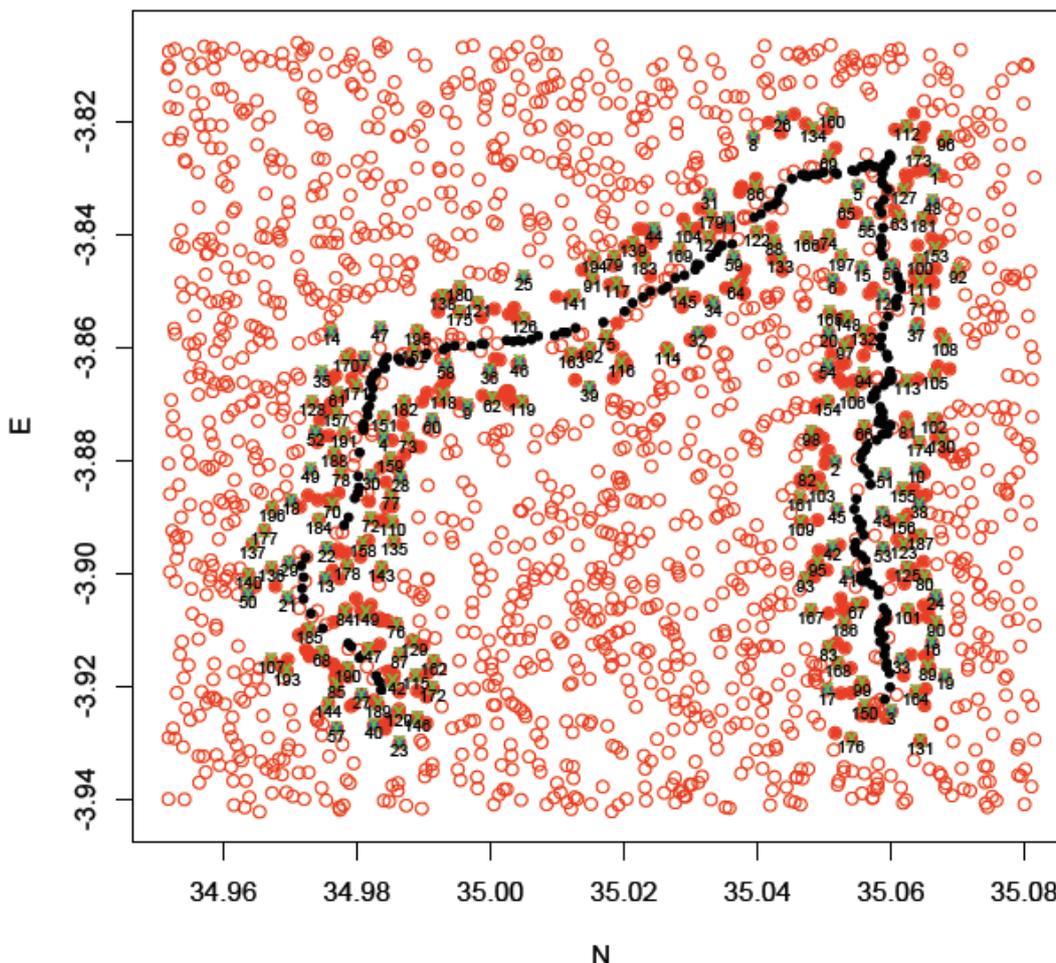
- 3) The project area is the next likely area for conversion to agriculture as farmers will follow the soil type eastward into the Hadzabe's land.
- 4) The area continues to attract new settlements which is expected to persist as the benefits of protecting the habitat and watershed in the project area are realized and the economic status of participating communities improves. This pattern of migration was evident in Yaeda Chini after the recent opening of a new school.
- 5) While charcoal manufacturing is not currently a driver of deforestation in the area, it is likely that it could develop during the lifecycle of this project as other areas are depleted.

2. Method for Quantifying Existing Carbon Stocks

Per the Plan Vivo Foundation's recommendation, the project has used the Winrock aboveground biomass (AGB) methodology¹² to calculate the existing carbon stocks in the project area utilizing plot sampling.

In preparation for carrying out the surveys, the project consulted with statistician Colin Beale, affiliated with the University of York. The statistical analysis tool R was used to randomize plot selection and calculate carbon content from the survey results. The track in the project area was mapped using a Garmin GPS and downloaded using Mapsource. This track of 35.2 kilometers, shown in black in Figure 6, served as the transect line and plots were randomly generated using the following criteria: more than 300m away from each other, more than 200m away from the track and no more than 1000m away from the track.

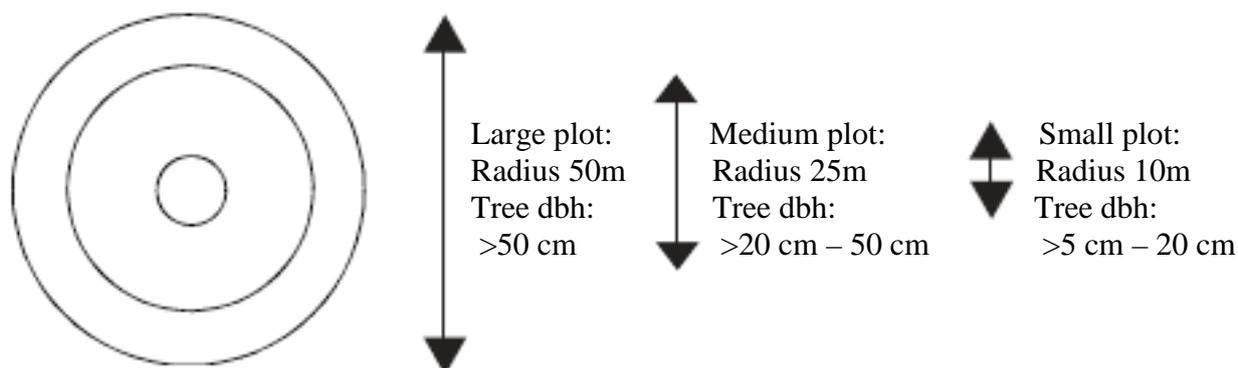
Figure 6. The transect line showing the random points.



¹² http://www.planvivo.org/wp-content/uploads/LULUCF_Sourcebook_compressed11.pdf

A three-nest circular plot design was chosen. Different sized trees, determined by diameter at breast height (dbh), were measured in each concentric circle as depicted in Figure 7.

Figure 7. Three-nest circular plot design



A preliminary survey using temporary plots was carried out to determine how many plots should be sampled in a full survey and whether stratification was necessary. The results of this initial survey determined that 62 plots should be sampled and that stratification was not applicable to the project area due to the relative homogeneity of the species and carbon stocks within it. Two AGB surveys were conducted in 2011, 44 plots were sampled in the first and an additional 26 in the second, for a total of 70 plots. Field teams surveyed a total of 1,401 trees and recorded 48 species. Baobab trees were excluded from the survey since they generally remain standing in converted land while all other trees are removed.

Allometric equations, obtained from the Kasigau Corridor REDD project¹³ in Kenya, were used to calculate the tonnes of carbon per tree based on its dbh. Species specific equations were used when available, if no species specific equation was available, a genus specific equation was used. These equations are listed in Table 1, where y = tonnes carbon and x = dbh.

Table 1. Species and Genus Specific Allometric Equations

Tree Species or Genus	Allometric Equation
Acacia bussei	$y = 3.054x^{1.6692}$
Acacia hockii	$y = 1.7392x^{1.8478}$
Acacia nilotica	$y = 0.7075x^{2.1742}$
Acacia tortilis	$y = 3.6225x^{1.4924}$
Acacia	$y = 2.0276x^{1.761}$
Boscia coriacea	$y = 0.3641x^{2.1587}$
Boswellia neglecta	$y = 0.1521x^{2.526}$
Commiphora africana	$y = 0.5533x^{1.978}$
Commiphora campestris	$y = 0.0792x^{2.7284}$
Commiphora confusa	$y = 0.1987x^{2.461}$
Commiphora	$y = 0.1661x^{2.4862}$
Lannea alata	$y = 0.6561x^{2.0275}$
Lannea rivaie	$y = 0.5053x^{2.1106}$
Lannea	$y = 0.5898x^{2.0566}$

¹³ Annex 3 of Kasigau Corridor REDD Project PDD accessible at <http://www.climate-standards.org/projects/>

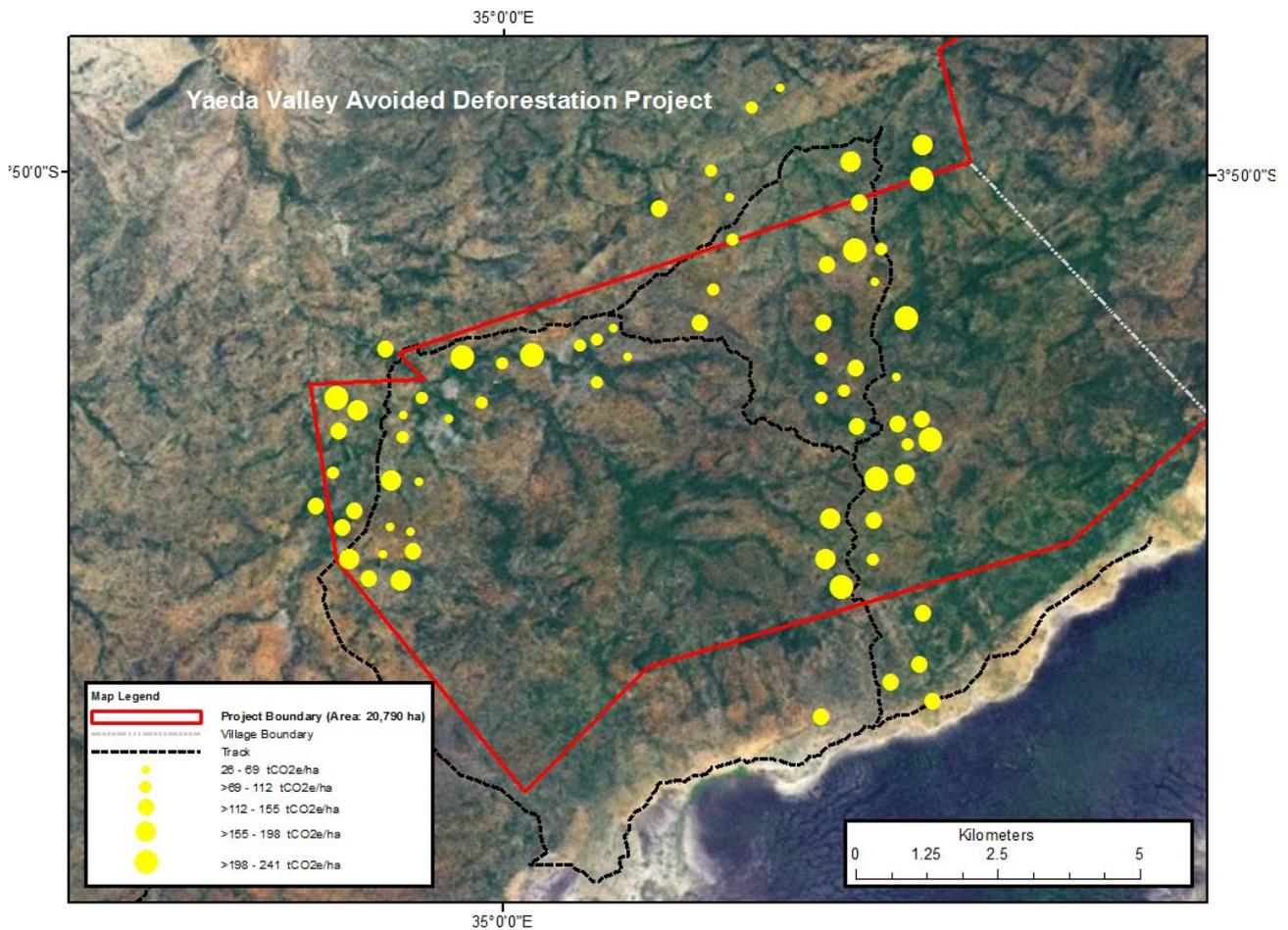
In cases where neither species nor genus specific equations were available, one of two generic functions was used depending on the dbh. These equations are listed in Table 2, where y = tonnes carbon and x = dbh.

Table 2. Generic Allometric Equations

Tree Size	Allometric Equation
dbh <35 cm	$y = 0.5217x^{2.1393}$
dbh >35 cm	$y = 0.574x^2 + 9.8184x - 73.186$

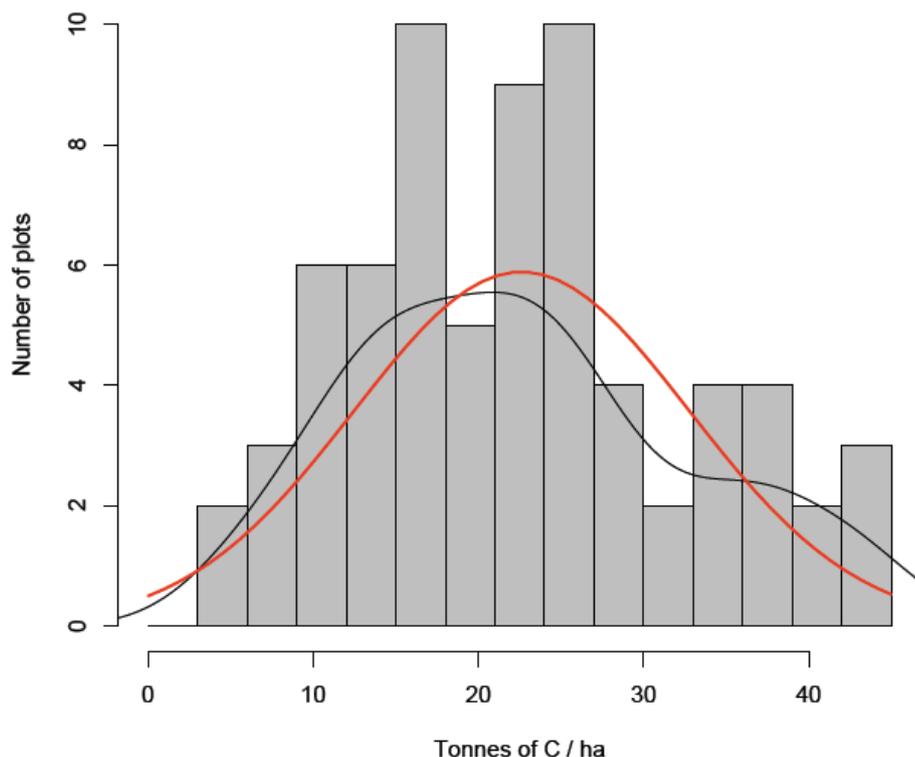
The results of the AGB survey are represented in terms of carbon content per sample plot in the map in Figure 8.

Figure 8. Carbon content per sample plot



The distribution of carbon measured in the sampled plots is represented in a histogram chart in Figure 9.

Figure 9. Histogram chart of sampled carbon stocks



Model-based clustering revealed that despite the variance between the plots that there are not distinct groups, confirming the preliminary survey results that stratification is not applicable. Applying a 95% confidence interval, the field samples determined the existing carbon content of AGB in the project area to be 22.6 ± 19.9 tC/ha.

Belowground biomass (BGB) was calculated based on the root-to-shoot, also known as root to stem, ratio for woodland provided in the IPCC Good Practice Guidance on Land Use, Land Use Change and Forestry¹⁴ of 0.48 ± 0.19 . This ratio, applied to the results of the AGB survey, produced a BGB carbon content of 10.8 ± 4.29 tC/ha.

¹⁴ Available at http://www.ipcc-nggip.iges.or.jp/public/gpplulucf/gpplulucf_contents.html

D. Quantification of Carbon Benefits

1. Carbon Pools Considered

Aboveground biomass and belowground biomass were the only carbon pools considered when calculating the likely carbon benefits resulting from project interventions. Due to the difficulty of measuring additional carbon pools in the context of community based monitoring, the project has opted to exclude soil carbon, leaf litter, deadwood, and grass biomass. By not including these carbon pools in the calculations, the projected carbon benefits are assuredly conservative despite the high level of variance in the carbon content of the project area.

2. Method for Calculating Carbon Benefits

The following steps were taken to determine the carbon benefits attributable to the project:

i. Define the land area within the project boundary that is under threat of deforestation

The project area is the 20,790 ha of land designated in the village land use plan as protected area for utilization for cultural livelihoods by Hadzabe. Nearly the entire project area is considered under threat of deforestation and conversion to agricultural land. This assessment is based on the estimates of local stakeholders, observations from the surrounding area and the expert advice of Ekko Oosterhuis of QFP-Agro (see letter, Annex 4). The area considered not to be under threat is the uncultivable area such as granite hilltops. These uncultivable areas, when added together, still account for less than 5% of the total land in the project area. Land determined to not be under threat has been left out of the analysis of carbon benefits attributable to the project. 95% of the project area, 19,750 ha are therefore eligible for carbon crediting by this project.

ii. Determine baseline scenario using historical deforestation rate

Application of the historical deforestation rate in the reference region, 0.93%, to the land under threat in the project area results in a projected loss of 183 ha per year. After 20 years, the remaining *Acacia-Commiphora* would be reduced to 16,090 ha, a loss of 3,660 ha from the project start.

iii. Assess expected effectiveness of project intervention

Acknowledging that it is unlikely that the project will be successful at completely preventing all deforestation in the project area, the project benefits are based on a 85% reduction in deforestation relative to the baseline scenario. The avoided deforestation that can therefore be attributed to the project is 3,111 ha.

iv. Calculate the carbon benefit

The existing carbon content, 33.4 tC/ha is calculated from the AGB surveys and application of the BGB root-to-shoot ratio. Applied to the 3,111 ha of conserved *Acacia-Commiphora*, the carbon benefit of the project is 103,907 tC. Carbon is converted to CO₂e by multiplying the carbon by 44/12, the molecular weight ratio of carbon to carbon dioxide. The carbon benefits of this project are 380,993 tCO₂e.

v. Deduct permanence and leakage buffers

The project has set a 10% risk buffer as a protective measure in the case of non-permanence and another 10% to be held as a leakage buffer. An explanation of how these figures were set can be found in section D4 of this document. Creditable carbon benefits are therefore 80% of 380,993 tCO₂e, 304,795 tCO₂e.

vi. Calculate annual carbon benefit eligible for crediting

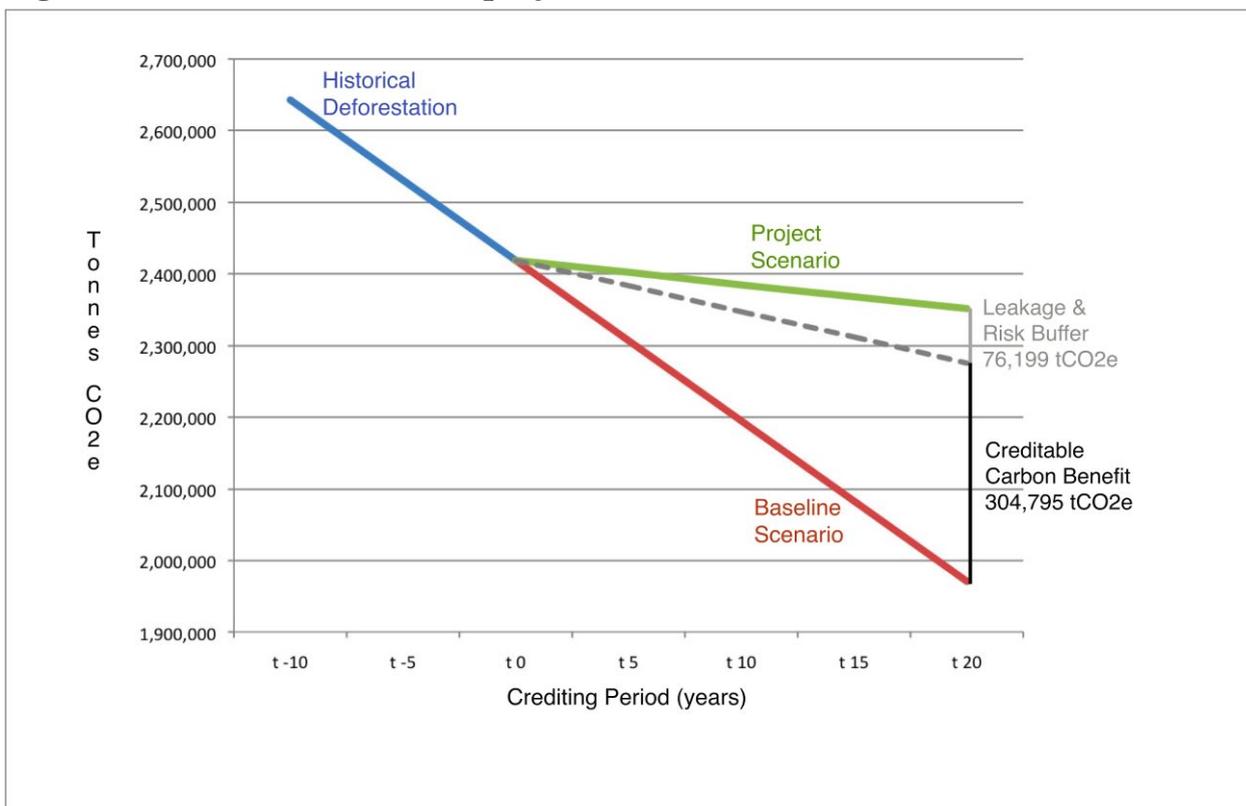
The project's total creditable carbon benefit, 304,795 tCO₂e, when divided over the 20-year crediting period equates to 15,240 tCO₂e each year.

The calculation of the expected carbon benefit from the project is depicted in Table 3 and visually represented in Figure 10.

Table 3. Summary of baseline and emissions reductions per hectare over crediting period

1. Area of woodland under threat in project area	19,750	ha	95% of total project area (20,790 ha)
2. Ha of woodland at end of 20-year crediting period without project	16,090	ha	Application of 0.93% deforestation rate, annual loss of 183 ha
3. Loss of habitat without project over 20-year crediting period	3,660	ha	= Row 1 – Row 2
4. Expected effectiveness of interventions	3,111	ha	= 85% of Row 3
5. Carbon benefit attributable to project (tC)	103,907	tC	= Row 4 * 33.4 tC/ha
6. Carbon benefit attributable to project (tCO ₂ e)	380,994	tCO ₂ e	= Row 5 * (44/12)
7. Carbon benefit eligible for crediting (deducting buffers)	304,795	tCO ₂ e	= 80% of Row 6
8. Annual carbon benefits of project eligible for crediting	15,240	tCO ₂ e	= Row 7 / 20 years

Figure 10: Carbon benefit from project



3. Crediting Period

The crediting period for this project is 20 years. Payments for ecosystem services to participating communities will be structured over the 20-year crediting period as per the producer sale agreement. The rationale for this length of time is twofold. First, since land use change takes place over many years, and the risk of reversal is a real threat for biological sequestration, this project chose an extended period so as to be accountable to the threat of non-permanence. Additionally, the project is introducing novel concepts to participants which will require time to be adopted as the new norm. Specifically, it is understood that convincing people to accept new agricultural practices will be a slow process and requires evidence of success be shown to individual farmers until the more sustainable approach becomes the new conventional wisdom.

4. Assessment of Permanence and Leakage Risks

Permanence

The project coordinator used the VCS Tool for AFOLU Non-Permanence Risk Analysis and Buffer Determination¹⁵ to assess the project's risk level. Various factors were considered including the land tenure and management type, technical capacity of the project developer, net revenue to stakeholders compared to alternative land uses, infrastructure and natural resource extraction in and around the project area, population growth, incidence of natural disturbances and credibility of project financial plan. Careful evaluation of these criteria resulted in a low risk rating for the proposed project and so a risk buffer of 10% has been set. Context specific risks identified by the project coordinator, community partner and participating communities are addressed in Table 4. Measures taken to manage and minimize these risks are also described.

Table 4. Permanence risks and management measures

Permanence Risks	Level of risk (low/medium/high)	Management Measures
Slash and burn agriculture begins in the project area from within Mongo Wa Mono or Domanga	Low	Results-based payments are sufficient incentive to prevent agricultural activity outside of the designated agricultural zones. Improved habitats in project area support Hadzabe livelihoods that are nonagricultural.
Slash and burn agriculture increases in the project area from neighboring communities	Low	Implementation of the land use plan and enforcement of village by-laws restrict agricultural activity initiated from outside of the village. Conflict resolution mechanism is in place. Project will support improved agriculture practices in neighboring villages thereby reducing the need for further incursion.
Communities fail to realize revenue from carbon offsets and choose low scale agriculture in the project area	Low	Monthly payments are being made to communities from June 2011 for project activities. The communities recognize the benefit of avoided deforestation and developed their own land use plan, which includes designated areas for low scale agriculture outside of the project area.
Hadzabe choose to extricate themselves from the plan vivo and producer sale agreement with Carbon Tanzania	Low	Project has been developed through open communication and participatory planning and therefore reflects the long-term goals of the target groups. Conflict resolution mechanism is in place and equitable to both parties. Community partner has a long history of involvement in project area.

¹⁵ <http://www.v-c-s.org/program-documents/tool-afolu-non-permanence-risk-analysis-and-buffer-determination>

National or District Government change the laws regarding land use and encourage agriculture	Low	Project has ensured that all land laws have been followed and is monitoring policy developments. Laws are decentralized and ownership conferred to the community. Land is poor for large-scale agriculture.
National or District Government create laws which centralize revenue from Payments for Ecosystem Services.	Low	Forest Act (2002) states that all user and ownership of forests is conferred to village and community. New forest policy builds on this to encourage PES and private sector involvement in forest conservation.

Leakage

Understanding the type and magnitude of potential leakage resulting from the project is essential to the success of this undertaking. For this reason, Carbon Tanzania engaged in a series of conversations with community members to determine probable sources of leakage and to develop a strategic response to it (see Table 5). The project will mitigate leakage wherever it is possible and cost effective to do so and discount when mitigation is not a viable strategy. Cost effectiveness is determined by the level of leakage and carbon density of the area where leakage takes place as well as the short and long term costs and likely success of proposed interventions. A 10% buffer has been included within the project's accounting for discounting purposes by which low levels of leakage can be absorbed (see Table 3).

The project's primary strategy to prevent leakage involves tackling the underlying causes of the historic deforestation pattern and scaling up of project activities. To this end, the project coordinator will contract with an agricultural specialist in sustainable agriculture to provide the neighboring villages with an alternative to continued land conversion. This training will introduce the community to alternative methods of farming which are expected to improve their yields despite the challenging setting. This will, in turn, improve their livelihoods and minimize the potential for conflict with the Hadzabe who have begun to enforce their land use plan. It is expected that leakage will reduce over time as a result of successful interventions and by engaging a greater number of villages in PES for avoided deforestation. As a result, it is likely that leakage will be positive rather than negative in the long-term.

Areas outside of the project boundary where leakage could occur have been identified and are included in the leakage belt to be monitored on an annual basis to measure leakage resulting from project activities (see Figure 3).

Table 5. Leakage risks and management measures

Leakage Risks	Level of risk (low/medium/high)	Management Measures
Displacement of agricultural activity to other land within the reference region	Medium	Participatory rural appraisal (PRA) to estimate scale of leakage due to project activities. Additional project activities aimed at reducing underlying cause of deforestation. Monitoring of reference region to establish land use change.
Displacement of biomass collection	Low	Biomass collection is currently not a major driver of deforestation, however, PRA to establish scale of leakage due to project activities
Displacement of charcoal manufacture	Low	Charcoal is currently not a problem however this is likely to change within the lifetime of the project.
Revenue is not realized in neighboring communities	Low	Project is planning to scale-up into neighboring villages to increase opportunities for benefit sharing.

E. Project Activities & Management Plan

The project activities are broken into three categories. The specific tasks and objectives for each activity type are outlined below in Tables 6-8. The drivers of deforestation may change during the crediting period and the project will respond to those changes accordingly by adjusting or adopting new activities.

1. Improved Land Use Planning and Management

Table 6. Improved land use planning and management activities

Type of Activity	Objectives	Brief Description	Target Groups
Participatory land use planning and management through education and empowerment	<ul style="list-style-type: none"> - To protect traditional Hadzabe lifestyle by specifying areas for conservation, agricultural and pastoralist activities - To secure recognition of land rights and land tenure from the central government - To educate communities on the ecological and livelihood benefits of conservation 	<ul style="list-style-type: none"> - Facilitate community-led planning process to develop land use plan and by-laws that supports sustainable and diverse land uses - Apply for approval of land use plan and by-laws from district officials and secure title deed recognizing Hadzabe as owners - Develop educational materials for use in schools and community meetings that promote the ecological and livelihood benefits of conservation 	<ul style="list-style-type: none"> - Hadzabe community - Villages of Mongo Wa Mono and Domanga - Surrounding villages

2. Avoided Deforestation

Table 7. Avoided deforestation activities

Type of Activity	Objectives	Brief Description	Target Groups
Enforcement of district approved village land use plan and by-laws in accordance with national land laws	<ul style="list-style-type: none"> - To ensure the indigenous <i>Acacia-Commiphora</i> woodland remains owned and managed by Hadzabe and protected for traditional and cultural utilization - To reduce emissions in relation to the BAU scenario - To generate certified carbon credits to be sold and revenues realized by target population in the form of PES 	<ul style="list-style-type: none"> - Employ and train community guards to monitor forest disruption, land conversion and illegal poaching activities in project area - Report instances of incursion or other disturbances - Communicate with neighboring villages about prohibited land use and associated penalties - Enforce land use plan and by-laws through customary and legal dispute resolution mechanisms as necessary 	<ul style="list-style-type: none"> - Hadzabe community - Villages of Mongo Wa Mono and Domanga - Surrounding villages

3. Improved Agriculture Land Management

Table 8. Improved agricultural land management activities

Type of Activity	Objectives	Brief Description	Target Groups
Training in improved agricultural techniques suitable to the conditions found in reference region to combat primary driver of deforestation	<ul style="list-style-type: none"> - To improve the capacity and technical know-how of farmers around project area - To mitigate leakage by tackling the key underlying cause behind deforestation in and around the project area - To improve the crop yields and livelihoods of communities surrounding project area 	<ul style="list-style-type: none"> - Contract with local agricultural specialist to facilitate training - Track results of farmers employing new techniques to serve as a model for farmers more resistant to change - Repeat and add to training as necessary 	<ul style="list-style-type: none"> - Agriculturalists in surrounding villages

4. Governance Plan

The project participants and their role in the project activities are articulated in Table 9. Project activities have been developed based on the current drivers and underlying causes of deforestation in the reference region and project area (see Figure 3).

Table 9. Project activities by participants

Key Function	Organization / group(s) involved	Type of group / organization and legal status	Brief description of activities
Project administration	Carbon Tanzania	Project Coordinator Registered not-for-profit Business Project of Ecological Initiatives Ltd.	<ul style="list-style-type: none"> - Ensure project implementation in accordance with plan vivos, producer sale agreements and PDD - Review field data, track project developments - Plan scaling-up of project in partnership with other stakeholders and report to the Plan Vivo Foundation - Serve as key actor in dispute resolution
Project technical operations	Carbon Tanzania	Project Coordinator Registered not-for-profit Business Project of Ecological Initiatives Ltd.	<ul style="list-style-type: none"> - Develop and monitor project cycle to ensure that it is in accordance with approved methodologies - Manage and support technical demands of project - Increase local capacity where possible
Community engagement / participation	Ujamaa Community Resource Team	Community Partner Registered not-for-profit company limited by guarantee	<ul style="list-style-type: none"> - Provide legal counsel to communities for the purpose of securing land tenure and entering into PES agreements - Provide knowledge of local context to ensure CT is able to carry out the necessary field operations - Organize meetings with ward and district officials - Engage with communities where project is expected to scale-up - Serve as key actor in dispute resolution
Forest management / monitoring	Hadzabe community	Communities recognized by central government as holding land tenure rights in project area	<ul style="list-style-type: none"> - Develop land use plan and village by-laws - Serve as community guards and patrol, monitor and report on natural resource use in violation of the land use plan - Take action against violators in accordance with village by-laws and Village Land Act - Monitor biodiversity impacts - Provide information on socioeconomic impacts

A description of the project participants, the land deed certificate and the MoU between Carbon Tanzania and UCRT are attached as annexes to this document.

F. Likely Non-Carbon Benefits

1. Environmental Impacts

By protecting the traditional land of the Hadzabe through patrolling, the project simultaneously improves the habitat of the wildlife species native to the project area by preventing poaching. Protection of the woodland area will also maintain biodiversity by preserving habitat for native fauna and flora species. Adherence to the village land use plan will result in protection of the interior springs in the protected area. Additional activities with agriculturalists will prevent incursion and limit the loss of topsoil that is endemic to the slash and burn agriculture currently practiced.

2. Socioeconomic Impacts

Participating communities will benefit from increased income stemming from the PES element of the project. Beyond the surplus revenue from the project's generation and sale of carbon offsets, there are significant, additional livelihood impacts. Unique to the Hadzabe is the very real and substantial overlap between environmental and socioeconomic impacts. As a population whose livelihood depends on the land, the Hadzabe will benefit from the improved habitat resulting from project activities. Preventing deforestation, thereby preserving the natural habitat that the Hadzabe are dependent upon, will result in a sustained supply of food and other essential items. Additionally, project activities related to enforcing the land use plan will serve the purpose of protecting the watershed within the project area for the benefit of the Hadzabe, wildlife and pastoralists in the surrounding areas.

Surrounding the project area exist several communities who employ unsustainable land use practices such as slash and burn agriculture. These practices, which are taking place on poor soil to begin with, have produced a cycle of low crop yields, necessitating increased land incursion resulting in mosaic deforestation. The project will address the root causes of the problem by providing training on intensified/improved agricultural techniques. These activities are intended to ensure that agricultural yields are not negatively impacted and neighboring communities are not made worse off by the project. Upon scaling-up of the project, villages where the project is suitable will be included more extensively in both project activities and benefit sharing.

G. Monitoring Plan

1. Carbon Benefits

The project will utilize three indicators to measure carbon content throughout the crediting period.

1. The rate of incursion and deforestation within the project area will be continuously monitored by community guards. They will report this information to the community coordinator who will record the data and relay it to Carbon Tanzania for tracking purposes. Aerial photography, obtained yearly, will be utilized to authenticate and verify data provided by project participants and will be used to assess carbon benefits for the sake of annual reporting and credit issuance.
2. The historical deforestation rate in the reference region, which includes the leakage belt, was determined by analysis and ground-truthed Landsat and Google Earth imagery. This process will take place every five years as required for verification and will use the same or improved techniques employed to establish the baseline.
3. Aboveground biomass surveys will be carried out biennially to assess change in the carbon stock over time. Local producers have been trained and had opportunities to practice this methodology and will increasingly be responsible for this aspect of monitoring.

Additional indicators related to the production of carbon benefits will be observed to measure the effectiveness of project interventions. These include the number of instances of incursion (expected to reduce over time), amount of time spent by UCRT in informal conflict resolution with individuals and villages who do not abide by the Hadzabe's land use plan (expected to reduce over time), and the number of farmers implementing improved/intensified agricultural techniques after training (expected to increase over time).

2. Environmental Impacts

Data on the biodiversity impacts of the project will be collected in two ways and analyzed to determine change over time. Timed Species Counts (TSC) will be conducted on an annual basis to monitor the change in avifauna species along a 33 km track inside the project area and in a deforested agricultural area along the southwest border of Mongo Wa Mono. Low-density, large mammal species subject to seasonal movement, specifically Lion, Wild Dog, Zebra, Eland, Cheetah and Elephant, will be monitored using community-based approaches. The community coordinator will record the presence of these mammals based on reports from hunter-gatherers who observe them in the project area. This information will be collected on a monthly basis and used to assess the presence and frequency of these species in the project area over time. These species were chosen because their presence is both indicative of a healthy ecosystem and relevant to the lifestyle of the target group. Avoided deforestation projects aim to preserve existing habitat and the project will therefore consider year-on-year consistency of data related to environmental indicators in the project area to represent the project's success in preventing deforestation and habitat degradation.

3. Socioeconomic Impacts

As previously described, the socioeconomic impacts of this project are, to a large degree, directly related to the environmental impacts due to the traditional lifestyle of the Hadzabe. There will, of course, be additional impacts as a result of the revenue generated through the sale of carbon credits. Payment records will indicate increased income for individuals participating in the measurement, monitoring and patrolling activities. The project will assess these records to ascertain the concentration of benefits and will take steps to ensure benefit sharing across a variety of diverse stakeholders.

In addition to individual stipends for carrying out specific project activities, surplus revenue will be transferred directly into two Hadzabe community accounts, one for each village, known as the Jamii

fund and the two village accounts. These payments, made on a biannual basis, will provide financial support for forest management as well as legal services beyond the scope of UCRT that may be required for land use enforcement. Payments in excess of what is needed to fulfill these purposes will be earmarked for community-wide development initiatives and be made available to individuals who apply for funds either in times of stress (i.e., illness) or for the purpose of increasing human capital (i.e., teaching or medical training) that will benefit the community-at-large. This approach to benefit sharing is modeled after a pre-existing village mechanism used to dispense funds generated from tourism.

Due to the community's high level of autonomy in terms of use of these funds, it is premature to identify specific metrics for assessing socioeconomic impacts. Carbon Tanzania and UCRT are currently engaged in a participatory process with the village populations in their entirety and specific smaller groups therein to both determine methods of tracking socioeconomic data and identify appropriate indicators of wellbeing and security in the realms of human, financial, social, physical and natural capital as they relate to socioeconomic impacts in the context of the project site and surrounding areas. Indicators related to agricultural interventions will also be established and measured. A credible baseline assessment of the participating village populations will be carried out in the first half of 2012. Going forward, socioeconomic impacts attributable to the project will be monitored in accordance with how the community chooses to allocate and invest the revenue.

4. Project Administration

UCRT and Carbon Tanzania maintain open channels of communication with the community and receive feedback regularly, albeit often informally. In addition to this, project administration will be monitored using the same methods as socioeconomic data, most likely through focus groups or household surveys. Participants will be asked their opinion of the work of the project coordinator, community partner and those individuals and organizations providing additional education and training to producers. The communities will be asked about instances of conflict arising from the project, regularity of payments and fund transfers, satisfaction with level of community ownership, and understanding of, and commitment to, project aims. This information will help Carbon Tanzania and UCRT improve and self-correct in terms of project administration as well as adapt to the situation on the ground in a timely and effective manner.

H. Additionality

Legal and Regulatory Test

This project has not been initiated to fulfill any government policies, regulations or standards. As detailed in section H of the PDD, the government of Tanzania promotes community-based management but it encourages rather than obligates sustainable land use and forest management.

Financial and Economic Barriers

There is no commercial interest in the preservation of the habitat in the project area. Without the revenue generated through the sale of carbon credits there would be no ability to compensate for the opportunity costs associated with avoided deforestation. Carbon finance incentivizes conservation, funds patrolling, monitoring and enforcement activities, and finances activities related to curbing drivers of deforestation such as environmental education and the training of farmers on sustainable land use practices. Funding from carbon finance will also be necessary to defend the land use plan and village by-laws in court should that prove necessary to keep poachers or other intruders out of the project area.

Social Barriers

This project works to empower the Hadzabe to protect their remaining land and lifestyle. This has been a significant barrier since the population has traditionally been very passive in its interactions with outsiders. Their ceding of land and eventual displacement into less hospitable areas over the last century evidences this. Building capacity within the Hadzabe community to defend and protect their remaining land is critical to the success of this project.

Cultural Barriers

Convincing local farmers to adopt new practices is a significant barrier that this project must overcome in order to address the root causes of deforestation in the region. The organizations collaborating on this project are well suited to work with local agriculturalists in terms of training, providing support on new practices as well as monitoring the rate of their adoption by local communities. Carbon financing will be required to carry out these activities and curb the rate of deforestation.

Ecological Barriers

The essential problem of deforestation that the project is working to solve stems from unsustainable land use practices on the part of agriculturalists utilizing slash and burn techniques and pastoralist communities overgrazing in and around the project area. The project addresses these problems by engaging farmers and pastoralists through education, training and project expansion. Specific to agricultural communities are the poor soil condition, variation in weather conditions and extended dry season. Engagement with farmers on improved practices will help them to overcome these barriers to ensure that the REDD project does not negatively impact agricultural yields.

Institutional and Political Barriers

The project has already surpassed the political barriers of facilitating the creation of a land-use plan and having it approved by the proper authorities thereby securing land tenure for the Hadzabe. While it is now legally-binding there is no enforcement by authorities outside of the village structure and therefore falls to the community. This project will focus on strengthening the villages' natural resource committee and other village institutions to enhance their ability to uphold their land use plan and by-laws.

Technical Barriers

Substantial effort has been put into building the technical capacity of the Hadzabe community in terms of monitoring carbon, environmental and socioeconomic benefits of the project. This is an ongoing process that transfers more responsibility and ownership of the project to the local

producers over time. This training encompasses all aspects of project monitoring such as conducting AGB surveys, tracking the presence of wildlife, conducting timed species counts and learning survey techniques.

Annex 1. Description of Project Participants

Carbon Tanzania (CT) is a registered business activity of the consultancy partnership Ecological Initiatives Ltd., incorporated under the company laws of the United Republic of Tanzania. CT aims to encourage the development of in-country, value added carbon offset projects which directly benefit communities and ensure biodiversity protection and secure livelihoods for communities threatened by climate change. Carbon Tanzania will serve as the project coordinator and take responsibility for project implementation and preparation of necessary documentation required for the issuance of Plan Vivo Certificates throughout the life of the project. Carbon Tanzania staff have extensive experience in forestry, conservation, biodiversity assessment and wildlife management. In addition, CT has relationships with individuals and institutions that provide technical support as necessary.

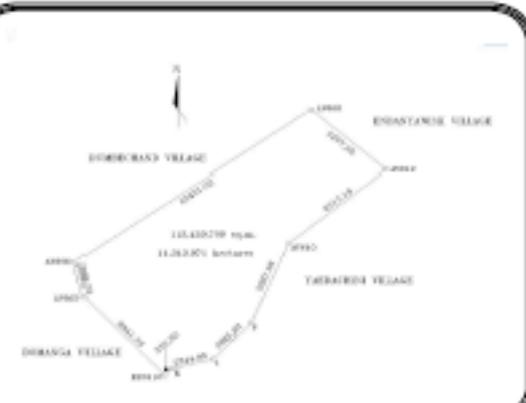
Ujamaa Community Resource Team (UCRT) is recognized as one of the best CBNRM organizations in Tanzania and has successfully pursued its mission of supporting community rights and ownership to ensure the viable and long-term conservation of human and biological diversity. UCRT will provide access to its local support team and provide knowledge of the local context to ensure that Carbon Tanzania is able to carry out the necessary field operations. UCRT has been working in Mongo Wa Mono for nine years and has established itself as a responsible and transparent partner with the Hadzabe communities. UCRT also works with the neighboring villages and is held in high regard by community members and district government alike.

This project is a community-based initiative and as such the relevant skills and experience not only come from the individuals working directly with Carbon Tanzania and UCRT, but also the Hadzabe who hold indigenous knowledge about the project's forest area and biodiversity. Mongo Wa Mono and Domanga village members have been involved in the planning of the project since its start and have agreed to carry out the activities necessary to ensure the preservation of the designated area.

Inline with the local nature of this project, the existing village structures will serve as a forum for representation of project participants and the community-at-large. The village assembly is a decentralized, democratic institution consisting of all male and female village members above the age of eighteen. This assembly meets on a bi-monthly basis and anyone is welcome to place an item on the agenda, including concerns relevant to this project. The ward, comprised of elected village leaders, will tend to issues that transcend the village. Village governance of this kind is ingrained in Tanzanian culture and embedded in law through the Local Government Act No 7 of 1982.

Annex 2. Land Deed Certificate

Attachment 1: Land deed of project area in Mongo Wa Mono to Hadzabe

JAMHURI YA MUUNGANO WA TANZANIA	
	
<i>Fomu ya Ardhi ya Vijiji Na. 21</i>	
Namba ya Hati ya Hakimiliki.....	
SHERIA YA ARDHI YA VIJIFI, 1999 (Na. 5 ya 1999)	
HATI YA HAKIMILIKI YA KIMILA	
(CHINI YA FUNGU LA 25)	
Leo tarehe.....mwezi.....mwaka.....	
Hii ni kuthibitisha kwamba Halmashauri ya Kijiji cha (jina na anwani) MONGO WA MONO S.L.P 74 MBULU imetoa kwa (jina la Mkazi) Kikundi cha Jamii ya Wahadzabe (humu ndani akirejewa kama "Mkazi") hakimiliki ya kimila (itaitwa "hakimiliki") juu ya ardhi iliyofafanuliwa katika Jedwali (humu ndani itaitwa "ardhi") kwa kipindi kisicho na kikomo*/kwa miaka 99*/kwa miaka.....tangu tarehe.....mwezi.....mwaka 20.....kwa maudhui na tafsiri halisi ya Sheria ya Ardhi ya Vijiji na kwa kuzingatia vipengele vyake na kamuni zozote zinazotungwa chini ya sheria hiyo au sheria mbadala au marekebisho yake na kwa mujibu wa masharti yafuatayo:	
*Futa lisilohusika	
i) Mkazi /Wakazi watalipa kodi ya mwaka ya Shs.....kabila ya tarehe..... ya mwezi.....kila mwaka (kama inahusika).	
ii) Ardhi itatumika kwa ajili ya Hifadhi na Matumizi ya asili ya Wahadzabe	
iii) Mkazi/Wakazi watawajibika kuhifadhi mazingira (ardhi na maji)	
iv) Mkazi /Wakazi watahakikisha kwamba mipaka ya ardhi inalindwa na kutunzwa na idumu kuwa bayana kwa kipindi chote cha hakimiliki.	
v) Mkazi/Wakazi watabeshimu na kuhifadhi haki za njia zilizopo.	
vi) Uhakilishi wa hakimiliki kwa mtu yeyote au kikundi chochote cha watu ambao kwa kawaida si wakazi wa kijiji lazima uidhinishwe na Halmashauri ya Kijiji.	
JEDWALI <i>(Maelezo kamili ya eneo na mipaka yake)</i>	
Ardhi hii yenye eneo lenye ukubwa wa hekta 11,343.971 iko katika Kitongoji cha Gideru Kaskazini inapakana na kijiji Dumbachand Kusini inapakana na kijiji Yaeda Chini Mashariki inapakana na kijiji Endanyawish Magharibi inapakana na kijiji Domanga Kama inavyoonyeshwa katika mchoro/ramani hapa kulia.	

JAMHURI YA MUUNGANO WA TANZANIA

Fomu ya Ardhi ya Vijiji

HATI NA.
IMESAJLIWA TAREHE
17/05/2011
MUDA
AFISA ARDHI WA WILAYA



Namba ya Hati
ya Hakimiliki.....

SHERIA YA ARDHI YA VIJJI, 1999
(Na. 5 ya 1999)
HATI YA HAKIMILIKI YA KIMILA
(CHINI YA FUNGU LA 25)

Leo tarehe.....mwezi.....mwaka.....
Hii ni kuthibitisha kwamba Halmashauri ya Kijiji cha (jina na anwani) **MONGO WA MONO** ;
MBULU imetoa kwa (jina la Mkazi) **Kikundi cha Jamii ya Wahadzabe** (humu ndani akire
"Mkazi") hakimiliki ya kimila
(itaitwa "hakimiliki") juu ya ardhi iliyofafanuliwa katika Jedwali (humu ndani itaitwa "ardhi") k
kisicho na kikomo*/kwa miaka 99*/kwa miaka.....tangu tarehe.....mwezi.....
20.....kwa maudhui na tafsiri halisi ya Sheria ya Ardhi ya Vijiji na kwa kuzingatia vipengel
kanuni zozote zinazotungwa chini ya sheria hiyo au sheria mbadala au marekebisho yake na k
wa masharti yafuatayo:

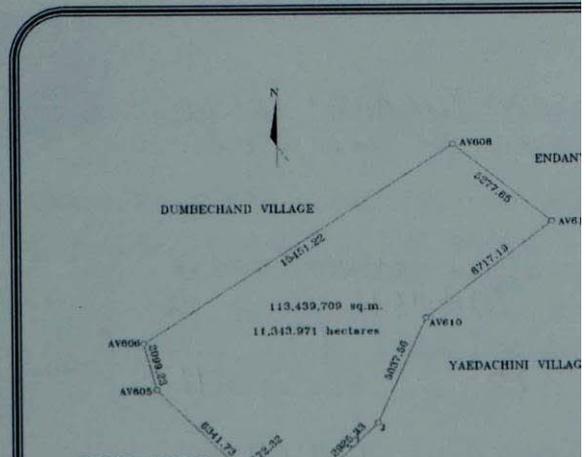
*Futa lisilohusika

- i) Mkazi /Wakazi watalipa kodi ya mwaka ya Shs.....kabila ya tar
mwezi.....kila mwaka (kama inahusika).
- ii) Ardhi itatumika kwa ajili ya **Hifadhi na Matumizi ya asili ya Wahadzabe**
- iii) Mkazi/Wakazi watawajibika kuhifadhi mazingira (ardhi na maji)
- iv) Mkazi /Wakazi watahakikisha kwamba mipaka ya ardhi inalindwa na kutunzwa na i
bayana kwa kipindi chote cha hakimiliki.
- v) Mkazi/Wakazi wataheshimu na kuhifadhi haki za njia zilizopo.
- vi) Uhakilishi wa hakimiliki kwa mtu yeyote au kikundi chochote cha watu ambao kwa
wakazi wa kijiji lazima uidhinishwe na Halmashauri ya Kijiji.

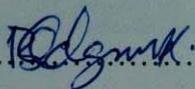
JEDWALI

(Maelezo kamili ya eneo na mipaka yake)

Ardhi hii yenye eneo lenye ukubwa wa hekta
11,343.971 iko katika Kitongoji cha **Gideru**
Kaskazini inapakana na kijiji **Dumbechand**
Kusini inapakana na kijiji **Yaeda Chini**
Mashariki inapakana na kijiji **Endanyawish**
Magharibi inapakana na kijiji **Domanga**
Kama inavyoonyeshwa katika mchoro/ramani



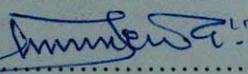
1. Jina kamili... GIDABUDI AIDAHONDA

Saini... 

Anuani... P.O. BOX 74 - MBULU

Wadhifa: Mwenyekiti wa Kijiji

Jina kamili... PASCAL J. KAJEMA

Saini... 

Anuani... P.O. BOX 74 - MBULU

Wadhifa: Afisa Mtendaji wa Kijiji

2. Mmiliki (Mkazi)

Jina

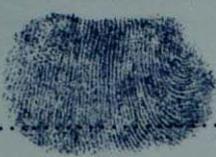
Saini/ dole gumba

PICH

(i) MUKUYI MAKANYANGE KANUNI
MWAJILISHI WA JAMII 

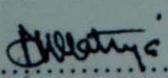
(ii) JULIANA ATHUMASTI TULANGI
MWAJILISHI WA JAMII 

(iii) RICHARD BANTON MUNGUDA RHBaellow
MWAJILISHI WA JAMII

(iv) HASSANI TULANGI ILEME
MWAJILISHI WA JAMII 

3. Imegongwa Lakiri ya Halmashauri ya
Wilaya ya MBULU na
Kusainiwa leo Tarehe 17
Mwezi 10 Mwaka 2011

Jina: DEOSRATUS J. MATIYX

Saini: 

Wadhifa: Afisa Ardhi wa Wilaya

LAKIRI/MU
WA
HALMASHA
YA KIJJI



LA



Attachment 2: Land deed of project area in Domanga to Hadzabe

JAMHURI YA MUUNGANO WA TANZANIA



Fomu ya Ardhi ya Vijiji Na. 21

Namba ya Hati
ya Hakimiliki.....

SHERIA YA ARDHI YA VIJILI, 1999
(Na. 5 ya 1999)

HATI YA HAKIMILIKI YA KIMILA

(CHINI YA FUNGU LA 25)

Leo tarehe.....mwezi.....mwaka.....

Hii ni kuthibitisha kwamba Halmashauri ya Kijiji cha (jina na anwani) **DOMANGA S.L.P 74**

MBULU imetoa kwa (jina la Mkazi) **Kikundi cha Jamii ya Wahadzabe** (humu ndani akirejewa kama "Mkazi") hakimiliki ya kimila

(itaitwa "hakimiliki") juu ya ardhi iliyofafanuliwa katika Jedwali (humu ndani itaitwa "ardhi") kwa kipindi kisicho na kikomo*/kwa miaka 99*/kwa miaka.....tangu tarehe.....mwezi.....mwaka 20.....kwa maudhui na tafsiri halisi ya Sheria ya Ardhi ya Vijiji na kwa kuzingatia vipengele vyake na kamuni zozote zinazotungwa chini ya sheria hiyo au sheria mbadala au marekebisho yake na kwa mujibu wa masharti yafuatayo:

*Futa lisilohusika

- i) Mkazi /Wakazi watalipa kodi ya mwaka ya Shs.....kabila ya tarehe..... ya mwezi.....kila mwaka (kama inahusika).
- ii) Ardhi itatumika kwa ajili ya **Hifadhi na Matumizi ya asili ya Wahadzabe**
- iii) Mkazi/Wakazi watawajibika kuhifadhi mazingira (ardhi na maji)
- iv) Mkazi /Wakazi watahakikisha kwamba mipaka ya ardhi inalindwa na kutumzwa na idumu kuwa bayana kwa kipindi chote cha hakimiliki.
- v) Mkazi/Wakazi watabeshimu na kuhifadhi haki za njia zilizopo.
- vi) Uhakilishi wa hakimiliki kwa mtu yeyote au kikundi chochote cha watu ambao kwa kawaida si wakazi wa kijiji lazima uidhinishwe na Halmashauri ya Kijiji.

JEDWALI

(Maelezo kamili ya eneo na mipaka yake)

Ardhi hii yenye eneo lenye ukubwa wa hekta **9,445.957** iko katika Kitongoji cha **Domanga** Kaskazini inapakana na kijiji **Matala** Kusini inapakana na kijiji **Eshkesh** Mashariki inapakana na kijiji **Mongo wa mono** Magharibi inapakana na **Makazi ya Domanga** Kama inavyoonyeshwa katika mchoro/ramani hapa kulia.



JAMHURI YA MUUNGANO WA TANZANIA

Fomu ya Ardhi ya Vijiji Na. 21

HATI NA.

IMESAHLIWA TAREHE

17/10/2011

MUDA
Mwaka

AFISA ARDHI WA WILAYA



Namba ya Hati
ya Hakimiliki.....

SHERIA YA ARDHI YA VIJJI, 1999
(Na. 5 ya 1999)

HATI YA HAKIMILIKI YA KIMILA

(CHINI YA FUNGU LA 25)

Leo tarehe.....mwezi.....mwaka.....

Hii ni kuthibitisha kwamba Halmashauri ya Kijiji cha (jina na anwani) **DOMANGA S.L.P 74 MBULU** imetoa kwa (jina la Mkazi) **Kikundi cha Jamii ya Wahadzabe** (humu ndani akirejewa "Mkazi") hakimiliki ya kimila

(itaitwa "hakimiliki") juu ya ardhi iliyofafanuliwa katika Jedwali (humu ndani itaitwa "ardhi") kwa kisicho na kikomo*/kwa miaka 99*/kwa miaka.....tangu tarehe.....mwezi.....n 20.....kwa maudhui na tafsiri halisi ya Sheria ya Ardhi ya Vijiji na kwa kuzingatia vipengele vya kanuni zozote zinazotungwa chini ya sheria hiyo au sheria mbadala au marekebisho yake na kwa r wa masharti yafuatayo:

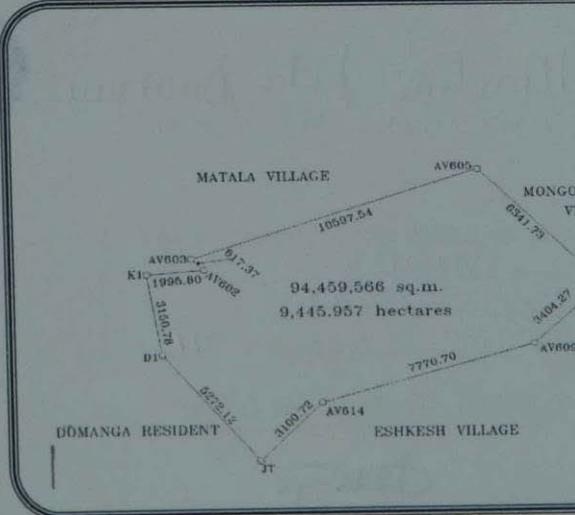
*Futa lisilohusika

- i) Mkazi /Wakazi watalipa kodi ya mwaka ya Shs.....kabila ya tarehe.. mwezi.....kila mwaka (kama inahusika).
- ii) Ardhi itatumika kwa ajili ya **Hifadhi na Matumizi ya asili ya Wahadzabe**
- iii) Mkazi/Wakazi watawajibika kuhifadhi mazingira (ardhi na maji)
- iv) Mkazi /Wakazi watahakikisha kwamba mipaka ya ardhi inalindwa na kutunzwa na idumu bayana kwa kipindi chote cha hakimiliki.
- v) Mkazi/Wakazi wataheshimu na kuhifadhi haki za njia zilizopo.
- vi) Uhakilishi wa hakimiliki kwa mtu yeyote au kikundi chochote cha watu ambao kwa kawaida wakazi wa kijiji lazima uidhinishwe na Halmashauri ya Kijiji.

JEDWALI

(Maelezo kamili ya eneo na mipaka yake)

Ardhi hii yenye eneo lenye ukubwa wa hekta **9,445.957** iko katika Kitongoji cha **Domanga Kaskazini** inapakana na kijiji **Matala** Kusini inapakana na kijiji **Eshkesh** Mashariki inapakana na kijiji **Mongo wa mono** Magharibi inapakana na **Makazi ya Domanga** Kama inavyoonyeshwa katika mchoro/ramani hapa kulia.



1. Jina kamili: GERSON MALLE ZUGIKA

Saini: [Signature]

Anuani: S.L.P 74 MBULU

Wadhifa: **Mwenyekiti wa Kijiji**

Jina kamili: PAULO GADILAO

Saini: [Signature]

Anuani: S.L.P 74 MBULU

Wadhifa: **Afisa Mtendaji wa Kijiji**

2. Mmiliki (Mkazi)

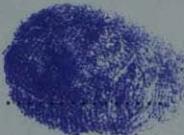
Jina

Saini/ dole gumba

(i) Marko Mussa Mazingiri 
MWAKILISHI WA JAMII

(ii) Mwangaza Mpanda Bagaye 
MWAKILISHI WA JAMII

(iii) Pili Gudo Mahiya [Signature]
MWAKILISHI WA JAMII

(iv) Martini petro Dunkuru 
MWAKILISHI WA JAMII

3. Imegongwa Lakiri ya Halmashauri ya
Wilaya ya MBULU na
Kusainiwa leo Tarehe 17
Mwezi 10 Mwaka 2011

Jina: DEOGRATUS J. MATIYA

Saini: [Signature]

Wadhifa: **Afisa Ardhi wa Wilaya**

LAKIRI/
W
HALMA
YA K



PI

LA

Annex 3. MoU between UCRT and Carbon Tanzania

Memorandum of Understanding between Carbon Tanzania (CT) and Ujamaa Community Resource Team (UCRT)

Background

In order to develop successful land management projects that can result in viable, long-term conservation and generate permanent carbon reductions, several factors are critical. Firstly, projects should be based in areas where land and resource tenure is clear and where local communities are able to make and control land and resource use decisions; in the context of Tanzania, this means that projects must be in areas that are clearly village lands, and ideally where village land boundaries have already been clarified.

Second, projects should be in areas with relatively high carbon storage potential; this means areas with either forest or woodland (savannah) land cover. Third, these forests or woodlands should be under some level of threat, such that local conservation measures would serve to *increase* the amount of carbon stored than would otherwise occur in the absence of the project (this is known as the 'additionality' principle and is a fundamental element of carbon markets). Such increases may occur through forest recovery (improved forest management) or through 'avoided deforestation', using a credible baseline scenario which demonstrates that in the absence of carbon market funds, existing vegetation will be cleared and carbon lost.

Lastly, projects should involve a fairly large area of land and thus a significant amount of stored carbon. Carbon forestry or land use projects involving very small areas tend to be very costly in relation to the revenues they generate, because of the high up-front costs required in project design and third-party verification and validation (whereby an independent organization validates the offsets which a project developer claims to have generated).

As such, this initiative will target three separate areas with fairly large forest areas, where local tenure over land and forests/woodlands is relatively clear, and where a credible baseline can be made to demonstrate that projects will protect 'additional' forests from loss or degradation. Critically, these are all areas where UCRT has a long-established presence, local relationships and familiarity, and has done much work to build local natural resource management capacity over the past decade.

I. Parties

This Memorandum of Understanding (hereafter 'MoU') is between the following two parties:

Carbon Tanzania, being a non-profit subsidiary of Ecological Initiatives Ltd., registered in Tanzania and having official residence at plot number 146A, Ngaramtoni Coffee Estate, Olasiti, Arusha District. P.O. Box 425, Arusha Tanzania, and with the mission of developing carbon offsetting projects involving indigenous forest conservation and community-based forest management in Tanzania.

Ujamaa Community Resource Team Ltd, being a non-Profit Company limited by guarantee, registered in Tanzania and having official residence at Olasiti, near Dorobo premises, Arusha District. P.O.Box 15111, Arusha Tanzania, and with vision to Improved livelihoods for pastoralists, Hunter-gatherers and Agro-pastoralists communities through social Justice and sustainable Natural Resource management in Tanzania.

The purpose of this MoU is to articulate a collaborative relationship between the two parties based on mutual interests and pursuit of common aims and objectives, and the general rights and obligations of the two parties within that evolving relationship.

II. Duration

This MoU will apply from 1st December 2010 until 31st December 2012. The MoU may be renewed with any amendments based on the written consent of both parties. The MoU can be resigned without or including changes to the content with the consent of both parties.

III. Scope and Nature of Partnership

Carbon Tanzania (CT) will provide the skills to assess, document and process the necessary documentation required to prepare an area for the development of verified and certified carbon credits. This process will be done in order to enable UCRT to fulfill its mission and aims to support community rights and community ownership over an area to ensure the viable and long-term conservation of biological diversity.

Ujamaa Community Resource Team (UCRT) will provide access to its local support team and provide technical and local knowledge to ensure CT is able to carry out the necessary field operations. UCRT can represent CT at community level through this partnership which enables both organizations to fulfill their missions and aims.

This partnership includes

1. Assistance in strategic organizational planning, including identification of technical, human resource, and financial requirements and gaps, and development of strategies to address those;
2. Assistance in identifying and pursuing funding opportunities, including potentially joint funding proposals;
3. General networking and linking to other potential partner organizations and individuals, nationally and internationally;
4. Assistance in analysing and communicating key lessons and experiences through publications and other forms of media;
5. Direct technical support to field projects, which may include:
 - a. Policy and institutional analyses
 - b. Development of project strategies and proposals
 - c. Input to technical documents
 - d. General advice on project implementation as may be required

IV. Areas of collaboration:

A. Primary area of collaboration:

- The primary area of collaboration and focus for activities for the year 2012 will be the The Kidero hills of the Yaeda Valley, Mbulu District. This area of dry but dense *Acacia* and *Baobab* woodland is contained within Mongo wa Mono village, and is the last remaining expanse of natural habitat remaining under the control of the Hadzabe hunter-gatherers. UCRT has worked in the area since the late 1990s and enabled the village to develop a land use plan and by-laws, and to demarcate the Kidero hills as a resource management and conservation area under the village's control. Nevertheless the area faces constant pressures of encroachment from densely populated areas to the west (Meatu District), south (Mbulu District) and

north (Karatu District). Without strengthened local management capacity and incentives the area is likely to be degraded, with severe consequences for the Hadzabe's cultural survival.

B. Other possible areas of collaboration:

Depending on availability of time and resources the parties also agree to investigate the potential for collaborative activities in the following areas:

- The southern Maasai Steppe of Simanjiro District and northern Kiteto District. This semi-arid area contains vast woodlands and some pockets of forest, and its extensive savannah contains critical livestock forage for tens of thousands of pastoralists in the area. The region has long been subject to gradual encroachment from other ethnic groups, immigrants from adjacent highlands, and commercial farming interests. At present the southern Maasai Steppe stands at a frontier of encroaching agriculture from the northeast and the southwest, and is the largest remaining area of native vegetation and pastoralist land uses in northern Tanzania.
- The Loliondo forest, Loliondo Division. This area of highland forest is partly contained within a government forest reserve and partly on village lands, including the lands of 3-5 villages. The forest provides numerous ecosystem services, such as water catchment for rivers that flow into Lake Natron and dry season grazing refuge. The forest is however being rapidly degraded from over-harvesting and lack of local management and protection measures, and has a very high carbon storage potential per hectare.

Both organizations shall follow normal practice of duly acknowledging the partnership described in this MoU when presenting or publicizing information about any of the work done through the course of this collaboration, and will share drafts and provide opportunities for incorporating comments from the other party before publishing information about the partnership that includes specific mention of the other organization.

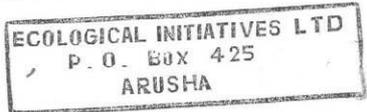
Dated this the 7th day of FEBRUARY 2012.

Signed on behalf of Ujamaa Community Resource Team



Mr. Edward Loure ole Parole
Coordinator
Ujamaa Community Resource Team

Signed on behalf of Carbon Tanzania



Mr. St. John Anderson.
Director
Ecological Initiatives & Carbon Tanzania.

Annex 4. Letter from Ekko Oosterhuis detailing deforestation threat level in project area

Brief Situational Analysis of Agricultural Context in Yaeda Valley and Gideru Hills.

Consultant: Ekko Oosterhuis.
Position: Director.
Organisation: QFP Agro (www.qfp-agro.com)

The valley bottoms are comprised of lateritic volcanic clays (black cotton soil) colonised by various species of grasses. Although not well drained, they provide the opportunity for cultivating pigeon peas, chick peas and sunflower when rainfall permits. After the initial turning of the soil for the first planting season, which releases a high volume of carbon, the soil no longer needs to be tilled year on year. Once turned the area is no longer available as grazing land for pastoralist stock herds.

The low hills and rocky ridges that characterise the Gideru Ridge are comprised of quartzite sandy soils with regular inselbergs protruding from the earth. The soils in these areas are attractive to shifting agriculturalists who seek to cultivate maize, sunflower and foodbeans. The native vegetation of Acacia / Commiphora woodland and baobab trees is cleared over a period of 2-3 years as crops are tried year-on-year. With adequate rainfall yields on such soils of these crops can be relatively good 1mt / hectare, but the soil is quickly exhausted and after 4-5 years yields decline and in many cases the farmers move on to another area of unconverted woodland. Even where potential yields are poorer (such as shallow-soiled well-drained areas), cultivators can obtain a short term return for one or two year's effort. This means that the entire Gideru Hills area is attractive to marginalised members of these mobile and displaced cultivators from districts beyond the Yaeda / Gideru area.

Signed:



Ekko Oosterhuis, Director.