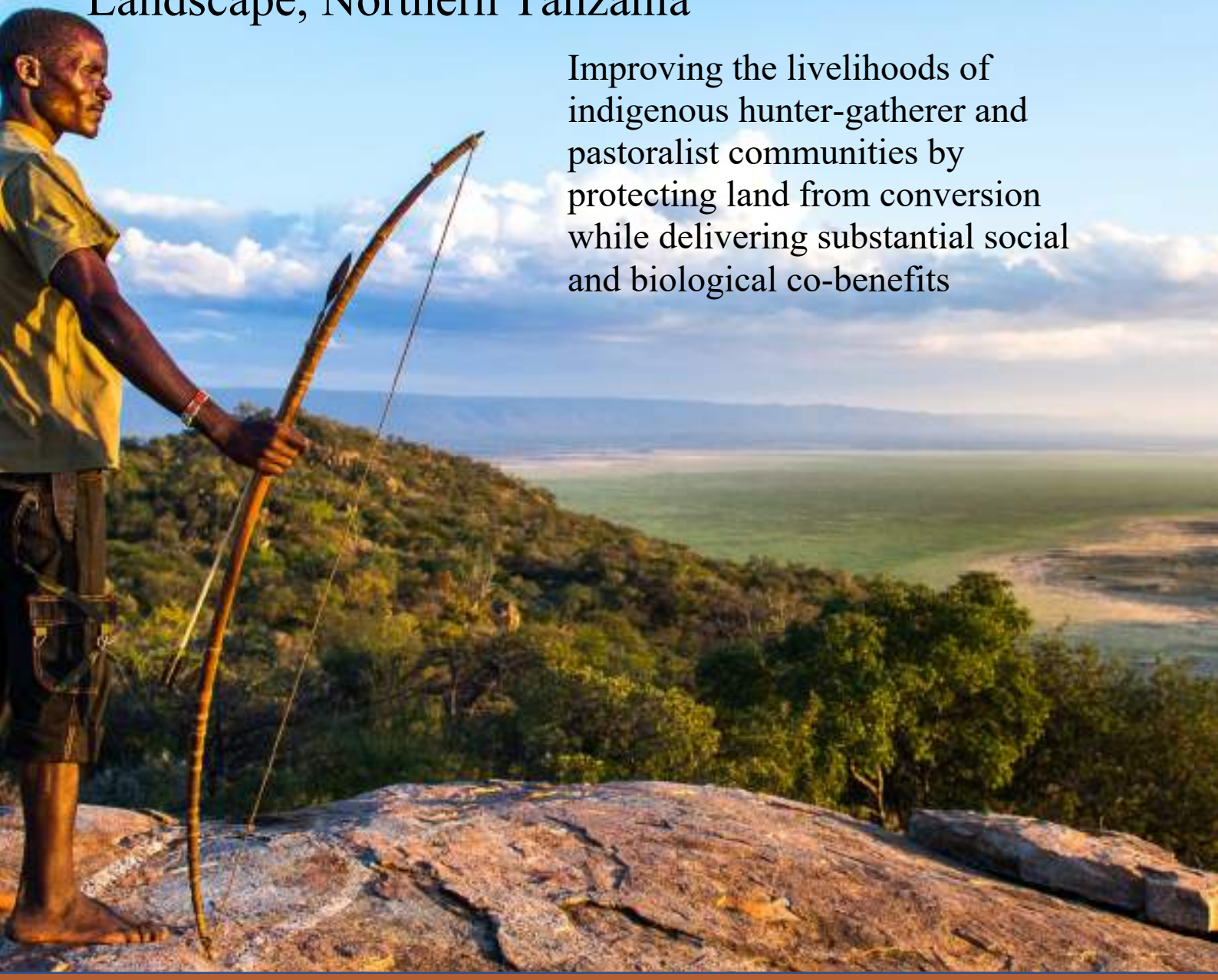
Reducing Emissions from Deforestation and Forest Degradation in the Yaeda-Eyasi Landscape, Northern Tanzania



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

Project Design Document, Plan Vivo Foundation
Carbon Tanzania, November 2020

Executive Summary

The aim of the Yaeda-Eyasi Landscape REDD project is to reduce emissions from deforestation whilst supporting local development and habitat conservation. This project and its associated carbon revenues support anti-poaching, monitoring, education and medical provision ensuring all members of the villages, hunter-gatherer Hadzabe and pastoralist Datooga communities in Domanga, Dumbechand, Endamaghan, Endanyawish, Endesh, Eshkesh, Jobaj, Mbuganyekundu, Mikocheni, Mongo wa Mono, Qangdend and Yaeda Chini villages receive benefits. By working in conjunction with traditional leaders, the elected village, ward and district governments and community members, Carbon Tanzania (CT) and Ujamaa Community Resource Team (UCRT) have created a unique community planned and operated Reduced Emissions from Deforestation and Degradation (REDD) project across the Yaeda-Eyasi landscape. Successful avoided deforestation will be achieved through a series of interventions including reinforcing the implementation of the approved village land use plans and associated village by-laws, improving forest conservation and management activities which address the primary driver of deforestation, shifting agriculture.

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. For these communities there is a very real and substantial overlap between environmental and socioeconomic impacts. As a population whose livelihood depends on the land, the Hadza will benefit from the improved habitat resulting from project activities. Preventing deforestation, thereby preserving the natural habitat on which the Hadza and Datooga communities depend, will result in a sustained supply of food, grazing and other essential items and ecosystem services. 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 people and wildlife.

Carbon Tanzania is the leading Reduced Emissions from Deforestation and Degradation (REDD) project developer and sales conduit for Verified Emissions Reductions in Tanzania. Our innovative approach ensures sound land management that reduces deforestation and is based on community land and ownership rights. Carbon Tanzania manages the value chain ensuring the sales of verified emission reductions result in long-term revenue flow into villages and households within the Yaeda-Eyasi area in a participatory and equitable manner.

Contents

Abbreviations and Acronyms

AGB	Aboveground Biomass
AMSL	Above Mean Sea Level
CBNRM	Community-Based Natural Resource Management
CCRO	Community Customary Right of Occupancy
CITIES	Convention on the International Trade in Endangered Species
CO2e	Carbon Dioxide Equivalent
CSO	Civil Society Organization
CT	Carbon Tanzania
FPIC	Free, Prior and Informed Consent
GCA	Game Controlled Area
GPS	Global Positioning System
IBA	Important Bird Area
IUCN	International Union for the Conservation of Nature
MoU	Memorandum of Understanding
NCCSC	National Climate Change Steering Committee
NEMC	National Environment Management Council
NGO	Non-Governmental Organization
NWFP	Non-Wood Forest Products
OTC	Over-the-Counter
PDD	Project Design Document
PES	Payment for Ecosystem Services
REDD	Reducing Emissions from Deforestation and Forest Degradation
SDGs	Sustainable Development Goals
tC/ha	Tonnes Carbon per Hectare
tCO2e/ha	Tonnes Carbon Dioxide Equivalent per Hectare
TSC	Timed Species Count
UCRT	Ujamaa Community Resource Team
UNDP-GEF	United Nations Development Programme's Global Environment Facility
UNESCO	United Nations Educational, Scientific and Cultural Organization
VGS	Village Game Scouts
VLFR	Village Land Forest Reserve

Part A: Aims and Objectives

This project works with hunter-gatherer Hadzabe [1] and pastoralist Datooga [2] communities in 12 villages in Mbulu District and Karatu District, Northern Tanzania. By working in conjunction with traditional leaders, the elected village governments and community members, Carbon Tanzania (CT) and Ujamaa Community Resource Team (UCRT) have created a unique community planned and operated Reduced Emissions from Deforestation and Degradation (REDD) project in the Yaeda-Eyasi area. This REDD project strengthens land tenure, management capacity and local natural resource management, enhances and diversifies local incomes, and contributes to local and national environmental conservation aims and the Sustainable Development Goals (SDGs) [3]. Successful avoided deforestation will be achieved through a series of interventions including reinforcing the implementation of the approved village land use plans and associated village by-laws, improving forest conservation and management activities and addressing the primary driver of deforestation, shifting agriculture. This REDD project, planned with the participating community members, 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.

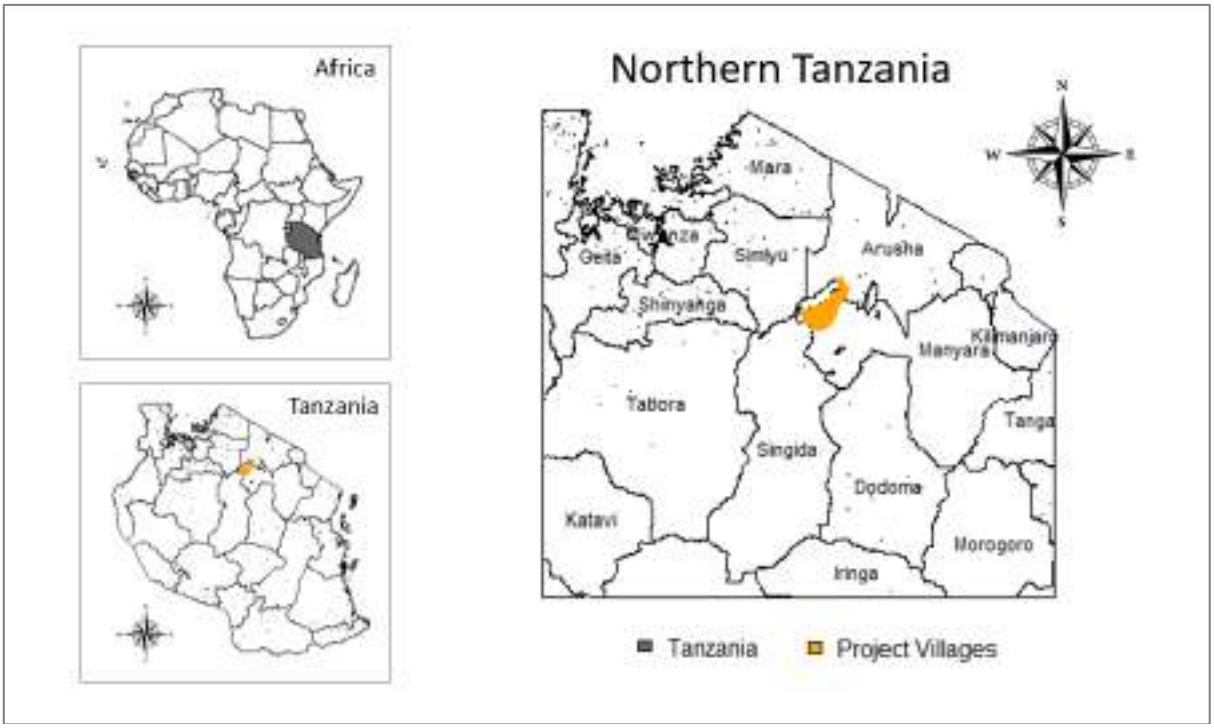
This project development document (PDD) is submitted to the Plan Vivo Foundation as an updated version of the "REDD in the Yaeda Valley" PDD (validated in 2012). This version of the PDD is updated to include 10 villages surrounding the existing project, resulting in a total inclusion of 12 villages in the Yaeda-Eyasi landscape. These villages have been included within the project and follow the same governance and land ownership structures, interventions and activity-based monitoring approaches as the current project.

Part B: Site Information

B1: Project location and boundaries

The East African country of Tanzania covers 970,000 km^2 of land, of which approximately 38% [4] is forested (defined as at least 10% tree crown cover [5]). The villages of Domanga, Dumbechand, Endamaghan, Endanyawish, Endesh, Eshkesh, Jobaj, Mbuganyekundu, Mikocheni, Mongo wa Mono, Qangdend and Yaeda Chini are situated at 34°30'E/03°30'S in the Central Rift Valley, at an altitude of 1200-1400 MASL, in the southwest of Mbulu District, Manyara Region, Northern Tanzania (see map, Figure B1a).

Figure B1a. Map of Northern Tanzania

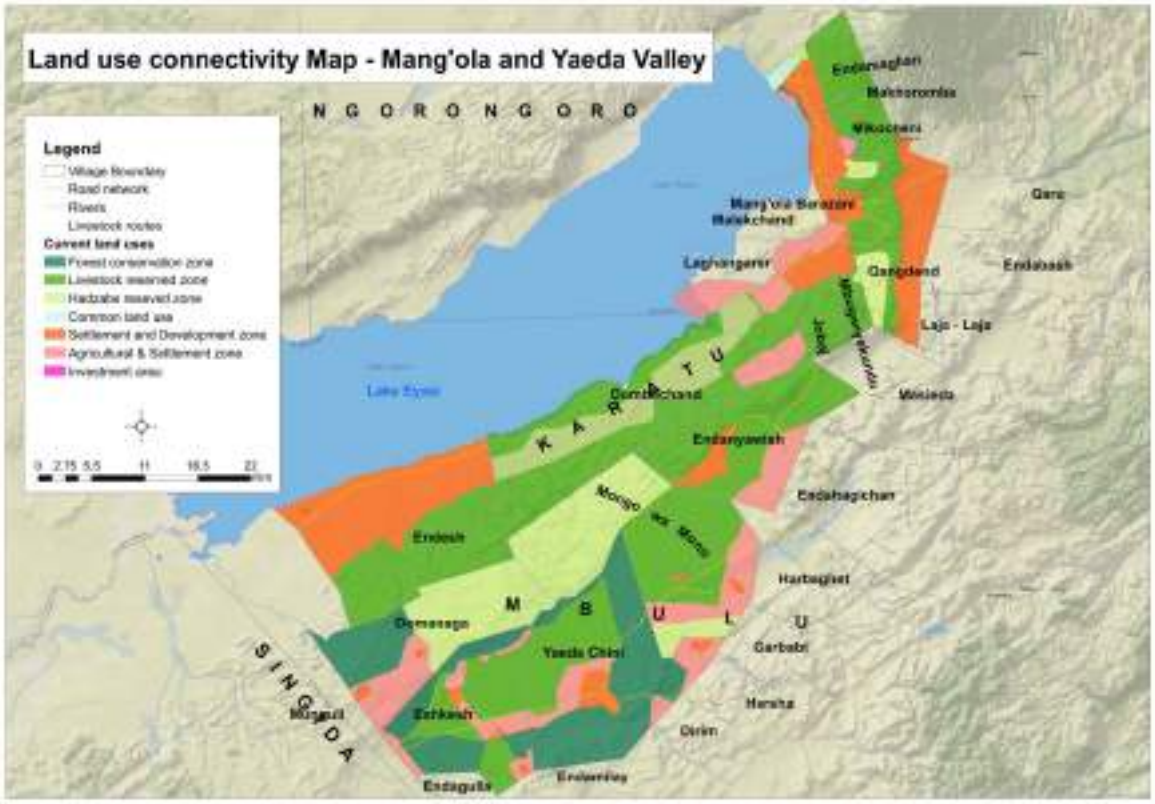


The adjacent villages of Domanga, Dumbechand, Endamaghan, Endanyawish, Endesh, Eshkesh, Jobaj, Mbuganyekundu, Mikocheni, Mongo wa Mono, Qangdend and Yaeda Chini cover a total area of 238,752.44ha. Previously the Yaeda I and II projects were made up of Mongo wa Mono and Domanga's Hadza protected area and Yaeda Chini's grazing area (34,073ha). Land use plans, developed by the villages in conjunction with district government, divide the entire Yaeda-Eyasi area into land use zones, each designated as one of three land use types: housing and farming, grazing, and protected areas (see Figure B1b). There is also a small investment zone the community set aside for potential tourist camp development, but this is unrelated to the project and not an area claiming emission reductions.

Primary land use(s) in each village	
Domanga	Protected (Hadza), Grazing
Dumbechand	Grazing
Endamaghan	Farming, Grazing
Endanyawish	Grazing
Endesh	Grazing
Eshkesh	Grazing
Jobaj	Farming, Grazing

Mbuganyekundu	Farming, Grazing
Mikocheni	Farming, Grazing
Mongo wa Mono	Protected (Hadza), Grazing
Qangdend	Farming, Grazing
Yaeda Chini	Grazing

Figure B1b. Village land-use plan for the Yaeda-Eyasi area. Provided by UCRT.



B1.2: Yaeda Valley (I & II)

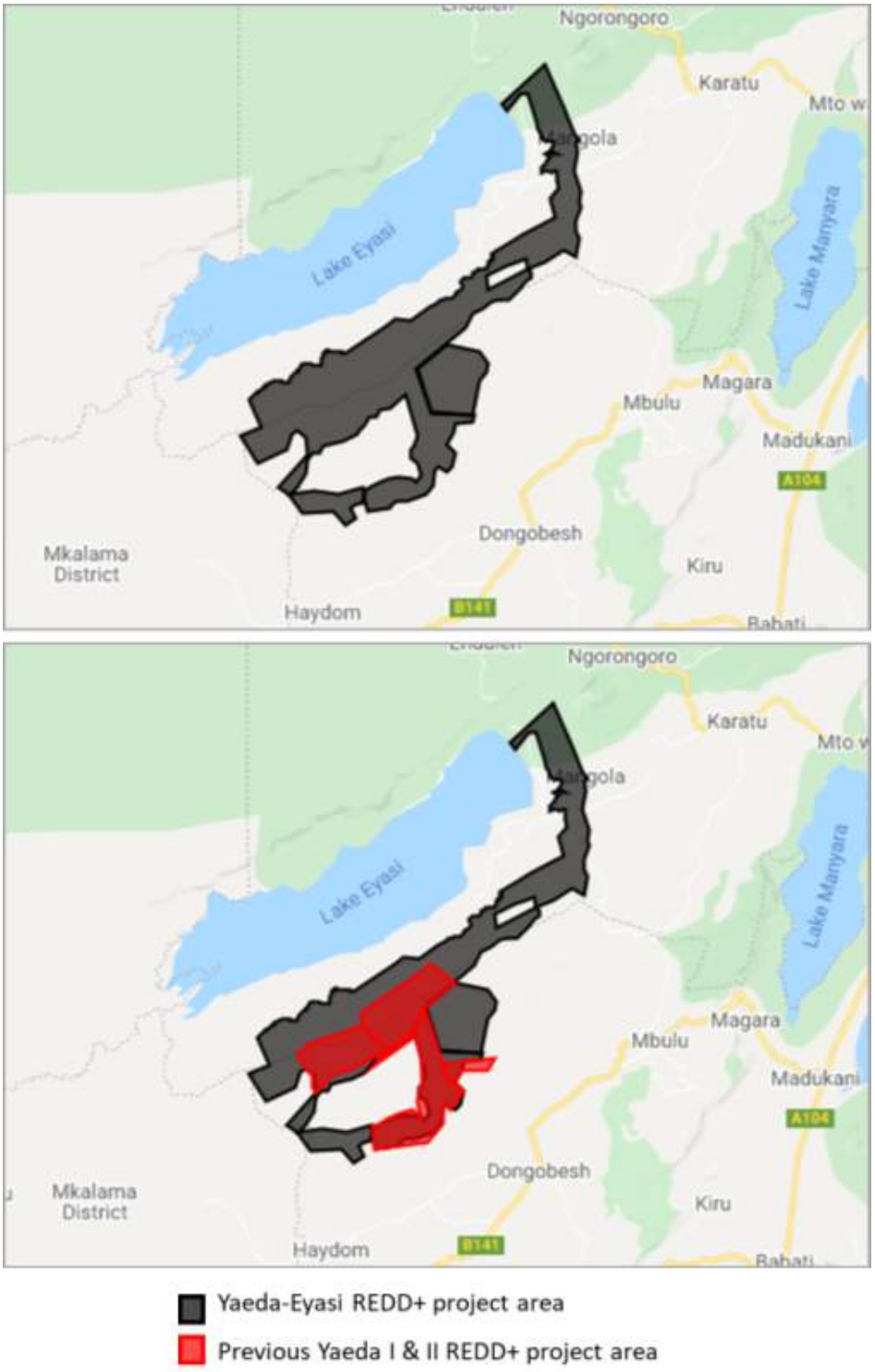
The original Yaeda I REDD project was first introduced in October 2010 and, as is customary, required a two-day meeting with a quorum of the Hadzabe communities of Domanga and Mongo wa Mono (270 people). Yaeda I covered an area of 20,790 ha and was validated in 2012.

Yaeda II was implemented in 2016, expanding to include the pastoral use CCRO of Yaeda Chini village, covering 13,283 ha. Yaeda I & II together cover a total area of 34,073 ha. This extension was validated in 2018 and by 2020 together Yaeda I & II had achieved 105,818 tCO2e climate benefits verified, which totals 84,655 tCO2e after deducting the 20% risk buffer. The project was verified to be on track for achieving the estimated net carbon benefit over the project's 20-year lifetime.

The Yaeda-Eyasi project encapsulates the Yaeda Valley project area and extends it into 10 new villages. The rational for this extension is to increase the climate and livelihood benefits gained from the REDD project. This Yaeda-Eyasi PDD also uses updated baseline and monitoring methodologies, following Plan Vivo approved approaches.

The project boundaries shown below in Figure B1c are for both the current REDD project (Yaeda I & II) and the new project area (Yaeda-Eyasi). The area marked as “Previous Yaeda I & II REDD Project area” is comprised of the red shaded area falling within Domanga, Mongo Wa Mono and Yaeda Chini villages. The project extension is circumscribed by the black shaded area. It includes protected areas for traditional use by the Hadzabe as well as protected areas for pastoralist use (see Annex 6 for CCROs). This project extension encapsulates the current project area and is under the same form of legal protection and dominated by the same habitat type.

Figure B1c. The new Yaeda-Eyasi REDD project area and the existing Yaeda I & II project area



B2: Description of the project area (PV requirement 5.1.1)

B2.1: Yaeda-Eyasi Project Area

The Yaeda-Eyasi project villages occupy 238,752.44ha and the project area within these villages is 110,526.54 ha in size and includes the Yaeda I & II project areas, with an extension of 14 CCROs and land use areas. It includes the Kidero (also spelt Gideru) Hills, an area of woodland and granite outcrops which is the core land use zone for Hadzabe hunting and gathering activities, medicinal plant collection and also contains a wide range of

important cultural and religious sites. The natural habitat within Domanga, Dumbechand, Endamaghan, Endanyawish, Endesh, Eshkesh, Jobaj, Mbuganyekundu, Mikocheni, Mongo wa Mono, Qangdend and Yaeda Chini is dominated by Acacia- Commiphora woodland, specifically *Acacia tortillis*, *Acacia kirkii* (lower areas), *Acacia mellifera*, *Commiphora Spp, Grewia Spp* and *Combretum Spp*, interspersed with areas of savanna grasslands, seasonally flooded *Themeda* grasslands and *Adansonia digitata* (Baobab) woodland (see photos, Annex 8).

Mbulu District and Karatu District contain 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 project area is predominantly Acacia-Commiphora woodland interspersed with inselbergs and bordered to the south by a steep wooded escarpment.

B2.2: Endangered species and wildlife

Several rare and threatened large mammal species have been recorded within the project area. Wild Dog *Lycaon pictus* (IUCN [6] 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 Reserve (GCA) and Ngorongoro Conservation Area to the northwest of the Yaeda Valley. Leopard *Panthera pardus* (IUCN Near Threatened) are resident to the area, and both African 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 CITES [7] and protected under national and international laws. The project area supports seasonal populations of ungulates, including Thomson's Gazelle, White-bearded Gnu (Wildebeest), Impala, Zebra, Giraffe, Cape Eland, Savannah 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 495 species of birds have been recorded within the project 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 encompasses the Yaeda Chini seasonal wetland, which is designated as an Important Bird Area (IBA) [8] by BirdLife International due to the presence of resident globally threatened species. Northwest 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 Ramsar site [9]. The northern boundary of the project borders the Ngorongoro Conservation Area, a UNESCO World Heritage Site and world-famous tourist destination. Bordering this is the Serengeti National Park, a 14,700,000 ha fully protected area and a UNESCO World Heritage Site.

This project will promote the protection of indigenous species of various taxa 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 communities involved are helping to promote and conserve the natural ecosystems and mammal populations on which their way of life depends.

B3: Recent changes in land use and environment conditions

Recent land use change (year 2007 onwards, see technical specifications in Part G) within the project area consists predominantly of conversion from Acacia-Commiphora woodland to a form of shifting agriculture (see photos, Annex 7). This land intrusion, conversion and resulting deforestation are contrary to the Community Customary Rights of Occupancy (CCRO) governing land ownership, village by-laws, the village land use plan, Village Land Act and national laws governing land acquisition and utilization within Tanzania (see Part G2).

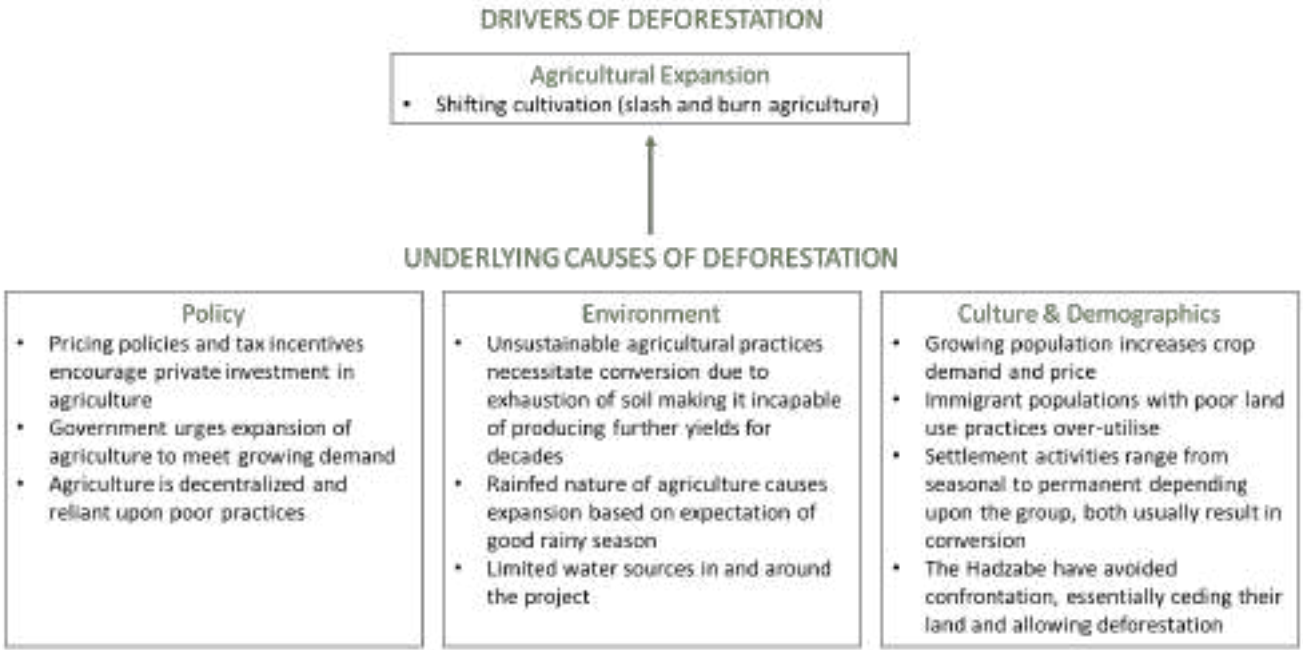
The encroachment originates from inside the villages of Domanga, Dumbechand, Endamaghan, Endanyawish, Endesh, Eshkesh, Jobaj, Mbuganyekundu, Mikocheni, Mongo wa Mono, Qangdend and Yaeda Chini. It is this encroachment compounded by population growth and changing cultural practices that has led to the development of the land use plans, which ensure that each land use requirement has a designated zone and reflects the needs of the different communities living in this landscape.

B4: Drivers of degradation

The low hills, valley edges and rocky ridges that characterise the Acacia-Commiphora woodlands that dominate this landscape, are comprised of shallow quartzite sandy soils. These soils are attractive to shifting agriculturalists that seek to cultivate maize, sunflower and foodbeans. This form of shifting agriculture is the primary driver of deforestation in the region [10] (Figure B4). The native vegetation, dominated by Acacia-Commiphora woodland and baobab trees, is cleared as crops are tried year-on-year. With adequate rainfall, yields on these soils can be relatively good, but the soil is quickly exhausted and after 4-5 years yields decline and in many cases the farmers change crops and pursue other areas of unconverted woodland. Even where potential yields are poorer (such as shallow soiled well-drained areas), cultivators can obtain a short-term return.

The threat posed by this pattern of shifting agriculture is a symptom of both national and local drivers of deforestation. These include some policy developments in the agricultural sector that favour agricultural societies who are often migrating as a result of both poor agricultural methods and unsuitable environmental conditions [10]. Migratory populations are also likely to try unsustainable agriculture due to the lack of local livelihood options, something this project addresses through payments for ecosystem services. Overgrazing does represent a secondary driver of deforestation (Figure B4), however this form of land use is restricted to the end of the dry season, can vary from year to year and degrades grassland. Whilst over-grazing rarely has an impact on mature trees, it can impact seedlings and regrowth and is considered negative to ecosystem health by participating communities.

Figure B4. Drivers of degradation



An understanding of these drivers of deforestation have been incorporated into the development of the land use plans to ensure that each land use requirement, often tribally defined, is designated based on soil quality, grassland quality and specific uses by both the Hadzabe hunter-gatherers and the other cultural groups in the villages.

Part C: Community and Livelihoods Information

C1: Describe the participating communities/groups

The cultural groups interacting most with the project are the Hadzabe and the Datooga. The Hadzabe are one of Tanzania's most distinctive 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. The Datooga are predominantly pastoralists who engage in some subsistence agriculture and hunting. In times of hardship hunting is used to supplement their diet of milk and grains and trading occurs with the Hadzabe for honey. The Datooga are limited to northern Tanzania where their historical range is buffered by the pastoralist Maasai to the north. The Hadza and Datooga have very different societies. The Hadza are egalitarian, whereas there is no clear leadership or status associated with gender or age. The Datooga on the other hand have a rigid, male dominated, and age-based structure to their society. All the project villages and communities have clear stable land tenure via ownership granted through the village land use plans and CCROs.

According to the most recent Tanzanian Census conducted in 2012, the average growth rate in both Mbulu District and Karatu District is 3.1%, which is on par with the national average of 2.9%. The 12 villages involved in the project are populated by multiple tribal groups: Hadzabe, Sukuma, Datooga and Iraqw. These different groups live together without conflict and their differing ecological approach to resource utilisation is reflected in the designated use zones in the land use plan (see Part B1.). The population of the entire administrative areas which encompass the project area and communities is listed by the census (2012) [11] as 61,029 within the Yaeda Chini, Eshkesh, Baray, Mangola and Endamaghan wards (consisting of 2-3 villages each).

Project Villages by Ward	
Ward	**Village(s)**
Yaeda Chini	Yaeda Chini, Mongo wa Mono
Eshkesh	Eshkesh, Domanga
Baray	Dumbechand, Endesh, Jobaj, Mbuganyekundu, Qanqdend
Masieda	Endanyawish
Endamaghan	Endamaghan, Mikocheni

Ward (consists of 2-3 villages)	**Population (number)**			**Average household size**	**Sex Ratio**
	Total	**Male**	**Female**		
Yaeda Chini	5,420	2,791	2,629	5.7	106

Eshkesh	5,859	2,961	2,898	6.2	102
Baray	23,554	12,398	11,156	5.2	111
Masieda	9,929	5,087	4,842	6.5	105
Endamaghan	16,267	8,265	8,002	5.2	103
Total	**61,029**	**31,502**	**29,527**		

C2: Describe the Socio-economic context

Accurate demographic information and socio-economic data on the Hadzabe, Datooga and other cultural groups in the area is scarce and notoriously difficult to obtain.

In general, the Datooga will sell cattle to meet occasional 'needs' for money such as meeting hospital bills or paying school fees. Adults, usually male, who have been forced to leave the area to earn money in towns, provide cash incomes. Due to the transient nature of many pastoralists this is difficult to quantify. Both the Datooga and 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) [12]. Hadzabe have virtually no material assets, including many who don't have permanent homes; however, their critical asset of land and their vast indigenous knowledge allow them to thrive in the right environmental conditions. The Datooga on the other hand often keep cattle as an asset, while some individuals may have cattle in the hundreds most have more modest amounts. These cattle depend directly on the communal grazing resource.

The project through enhancing the protection of the habitat will ensure the Hadzabe and Datooga can continue to utilize their natural riches which they hold central to their culture and identity, meanwhile community revenue will contribute to development infrastructure that will improve quality of life for community members. As communities, they are reliant on stable environment conditions for the majority of their daily needs, in the context of the Hadzabe this is gathering honey and hunting for meat for subsistence. Both the Hadzabe and Datooga way of life only minimally impacts the environment that they occupy as they today continue their historical practices of sustainable natural resource use. Both communities use wood from the forest as a heat and energy source through sustainable offtake deadwood. The projects protection of the habitat in the face of existing threats will ensure this source remains available to the communities. The Hadzabe follow a spiritually based, animist religion that involves and relies on environmental connectivity. Whilst Christianity is the dominant monotheistic choice there is little adherence to religious doctrine due to its irrelevance in the daily lives of these cultural groups.

The only notable communal income currently captured by the Hadzabe in Mongo Wa Mono and Domanga is through the sale of PVCs sold by Carbon Tanzania (Yaeda I & II), with 146,488 PVCs sold to date, and through Dorobo Tours and Safaris (T) Ltd (t/a Dorobo Safaris)., a specialist ecotourism company based in Arusha, which focuses on low-impact walking and camping safaris. Dorobo Safaris established the Dorobo Fund [13], which manages the benefit sharing process set up in collaboration with UCRT. The community shares a percentage of this revenue with the ward and district governments. The amount received by the communities prior to the revenue from Yaeda I varies according to tourism numbers. Income in 2011 was estimated at Tshs 6–7 million (3,500–4,100 USD) to each of the villages and Tshs 14–16 million (8,200–9,400 USD) to the Hadzabe (D. Petersen pers comm.).

The project activities include, but are not limited to, the provision of financial support for land use planning and the employment of walinzi wajadi, or Village Game Scouts (VGS) as they are referred to hereafter. The VGS are critical to the preservation of the protected area designated in the land use plan. This is because they patrol the land and ensure land use designations are being followed on the ground and flag incidents to the village leadership structures for action when they arise. Without the ability to generate revenue through the sale of Plan Vivo Certificates, the communities would be unable to secure and protect the forested project area, neither legally nor practically at the community level. This in turn would likely lead to the deterioration of these ancient societies.

This project, like most community-based natural resource management (CBNRM) initiatives, necessarily involves maintaining the project area boundaries and restricting access to neighbouring populations that have been responsible for the unsustainable natural resource use, in this case deforestation. The Hadzabe, Datooga and other minority groups in the project area are legally empowered to impose such restrictions through the land use plans and Customary Rights of Occupancy (CCRO) certificates (see Part C3 & Annex 6) and must begin to protect their land if they are to survive. The project developers understand the potential hardship that this enforcement may cause for the neighbouring villages and are therefore taking additional measures to mitigate the impact. The key amongst these strategies is the working partnership with UCRT that engages neighbouring communities to develop land use plans and CCROs within their own villages thus mitigating the cycle of unsustainable land use.

C3: Describe land tenure and ownership of carbon rights

Carbon Tanzania is the owner of the project based on the contracts and MOUs – an enforceable agreement with the holder of the statutory, property or contractual right in the land, vegetation or conservation or management process that generates GHG emission reductions or removals which vests project ownership in the project coordinator (see Annex 3).

There is currently no law or policy that specifically mentions the ownership of carbon rights within Tanzania. The current Forest Act (2002), which is the act governing forest utilization in Tanzania, clearly states that; “village or community forest reserves confer all ownership and user rights to the village or designated community”.

The Tanzanian government, with technical and financial assistance from the Royal Government of Norway, has developed a National Framework and Strategy for REDD. This process incorporates a National Climate Change Steering Committee (NCCSC), a National Climate Change Technical Group and a National REDD Taskforce to ‘guide the implementation of climate change activities’. The Ministry of the Environment under the Vice-President's Office is the Designated National Authority (DNA) for carbon projects, and Carbon Tanzania engages regularly, though the mechanism is not fully developed yet. A number of Non-Governmental Organizations (NGOs), including Carbon Tanzania, are currently engaged with the government on issues related to carbon rights, MRV and how REDD might be implemented in Tanzania to meet NDC commitments to the UNFCCC.

Land tenure in Tanzania is governed by the Land Act No. 4 of 1999, and the Village Land Act No. 5 of 1999. These laws classify all land within the boundaries of registered villages as ‘village land,’ which is held by the resident communities under customary rights of occupancy in perpetuity. The Village Land Act designates the village councils and village

assemblies as the statutory management authorities over these village lands. This land tenure framework, in combination with Tanzania's local government structures, provides for the rights and responsibilities of the village councils and village assemblies and provides a strong foundation for participatory management of communal land and resources such as forests.

In 2012 the government recognized the Hadzabe as having special status as hunter-gatherers and that was some of the impetus to granting them ownership of village lands (CCRO) (see Annex 6), including the project area, within Mongo wa Mono and Domanga. This has since been followed by CCROs being issued to villages across the Yeada-Eyasi landscape. This land tenure allows the cultural groups and their village institutions to enter into legal agreements pertaining to the land such as that required for this REDD project. The communal nature of this land tenure is reflected in the supporting documents in which the central government deed the land to community members. For example, the central government deeded the land to four individual Hadzabe community members in Mongo wa Mono and Domanga, two from each village (see land tenure and ownership documentation, Annex 6). These four people are recognized to represent the Hadzabe community as a whole and are the same four signatories to the original contract with Carbon Tanzania, again reflecting community-wide agreement to the partnership.

Disputes most likely to arise relating to land tenure in this area will originate from members of neighbouring villages. While ownership of the project area is not disputed, its status is often ignored by outsiders. In order to mitigate and combat potential land use conflicts, project activities involve the surrounding areas including training on land use planning and the implementation of CCROs in order to address the primary driver of deforestation.

The pastoralist communities within these surrounding villages are often dependent on water resources within the project area, especially during the months of October and November prior to the beginning of the rainy season. Water sources exist within the project area for both people and cattle. Many of these water sources are seasonal and vary from year to year. Identified within the land use planning process are chemchem (springs which are mainly seasonal). Visima Vya Maji (well or borehole, that can be seasonal or at least be unpalatable for people in the dry season) and Chanzo cha maji which can relate to any water source including piped water. The borders drawn into the land use plan purposefully allow for an important water source at the heart of the project area, Hukumako spring to be utilised in a sustainable fashion by both hunter-gatherers and pastoralists, particularly in dry years when alternative sources are lacking. These years may become more frequent as climate change has a greater impact in the region making the protection of the project area and its resources even more important. Protecting the project area as a refuge in difficult times increases the adaptive capacity of the larger community. Other water sources exist in the project area and are shown clearly in the Land Use Plan (Part B1, Annex 5 - Hifhadi ya chanzo cha maji), these are reserved for human and wildlife use upon which the Hadzabe and Datooga are dependent. The water available at other interior springs is minimal and the springs themselves are vulnerable to overuse and would likely disappear as a result of deforestation.

Should it be necessary, the process for conflict resolution within and between villages is outlined below and follows the Village Land Act and thus national land laws. Training on conflict resolution mechanisms has been an important part of UCRTs engagement with Domanga, Dumbechand, Endamaghan, Endanyawish, Endesh, Eshkesh, Jobaj, Mbuganyekundu, Mikocheni, Mongo wa Mono, Qangdend and Yaeda Chini as well as

neighbouring villages, with a focus on how the judicial system works and responsibilities within that system.

1. Village Land Tribunal (Baraza la ardhi la kijiji) is the first step to resolve conflict of any type. This process includes members of the village government and is applicable to any activity contrary to local or national laws. Most conflicts between individuals are resolved at this level.
2. Ward Land Tribunal (Baraza la ardhi la Kata) is the second step for conflicts not settled by the village land tribunal, resolving a number of disputes between individuals from different communities.
3. District Land and Housing Tribunal (Baraza la ardhi na nyumba la wilaya) occurs when steps one and two have failed or when village and ward government representatives or communities feel that external mediation is required.
4. High Court – Land Division (Mahakama kuu Kitengo cha Ardhi) is for serious cases of land loss or misappropriation by internal or external sources.
5. Court of Appeal (Mahakama ya Rufaa) is for appealing decisions made in the high court or decisions that have been referred by the district to the high court.

The community PES agreements (Annex 3) also include a structured system for conflict resolution between the signatories that mirrors step 1 of this procedure.

Part D: Project Interventions & Activities

D1: Summarise the project interventions

This Reducing Emissions from Deforestation and Forest Degradation (REDD) project avoids deforestation while promoting sustainable natural resource use on the part of land users and managers. This REDD project, planned with the participating community members, involves the improvement of land use planning and management to reduce and eventually eliminate the degradation and conversion of Acacia-Commiphora woodland through a process of payments for ecosystem services (PES). Specifically, the project interventions can be summarized thus;

- Apply for approval of land use plan and by-laws from district officials and secure title deed recognizing Hadzabe and the village communities as owners through CCROs
- Develop educational materials for use in the community meetings that promote the ecological and livelihood benefits of conservation
- Employ and train VGS to monitor forest disruption, land conversion and illegal poaching activities in project area
- Report instances of incursion or other disturbances
- Communicate with neighbouring villages about prohibited land use and associated penalties
- Enforce land use plan and by-laws through customary and legal dispute resolution mechanisms as necessary.
- Support UCRT to conduct training on legal rights and process of creating CCROs
- Track monitoring results, carry out reflective participatory community meetings and add to training as necessary.

D2: Summarise the project activities for each intervention

Table D2. Summary of project activities for REDD

Table D2. Summary of Project activities for REDD			
Intervention type	**Project activity**	**Description**	**Target groups**
Reducing Emissions from Deforestation and Forest Degradation (REDD) in the Yaeda-Eyasi area, Northern Tanzania	Improved Land Use Planning and Management through education and empowerment	• To protect traditional Hadzabe/Datooga lifestyles by specifying areas for conservation, agriculture 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	• Hadzabe population • Villages of Domanga, Dumbechand, Endamaghan, Endanyawish, Endesh, Eshkesh, Jobaj, Mbuganyekundu, Mikocheni, Mongo wa Mono, Qangdend and Yaeda Chini • Datooga in Yaeda Chini • Surrounding villages
	Avoided Deforestation through the enforcement of	• To ensure the indigenous Acacia-Commiphora woodland remains owned and managed by Hadzabe /	• Hadzabe population • Villages of Domanga, Dumbechand, Endamaghan,

	district approved village land use plan and by-laws in accordance with national land laws	Datooga and protected for traditional and cultural utilization • To ensure land use plans and CCRO are implemented and adhered to • To ensure national laws governing land management are implemented.	Endanyawish, Endesh, Eshkesh, Jobaj, Mbuganyekundu, Mikocheni, Mongo wa Mono, Qangdend and Yaeda Chini • Datooga in Yaeda Chini • Surrounding villages
	Training in the effective implementation of the Village Land Use Plans (VLUPs) and CCROs to combat the primary driver of deforestation	• To ensure communities are aware of their rights to manage their land • To mitigate leakage by tackling the key underlying cause behind deforestation in and around the project area • To improve the livelihoods of communities in the surrounding village lands by improved land use planning and utilisation	• Agriculturalists in surrounding villages and within project villages with designated areas for agricultural activity

Project activities have been developed based on the current drivers and underlying causes of deforestation in the reference region depicted in Part B4.

D3: Effects of activities on biodiversity and the environment

This project area contains high biodiversity (see Part B2) and by protecting the traditional land of the Hadzabe and Datooga through activities described in Part D2, this project simultaneously improves the habitat of the wildlife species native to the project area and by reducing impacts of illegal poaching protects enigmatic megafauna present in the area. Protection of the woodland area will also maintain biodiversity by preserving habitat for less well-known native taxa including endemic birds. Adherence to the village land use plan will result in protection of the interior springs in the protected area. Specific areas designated for agriculture will prevent incursion into the large area of connected habitat and limit the loss of topsoil that is endemic to the shifting agriculture currently practiced (see Table summary D2).

Part E: Community Participation

E1: Participatory project design

This project is a community-led 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 and Datooga who hold indigenous knowledge about the project's forested area and biodiversity, reflected by the fact they have been using the area sustainably for >500 years. Domanga, Dumbechand, Endamaghan, Endanyawish, Endesh, Eshkesh, Jobaj, Mbuganyekundu, Mikocheni, Mongo wa Mono, Qangdend and Yaeda Chini 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 (see Annexes 6 & 7). In line with the local nature of this project, the existing village structures 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 (see image Annex 7). This assembly meets on a bi-monthly basis and anyone is welcomed to place an item on the agenda, including concerns relevant to this project. The ward, comprised of elected village leaders, will attend 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.

The Village Land Act and CCRO.

Tanzania has relatively favorable laws that recognize the rights of communities to own or control their customary land. Yet in practice, communities still struggle to gain secure rights over their land and remain at risk of losing it. This is particularly true for hunter-gatherer and pastoralist communities in northern Tanzania, who are vulnerable to land loss and expropriation due to the high value of their land for tourism, agriculture and other purposes. Hunter-gatherer groups such as the Hadzabe, and pastoralists such as the Datooga (Barabaig) have progressively been pushed out of their customary lands and territories into increasingly marginal lands.

Tanzania's Village Land Act recognizes customary lands ('village lands') and the rights of communities to manage those through locally elected Village Councils and Village Assemblies. It also provides a mechanism, known as a 'Certificate of Customary Right of Occupancy' (CCRO), which is an even stronger legal tool for strengthening community land rights and collective lands. The CCRO formalizes and documents customary rights within village land and can be used to strengthen the external legal recognition and boundaries of communal areas such as grazing land or forests. It is based on a village-wide land use plan and is governed by village-enforced by-laws. A CCRO is a particularly useful tool for women and other minority groups, such as pastoralists and hunter-gatherers

E2: Community-led implementation

The Yaeda-Eyasi project was introduced in October 2020 and required two days of meetings with each village. The project coordinator explained the concepts and benefits of the project to the community (in Swahili which was then translated into Hadzane). At all stages of project development, Carbon Tanzania's role within project has been directly communicated to the villages and Hadzabe communities through informal training practices and meetings and through community and village leadership and stakeholders. Project activities related to patrolling the project area and resolving conflicts with those who do not adhere to the land use plan as well as proposals for mitigating leakage were developed by the village governments, in meetings with CT present.

Land use planning and issuance of land ownership

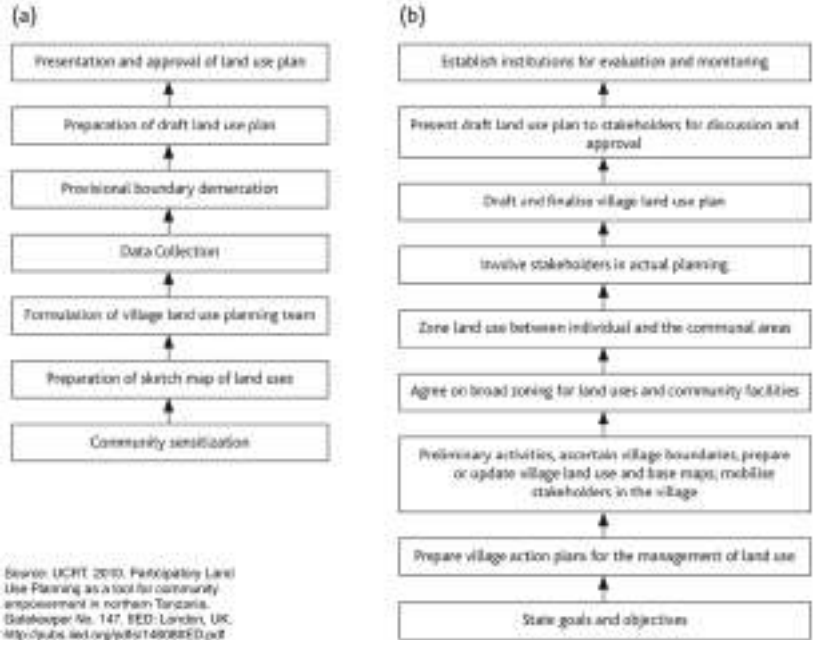
The Hadzabe and village governments in Domanga, Dumbechand, Endamaghan, Endanyawish, Endesh, Eshkesh, Jobaj, Mbuganyekundu, Mikocheni, Mongo wa Mono, Qangdend and Yaeda Chini have been sensitized to the importance of understanding the land law and rights in relation to the Village Land Act. This process of information dissemination and training has led to the understanding of 'how' these communities can protect their land. There has been no need to address the issue of 'why' the land must be protected due to the connectivity and dependence that these communities have to their land, both culturally and ecologically.

Prior to Carbon Tanzania's involvement with the participating communities, each village developed a land use plan with UCRT. UCRT started working with Yaeda Chini (as the ward government centre), Mongo Wa Mono and Domanga in 2002 with the aim of securing land tenure for the Hadzabe. Since then, UCRT began working with Dumbechand, Endamaghan, Endanyawish, Endesh, Eshkesh, Jobaj, Mbuganyekundu, Mikocheni and Qangdend with the same aim of securing land tenure for the communities. This process includes the following legal steps:

1. The villages created a land use plan with assistance from UCRT.
2. The village council wrote by-laws on land protection and enforcement.
3. The district council approved the land use plan (see Annex 5) and by-laws (see Annex 6) thereby permitting enforcement.
4. The village council applies for a CCRO from the district council.

The land use planning process is outlined in policy and implemented with UCRT in a participatory manner, starting from the sub-village level, encouraging engagement from the broadest and most diverse possible coalition of village members. This allows the Land Use Plan to respond to local needs and to rationalise resource use rights amongst competing local groups, such as farmers and livestock keepers. By using participatory land use planning, it is possible to balance the need to secure local tenure with the need for local management practices. This serves to strengthen the voice of local groups in the face of various pressures. The community leads the entire process, from zoning, to working with experts on the ground to complete georeferenced mapping. The plans also incorporate future needs, especially for agriculture, going as far as to predict population growth and food requirements. This ensures that food insecurity will not result from the planning process, as enough land has been set aside for future agricultural expansion. Once the plan has been approved by the highly representative village government it can begin to make its way to becoming legal and recognized by the government at all jurisdictions.

FORMAL STEPS IN THE LAND USE PLANNING PROCESS IN TANZANIA AS DESCRIBED BY (A) 1998 NATIONAL LAND USE PLANNING COMMISSION GUIDELINES; AND (B) THE LAND USE PLANNING ACT OF 2007.



Source: UCRT, 2010. Participatory Land Use Planning as a tool for community empowerment in northern Tanzania. Gatekeeper No. 147. IIED: London, UK. http://pubs.iied.org/pdfs/14908IED.pdf

In October 2011, the Hadzabe communities of Domanga and Mongo Wa Mono were issued a Community Customary Right of Occupancy (CCRO) (a title for the lands on which this project is based, see Annex 6), giving the communities ownership of the land. This land deed states in section (ii) that the land is protected for use by Hadzabe to conduct their 'natural way of life' (Annex 6). In July 2012, the village government of Yaeda Chini was issued with a CCRO giving the elected village government ownership of the land (Annex 6). This land deed states in section (ii) that the land is protected for pastoralists (in this context predominantly Datooga) to use the land for grazing only. Respective village governments store all land use plans and the corresponding CCROs, and the originals are held at the national land office in Moshi, Kilimanjaro Region.

In November 2016, CCRO's were issued to the Hadzabe communities and village governments in Endamaghan, Endesh, Eshkesh, Jobaj, Mbuganyekundu, Mikocheni, and Qangdend. These land deeds state that, for those issued to the Hadzabe, the land is protected for use by the Hadzabe to conduct their 'natural way of life' and, for those issued to village governments, the land is protected for pastoralists (in this context predominantly Datooga) to use the land for grazing only. Dumbechand and Endanyawish village governments have completed legal Village Land Use Plans, giving them full rights and enforcement over the land, while CCROs are in the process of being secured. All other villages comprising the project have by now completed legal Village Land Use Plans and secured CCRO's.

Whilst the communities had the motivation to implement the land use plans, there were barriers to their effective implementation prior to the project, including a lack of finance for employing participants to patrol village lands and limited empowerment of the Hadzabe to protect their land. After the Land Use Plans and CCROs were issued, Carbon Tanzania met with the communities regarding coordinating the monitoring and enforcement of the land use plans that had already been planned by the communities – with the assistance of UCRT. This project therefore addresses the barriers to implementation of the land use plans previously

experienced by the communities by providing financial support and a monitoring framework to enable community participants to enforce the land use plans.

Respective village governments store hard copies of all land use plans and the corresponding CCROs in map and written versions in their village government offices, while the originals are held at the national land office in Moshi, Kilimanjaro Region. Furthermore, the district government, UCRT, and Carbon Tanzania all maintain a mix of soft and hard copies of the documents stored across multiple offices and computer networks.

E3: Community-level project governance

Community consultations will continue to take place throughout the lifetime of the project between all key stakeholders and target groups, including the district, ward and village governments, Carbon Tanzania, UCRT, the Hadzabe, participating villages and the surrounding communities. To ensure an ongoing iterative process throughout the implementation of the project, the contract stipulates that all community members are to be provided with the opportunity to participate in the project and that Carbon Tanzania must provide reports every six months on the development of the project through the relevant committees and meetings. These participatory biannual meetings are also used by Carbon Tanzania to share and discuss any project monitoring results.

This contract serves as the community sale (PES) agreement for this project and includes additional stipulations to which the parties have agreed (Annex 3). The PES agreement was taken to the village governments and the Hadzabe communities, who had the opportunity to review, discuss and revise its contents with legal guidance from UCRT and district government. Meetings were held with the communities, in which no one was excluded on any discriminatory basis, to ensure they have a full and accurate understanding of project and its implications. Each community has the right to give or withhold their consent on the proposed project. The communities gave free, prior informed consent (FPIC) in two sets of meetings and then later again by signing the contract.

For further information on organizational structure, see organizational diagram (Section I, MoU between CT and UCRT (Annex 6) and list of key people involved (Annex 1). Table E3 below further outlines the roles and activities of the participating groups.

Table E3. Project participants

Table E3. Project participants			
Key Function	**Organization / group(s) involved**	**Type of group / organization and legal status**	**Brief description of activities**
Project administration	Carbon Tanzania	Project Developer	• Administrative overheads • Reinvestment • Financial planning • Engagement with government of Tanzania • Market research • Project prospecting • Administer PES funds

Project technical operations	Carbon Tanzania	Project Coordinator	• Ensure project implementation in accordance with Plan Vivo, community sale agreements and PDD • Enter into PES agreements • Enter into sales contracts for Plan Vivo Certificates • 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 • 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	• 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	Communities of Domanga, Dumbechand, Endamaghan, Endanyawish, Endesh, Eshkesh, Jobaj, Mbuganyekundu, Mikocheni, Mongo wa Mono, Qangdend and Yaeda Chini	Communities recognized by central government as holding land tenure rights in project area	• Develop and enforce land use plan and village by-laws

Part F: Ecosystem Services & Other Project Benefits

F1: Carbon benefits

Table F1 summarises the projected net carbon benefit attributable to this REDD project and the carbon eligible for crediting. The projected carbon benefits are based on a conservative estimate that the project will be successful in reducing deforestation in the project areas by 90% compared to the baseline scenario, thus accounting for leakage. The non-permanence buffer has been set at 20%, as shown below and discussed in detail in Part G of the PDD.

Table F1. Projected net carbon benefit

Table F1. Projected net carbon benefit						
Project	Intervention type/ Technical specification	Project start date	Baseline Carbon emissions (without project scenario) over 20-year crediting period	Carbon benefit eligible for crediting deducting 10% leakage buffer	Carbon benefit attributable to project with 20% risk buffer deducted	Annual carbon benefits of project eligible for crediting
			(tCO2e)	(tCO2e)	(tCO2e)	(tCO2e)
Yaeda-Eyasi	Reduced Deforestation	2020	4,924,547	4,432,092	3,447,183	172,359

See Part G for data sources.

Annual issuance of PVCs is based on annual activity-based monitoring results and validated at the start of the project and verified every 5 years (see G7 for details).

F2: Livelihoods benefits

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 forest carbon offsets, there are significant, additional livelihood impacts.. As a population whose livelihood depends on the land, the Hadza will benefit from the improved habitat resulting from project activities. Preventing deforestation, thereby preserving the natural habitat on which the Hadza depend, will result in a sustained supply of food and other essential items. For the Datooga, the project's protection of habitat is a direct livelihood and socioeconomic benefit as their pastoralist lifestyle depends on grazing being available to their cattle. 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 communities and wildlife.

Surrounding the project area are several communities who employ unsustainable land use practices such as shifting agriculture driven by migration [10]. These practices, which are taking place on poor soils, have produced a cycle of low crop yields, necessitating increased land incursion resulting in mosaic deforestation.

By preserving the area defined as protected area for utilization for cultural livelihoods by Hadzabe, this project enables them to maintain their unique lifestyle. As previously mentioned, a locally based ecotourism company has, for the last fifteen years, operated low impact safaris that highlight the Hadzabe culture and way of life. The community benefits from revenue sharing as a result of this tourism but without protection of their land, this revenue stream would reduce and eventually disappear.

A potential negative livelihood impact of the project is decreased food security for the surrounding agriculturalist communities. However, by making the pastoralist and Hadzabe designated areas financially sustainable to the greater community, the motivation for agricultural expansion into these areas is reduced. Also, a clear grievance process and UCRT acting as an intermediary between CT and the communities are in place to ensure negative livelihood impacts can be addressed and mitigated.

In the absence of the project, baseline socioeconomic conditions would continue. The existing governance structures would struggle to perform as they would continue to be significantly underfunded despite being expected to perform a wide range of duties critical to the socioeconomic development of their communities. Underfunded governance mechanisms are also highly susceptible to corruption-based incentive structures, this can significantly reduce the function of community-wide participatory decision making and benefit sharing. By engaging directly, interacting transparently, and providing resources to the local existing governance structures, the project serves to strengthen governance and decision making. This has positive effects for the project's environmental aims but also across the community's socioeconomic development.

Broader external factors paired with local lack of functioning governance and enforcement can lead in the Tanzanian context to unlawful economic migration onto community lands from foreign population groups and land grabs by urban elite. This can have significant effects on the landscape and the people in it. New peoples bring new cultural, religious, and ethnic traditions which can influence and degrade local indigenous practice. These populations can also through coercion, or political means, attempt to exert influence on the land and change its traditional land use. As communities such as the Hadza and Datoooga have cultures deeply rooted to specific species and sites within their land, the loss of such poses a direct threat to their cultures. By strengthening governance and enabling enforcement, thus preventing illegal land theft and abuse of community rights, the project mitigates these risks. The project is deeply committed to the centring of the local communities cultural, religious, and ethnic identities in all aspects of the project.

Inequity in age and gender manifest in the landscape through limited access to education for youth, and women's underrepresented influence on decision making around family planning and expenditure. The project will make significant revenue available to communities for education and education infrastructure. Investment in education for youth and especially women constituently produce improved family planning outcomes, the benefits of which are felt by women who are primarily responsible for childcare. Educated youth and women also experience the benefit of education which leads to improved lifetime livelihood outcomes. The demographic change towards population stability associated with family planning means youth may also benefit from more per capita investment from the elders in their society. The projects participatory governance structures for revenue decisions also ensure women and youth have a voice in community financial matters. Furthermore, the project's work to support the Hadzabe and share their narrative has important global implications as they are an ancient human society that has no internal hierarchy or power structures based around gender or age.

Table F2. Livelihood benefits

Table F2. Livelihood benefits								
	Food and agricultural production	**Financial assets and income**	**Environ-mental services (water, soil, etc.)**	**Energy**	**Timber & non-timber forest products (incl. forest food)**	**Land & tenure security**	**Use-rights to natural resources**	**Social and cultural assets**
Hadzabe	Hadzabe are almost solely dependent on forest foods such as roots, berries, tubers and forest dependent wildlife therefore forest protection directly benefits Hadzabe food access.	The Hadzabe do not farm or keep cattle so revenue is generated through some tourism activities and the ad-hoc sale of honey. Sale of PVCs generates income. The project protects habitat which is critical for honey production and tourism.	The Hadzabe are highly dependent on ecosystem services, so the community benefit from sustained food production due to preserved water access and soil quality.	Hadzabe depend on forest wood as cooking fuel and therefore forest preservation through the project is key.	Hadzabe almost solely dependent on forest foods such as roots, berries, tubers and forest dependent wildlife which the project protects. This is also true for wild medicine.	Land tenure is legally binding through village by-laws and implementation of CCROs which is directly supported by the project.	User rights for hunting and gathering are legally binding through village by-laws and implementation of CCROs, governance structures are strengthened by the project.	The project protects ancestral lands and cultural holy sites While improved governance reduces likelihood of land disputes.
Datooga	Datooga are highly dependent on grazing resources therefore forest protection directly benefits Datooga food access.	Cattle health from improved and project protected grazing does represent a financial asset. Sale of PVCs is complementary to grazing activities.	The Datooga are dependent on ecosystem services to sustain cattle health, so they will from sustained food production due to preserved water access and soil quality.	Datooga depend on forest wood as cooking fuel and therefore forest preservation through the project is key.	Datooga are highly dependent on grazing resources which are protected by the project. This is also true for wild medicine.	Land tenure is legally binding through village by-laws and implementation of CCROs which is directly supported by the project.	User rights for grazing are legally binding through village by-laws and implementation of CCROs, governance structures are strengthened by the project.	The project protects ancestral lands and cultural holy sites While improved governance reduces likelihood of land disputes.

F3: Ecosystem and biodiversity benefits

This project will promote the protection of indigenous species according to the national laws of Tanzania and international conventions (Ramsar, CITES, UNESCO, see Part B2) 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 cultural groups involved are helping to promote and conserve the natural ecosystems and mammal populations on which their way of life depends.

By protecting the traditional land of the Hadzabe and village communities through patrolling, the project simultaneously improves the habitat of the wildlife species native to the project area by preventing poaching and improving grazing. Protection of the woodland area will also maintain biodiversity by preserving habitat for the diverse native fauna and flora species typical Acacia-Commiphora woodland. Adherence to the village land use plan will result in protection of the interior springs in the protected area improving water resources for both wildlife and people. Areas designated for agriculturalists will prevent incursion and limit the loss of topsoil that is characteristic of the shifting agriculture currently practiced.

Table F3. Ecosystem impacts

Table F3. Ecosystem Impacts				
Intervention type	**Biodiversity Impacts**	**Water/watershed impacts**	**Soil productivity/conservation impacts**	**Other impacts (Cultural)**
Improved land use planning which includes areas for wildlife protection, water conservation and sustainable grazing	Anti-poaching protects large mammal species a critical resource for Hadzabe	Land use planning protects water sources specifically for hunter- gatherers and pastoralists, interior springs protected for wildlife and hunter-gatherers	Improved grazing is beneficial for wildlife and pastoralist communities	Anti-poaching and protection of water sources increases availability of medium/large mammals, critical for hunter-gatherer culture. Protection of water sources is essential to the wildlife and culturally important to communities living in the area.
	Preservation of habitat for wildlife and fauna	Preservation of catchment system in project area	Soil fertility preserved	Availability of food for hunter-gatherers preserved and grazing for pastoralists
	Diverse fauna are essential seed disperses and pollinators in these environments	Preservation of catchment system in project area	Topsoil is not lost due to shifting agriculture	Likelihood of land disputes arising from protection of project area reduces

Part G: Technical Specifications

G1: Project intervention and activities

This project supports two main interventions; Facilitate participatory land use planning to ensure communities own their land and resources through CCROs and land use plans, and to ensure the village government and communities are able to enforce the associated village by-laws and enforce the land use plan. The specific objectives to achieve each intervention are outlined below in Table G1.

Table G1. Improved land use planning and management activities				
Type of Activity	**Objectives**	**Inputs**	**Brief Description**	**Target Groups**
Implementation of land use plans and management through education and empowerment	To protect traditional Hadzabe and Datooga lifestyle by managing areas specified for conservation, agricultural and pastoralist activities To educate communities and village governments on the ecological and livelihood benefits of conservation To mitigate leakage by tackling the key underlying cause behind deforestation in and around the project area	Materials for tenure securing process, educational materials, community time and expertise to establish boundaries and maps. Finance to support these processes.	Apply for approval of land use plan and by-laws from district officials and secure title deed recognizing the Hadzabe and the villages of Domanga, Dumbechand, Endamaghan, Endanyawish, Endesh, Eshkesh, Jobaj, Mbuganyekundu, Mikocheni, Mongo wa Mono, Qangdend and Yaeda Chini as owners Develop educational materials for use in schools and community meetings that promote the ecological and livelihood benefits of conservation	Hadza community Village communities and government of Domanga, Dumbechand, Endamaghan, Endanyawish, Endesh, Eshkesh, Jobaj, Mbuganyekundu, Mikocheni, Mongo wa Mono, Qangdend and Yaeda Chini
Enforcement of district approved village land use plan and by-laws in accordance with national land laws	To ensure the indigenous Acacia-Commiphora woodland remains owned and managed by Hadzabe and Datooga and protected for traditional and cultural utilisation 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	Time of community members to monitor and enforce. Finance to support all monitoring and enforcement. Existing land use plan and by-laws.	Employ and train VGS to monitor forest disruption, land conversion and illegal poaching activities in project area Report instances of incursion or other disturbances Communicate with neighbouring villages about prohibited land use and associated penalties Enforce land use plan and by-laws through customary and legal dispute resolution mechanisms as necessary	Hadza community Village communities and government of Domanga, Dumbechand, Endamaghan, Endanyawish, Endesh, Eshkesh, Jobaj, Mbuganyekundu, Mikocheni, Mongo wa Mono, Qangdend and Yaeda Chini

Table G1. Improved land use planning and management activities

G2: Additionality and environmental integrity

The following natural resource management laws apply to the project activities:

- The Forest Act of 2002

  At present the Act does not mention the terms "Carbon Rights" or "Carbon Trading", or indeed any other phrase concerning the leveraging of finance through non-extractive forest management activities. Tanzania's National Forest Policy is currently being revised and any subsequent legislation that either amends or repeals the Forest Act 2002 may affect the management of the forest area within the project area. However, the following policy statements illustrate that future developments in respect to carbon rights are clearly integrated into the government's policy on forest management.

  > Policy statement (5): To enable sustainable management of forests on village lands, those forests that communities wish to retain will be reserved and accorded clear ownership, user rights and incentives under REDD.
  >
  > Policy statement (7): Private and community forestry including management of existing natural forests, afforestation and reforestation initiatives with carbon trade opportunities and other benefits will be promoted and supported.

- The Village Land Act 1999

  The legal tenure over the project area will be conferred on the target community through the Village Land Act, which allows traditional communities to apply for Customary Rights of Occupancy over areas used to support their traditional lifestyles. In this way the area under protection will be defined by this land deed, and the obligations of land and resource management outlined under this same law.

- The Environmental Management Act 2004

  This law governs and regulates all activities that may have significant impacts on the environment. It requires any project that will impact the environment to be subject to an environmental impact assessment process, and further defines the kinds of projects that qualify for this scrutiny. The management and protection of natural habitat by local communities is not subject to these regulations, but the Act does give the national regulatory body (in this case The National Environment Management Council (NEMC)) powers to monitor the impact of any intervention that may affect the environment.

- The Local Government Authorities Act 1982

  This law governs the way that local government interacts with outside bodies, such as investors and not-for-profit organizations. It outlines codes of practice for administering and implementing projects within villages and governs the way that responsibilities and revenue are shared in accordance with the project activities. Any habitat protection activities that are tied to payments for ecosystem services (i.e. a carbon finance project for woodland conservation such as this) are governed by this law in terms of village participation. This ensures that the mechanisms that are put in place are in agreement with Tanzanian law at both a national and local level, rather than imposed by an outside body. It is recognized that sustainability is greatly

increased in the scenario where local government is the main stakeholder in the implementing and governing of project activities.

Additionality
The project does not owe its existence to legislative decrees or economically viable land use initiatives. Though the project area was set aside in the village land use plans for the traditional land use of the pastoralist Datooga people and hunter-gatherer Hadzabe people, the land use plan alone is not sufficient to prevent deforestation in the area. This is reflected in the recorded deforestation that continues in spite of land use planning and village level law enforcement.

In the absence of carbon finance, the project area would not be adequately protected due to both cultural and economic factors. Given pastoralist and hunter-gatherer lifestyles, which involve moving seasonally in search of grazing and leaves agriculturalists with the impression that the land is open for their use, it is likely that the project area would be poorly defended or a point of conflict without the efforts of the REDD project to organize and pay the village governments to patrol and enforce the land use plan. Additionally, the project will provide funds from carbon finance to support the ward and district governments which builds the political capital needed to support efforts to more effectively implement the land use plan.

There is no evidence that the project area has been negatively altered prior to the start of the project for the purpose of claiming payments for ecosystem services, drivers of deforestation are based on poor land use planning both locally and regionally, there are no land use schemes or activities in place that are negatively impacting the ecological integrity of the area outside of the aims and objectives of this project. Carbon Tanzania's project partners have been working in the Yaeda-Eyasi area on land use planning prior to the beginning of this project and continue to work within the area and beyond as part of a joint strategy to improve and increase land use planning and resource management in neighbouring villages. There are no PES-based projects in the area or the region, and Tanzania does not have a national GHG emission scheme or formal nested agreement on REDD. The Yaeda-Eyasi REDD project does not seek to generate any other form of environmental or social credit. Double counting under national emission trading programs will be avoided as the developer maintains contact with all relevant local authorities and national coordinators though Tanzania yet has no national emission trading program or policy.

G3: Project period

The crediting period for this project is 20 years (2021-2040). Payments for ecosystem services to participating communities will be structured over the 20-year crediting period as per the community sale agreement. Monitoring and reporting will be carried out during this period, with a project verification at least once every five years.

Annual climate benefits, for each year of the five-year monitoring period, will be estimated at the start the project period and verified at the end of the monitoring period. Estimates of baseline and project scenario emissions will be revised at the end of each five-year monitoring period, so a five-year quantification period that is renewable provides the potential to generate a more accurate estimate of the long-term impacts of forest protection than would be possible with a longer quantification period.

G4: Baseline scenario

Current conditions and trends in the project area

Recent land use change within the project area consists predominantly of conversion from Acacia- Commiphora woodland to a form of shifting 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 [12] [14] [15]. They also serve as a direct threat to the communities that live in the area and their livelihoods. The encroachment originates from designated agricultural areas inside the participating village lands [16]. In the absence of project interventions these trends are most likely to continue over the quantification period, predominantly due to continued population growth and decreasing land availability throughout Tanzania.

Carbon Pools

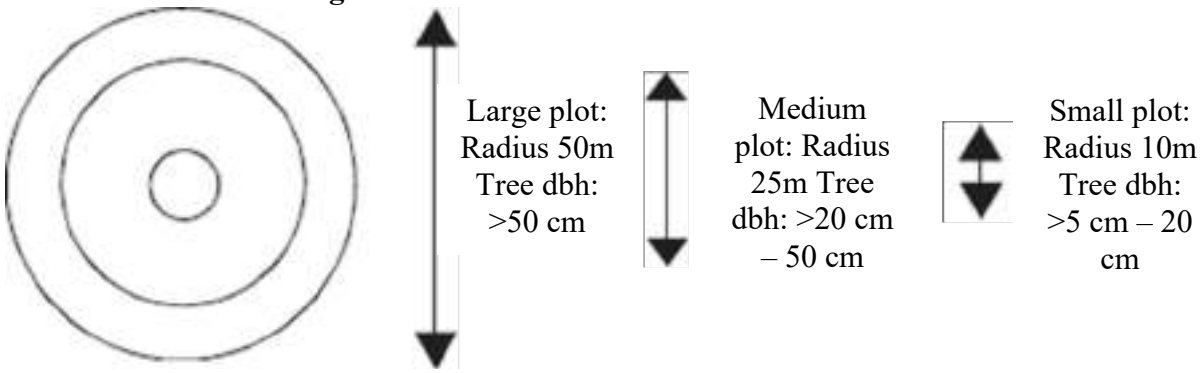
Aboveground biomass and belowground biomass were the only carbon pools considered at this stage when calculating the likely carbon benefits resulting from project interventions. Belowground biomass is assumed to be completely lost as the deforested land becomes permanent agricultural land and has no potential for regeneration, causing complete loss of above- and below-ground biomass. 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**. Whilst soil carbon was not included, 11 soil samples were taken and analysed, based on the fact that deforestation results in complete removal of both above and below ground biomass.

Baseline methodology

The initial carbon stock for each carbon pool was quantified by calculating the existing carbon stocks in sample plots in the original Yaeda I project area, using the Winrock aboveground biomass (AGB) methodology [17]. In preparation for carrying out the surveys, the project consulted with statistician Dr. 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 tracks in the project area were mapped using a Garmin GPS and downloaded using Mapsource [18]. Transect lines 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.

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 below.

Three-nest circular design



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.

Species specific allometric equations, obtained from the Kasigau Corridor REDD (last verified under VCS/CCB in 2020) project (due mainly to the similarity in species composition between the two areas) in Kenya, were used to calculate the tonnes of carbon per tree based on the dbh from the baseline. 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.

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 rivae	$y = 0.5053x^{2.1106}$
Lannea	$y = 0.5898x^{2.0566}$

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

Generic Allometric Equations

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

Whilst the original sample plots were randomly chosen from the Yaeda I project area, which is representative of the complete project area due to the homogenous nature of the forest. According to Global Forest Watch all plots from Yaeda I are in the terrestrial ecoregion "Southern Acacia-Commiphora bushland and thickets" likewise the entire Yaeda-Eyasi is within the "Southern Acacia-Commiphora bushland and thickets" terrestrial ecoregion. All plots and representative non-forest areas that did not meet the forest criteria defined by this

project (see section G4) were removed to provide a more accurate initial carbon stock estimate for forest within the project area (see G4b). The result of this is a sample size of 40 plots (shown in Figure G4a).

Figure G4a. Map of biomass survey plot location in the project area

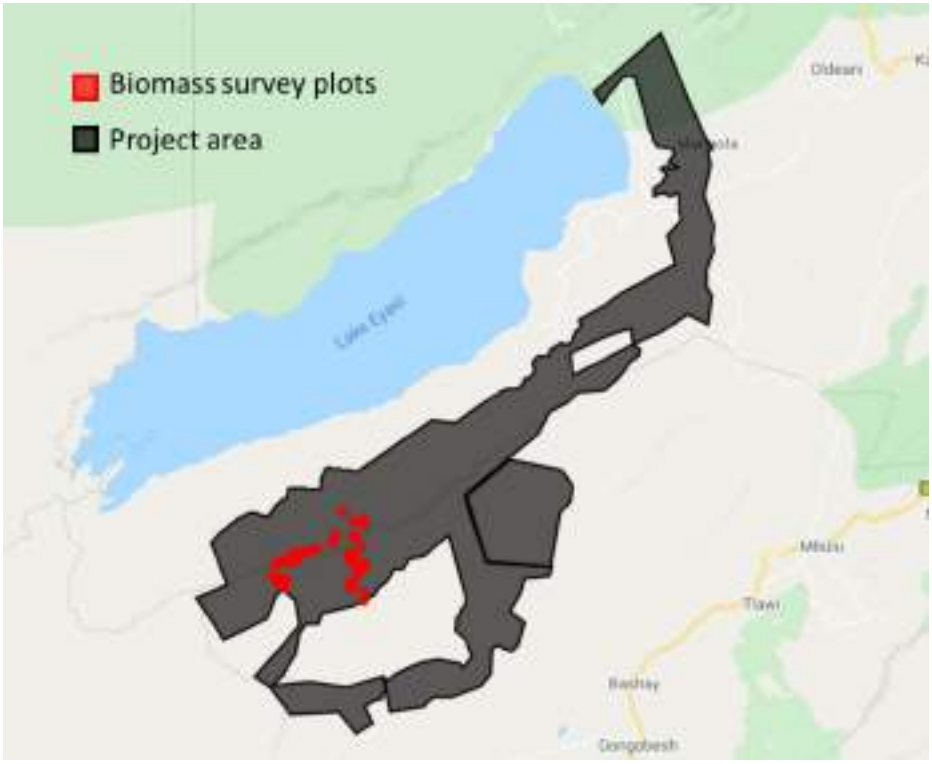
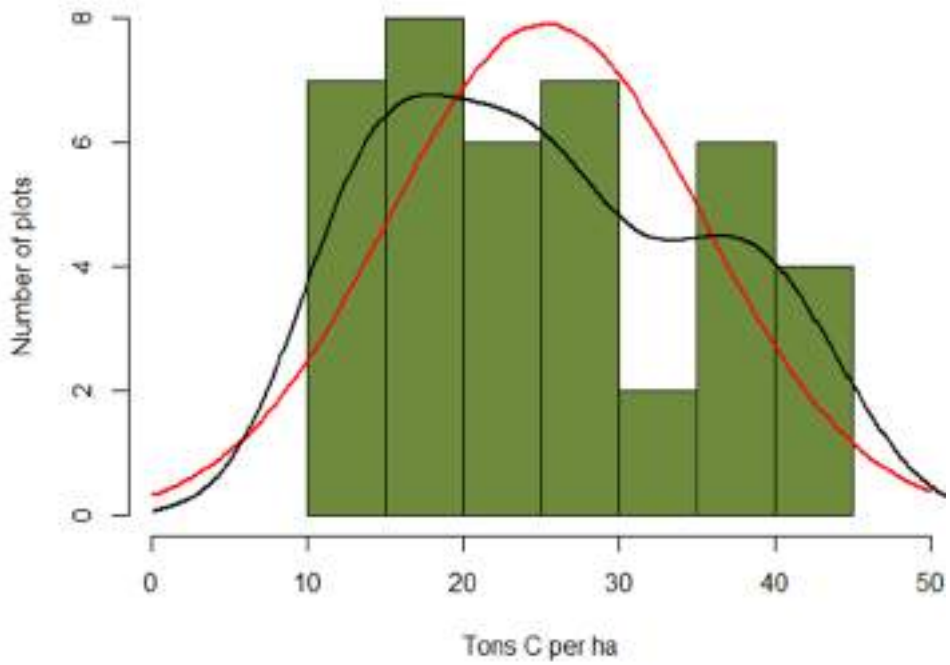


Figure G4b. Histogram chart of sampled carbon stocks



Model-based clustering revealed that there are not distinct habitat 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 25.32±3.12tC/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 Forestry [19] of 0.40. This ratio, applied to the results of the AGB survey, produced a BGB carbon content of 10.13 tC/ha.

The biomass calculations are as shown below:

Mean above-ground biomass (AGB) = 25.32tC/ha, Standard deviation (sd) of AGB = 10.08 tC/ha, n = 40
95% confidence interval = qnorm(0.975) *sd/sqrt(n) = 3.12 tC/ha
Mean below-ground biomass (BGB) = AGB*0.4 = 10.13 tC/ha
Total biomass = AGB+BGB = 35.44 tC/ha

Baseline Emissions

The changes in carbon stocks for each carbon pool under baseline conditions, i.e. without project, were identified based on the historical deforestation rate in the reference region. The forest area was classified using a supervised classification of remotely-sensed data available on Google Earth Engine (GEE) for four 12-month periods between 2007 and 2020, and the forest change was then calculated in R studio using the GEE classification [20] [21]. This rate of change was then applied to the current carbon stocks to understand baseline conditions.

Reference Region for Deforestation

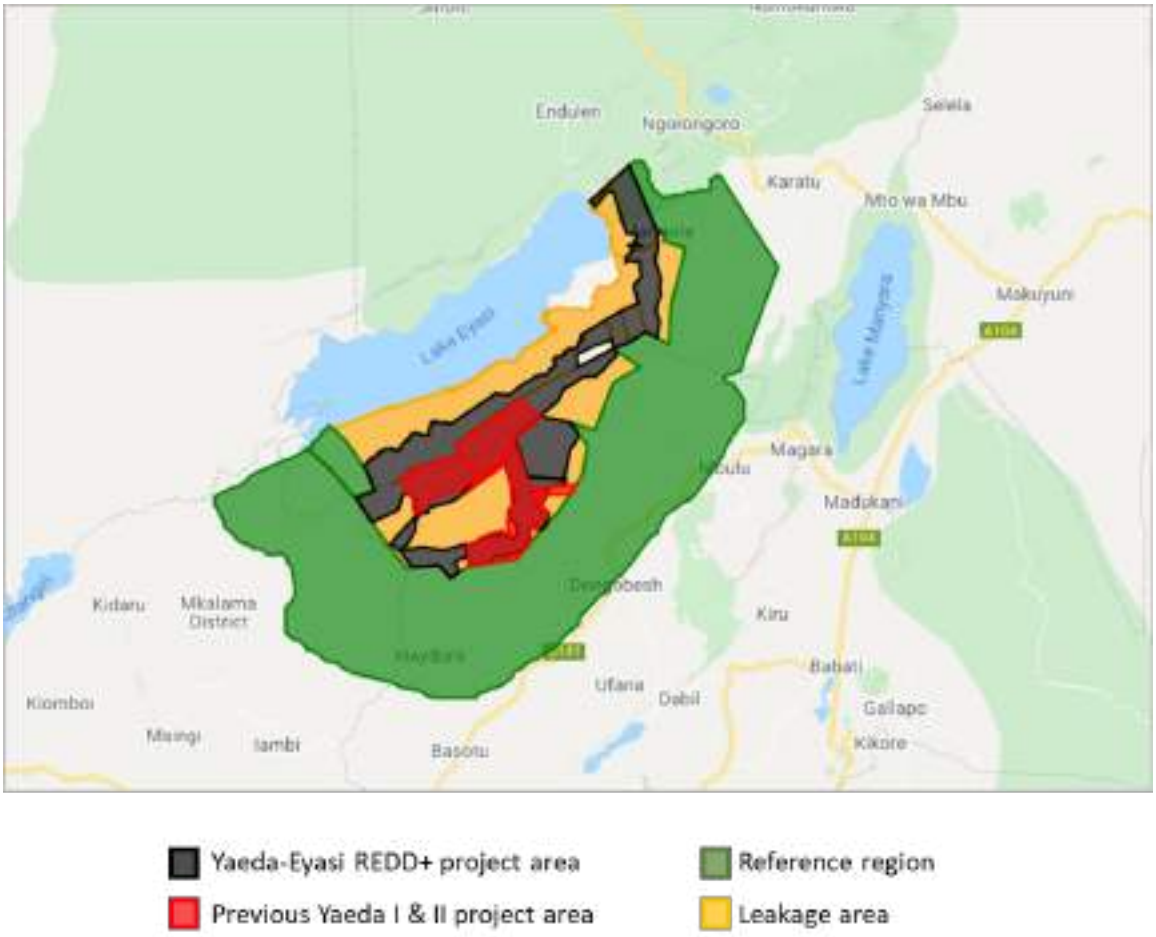
The Reference Region for Deforestation (RRD) starts at the northern point of the project area which borders the Ngorogoro Conservation Area (NCA). The RRD initially follows the NCA boundary, then departs to follow the edge of private farms at Oldeani until it meets the NCA boundary again, north of Karatu. The RRD follows the NCA boundary until it meets The Gregory Rift (referred to after this point as 'the rift'), north of Selela. The RRD then follows the rift south (north of Mto wa Mbu town and along the west boundary of Manyara National Park) to Marang Forest Reserve. The RRD follows the boundary of Marang Forest Reserve until it meets the rift again at Magara. The RRD continues south along the rift until it meets the Nou Forest Reserve (north of Ndareda). The Nou Forest Reserve boundaries are followed along the Malbadow escarpment until it mets Lake Balangida. The RRF continues further south along the Malbadow escarpment, past the Lake Balangida-Lelu basin, to the same latitude as Singida. At this point, the RRD goes West North West, past Lake Mikuyu, to the southern edge of the Iramba plateau. The RRD then follows the edge of the Iramba plateau north to Lake Kitangiri, at which point the RRD continues to follow the edge of the Iramba plateau North North East to the edge of the Sibiti river basin. The RRD continues North, following the edge of this Sibiti river basin until it reaches the project area at Lake Eyasi. It then follows the edge of Lake Eyasi until it meets the northern point of the project area which borders the NCA.

The RRD is 352,160 ha in size and does not include the project and leakage area, the Endanyawish floodplain, the Mongo wa Mono-Yaeda floodplain and the Eshkesh wetland, as the conditions in these areas were considered unrepresentative of the project area. The Acacia-Commiphera forest in the RRD is representative of the forest in the project area. In the first forest classification (July 2007 – June 2008), the reference region contained of 27% forest cover and the project area contained 46% forest cover.

The RRD is used to estimate the project climate benefits, despite a lower proportion of forest cover in the RRD, due to the locally driven frontier deforestation occurring in the area.

Because the project area is on the margins of the wider forest area, due to its proximity to lake Eyasi and Ngorogoro Conservation Area, the project area has been less exposed to deforestation threats than the RRD. However, as the forested area and land productivity decreases in the reference region, agricultural expansion from communities in both the participating and local surrounding villages is pushed into the project area. As a result, the amount of deforestation occurring in the reference region is historically greater than in the project area. But this is expected to be similar in the project area over the project period due to agricultural expansion into the productive remaining forests of the project by local agriculturalists. This locally driven frontier deforestation will expand into the project villages to a greater degree than it has historically, in line with historical deforestation in the RRD. Because of the tribal connections between the participating and surrounding villages and the ability to enforce local land use plans due to project interventions, the project will address the drivers of deforestation by the local community. The reference area is also representative of the project area in its population growth rate (3.1%), the same resident tribes, land use planning policies and resource management strategy (see section B4). As a result, the reference region has been deemed a representative area for calculation of the baseline scenario due to the land cover type, drivers of deforestation (see section B4) and the governance and policies in place.

Map G4c. Project area and reference region



Historical deforestation rate

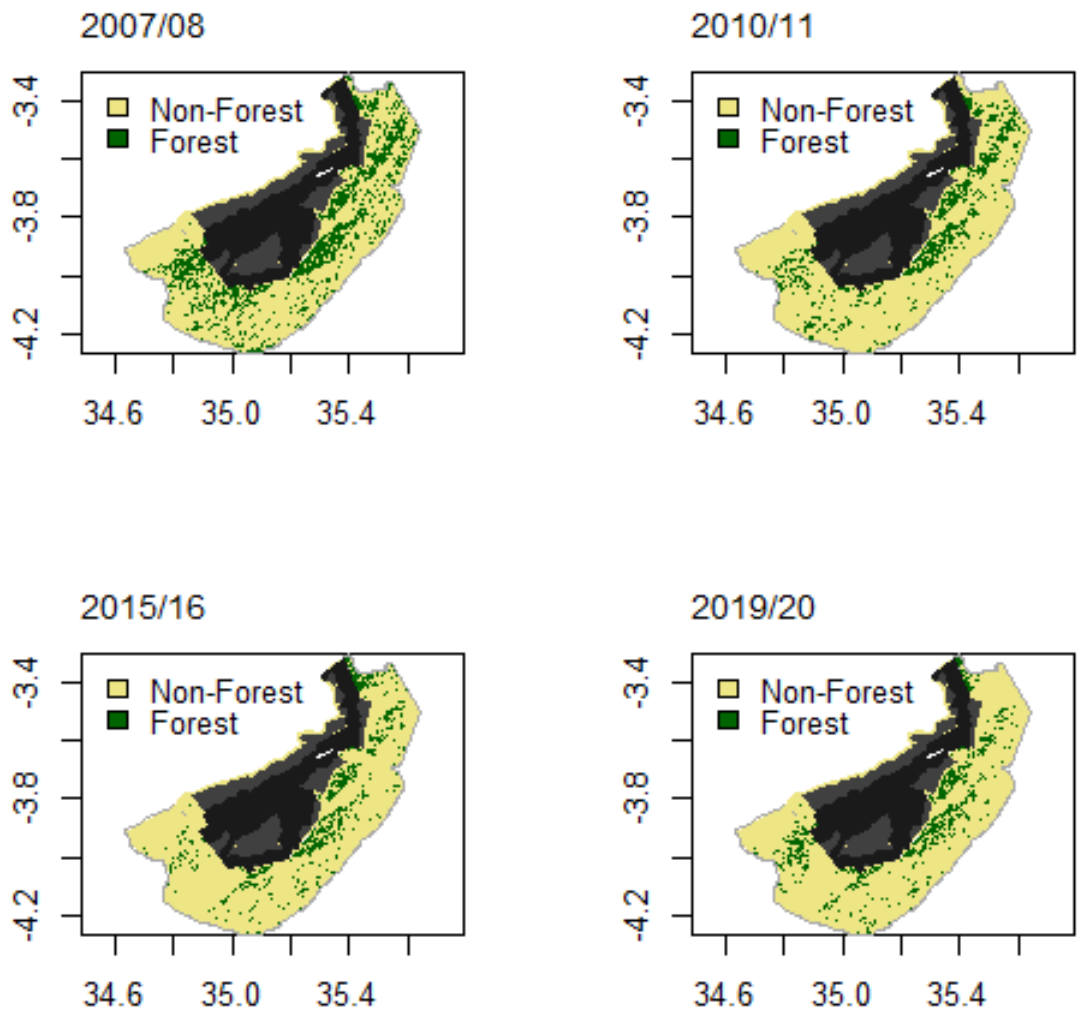
The historical deforestation rate in the reference region, was analysed using remotely sensed data on Google Earth Engine. This was done by classifying the forest area at four 12-month

periods over the past 12 years and analysing the forest loss over this 12-year period. The reference periods used were 01/07/2007-30/06/2008, 01/07/2010-30/06/2011, 01/07/2015-30/06/2016 and 01/07/2019-30/06/2020.

Table G4d. Forest loss in the RRD				
Year	**2007/08**	**2010/11**	**2015/16**	**2019/20**
Forest area (ha)	93,704	58,871	44,133	48,619
Average annual forest loss since the previous land cover assessment (%)	-	12.39	5.01	-2.54

The average annual deforestation rate in the 2007/08-2019/20 period was 4.95% in the reference region. Whilst the high forest cover in 2019/20 may raise concerns about the additionality, it is likely that this increase in forest cover was detected due to an extreme rainfall year causing greater greenness in the landscape leading to classification of more forest than other years [22]. The impact of climatic variability on the baseline scenario is mitigated by the use of multiple reference years over the reference period and the use of a shifting baseline scenario which will be updated at each verification event.

Map G4e. Satellite imagery showing forest cover change from 2007/2008 to 2019/2020



Baseline scenario

The total land area of the reference region is 352,160 ha. Within the region, 93,704 ha of Acacia-Commiphora woodland existed in 2007/08 and this was reduced to 48,619 ha by 2019/20 due to increasing conversion and expansion of agriculture. This equates to a 4.95% average annual loss in forest cover between 2007/08 to 2019/20.

This deforestation is predominantly incoming from the external boundaries of the reference region, not the existing project area, so we consider the increase in deforestation between 2007/08 and 2019/20 unlikely to be leakage from Yaeda I & II. This is supported by the results of the leakage monitoring in Yaeda I & II, whereby no displacement of agriculture was identified (see Section G6.2).

Data sources

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

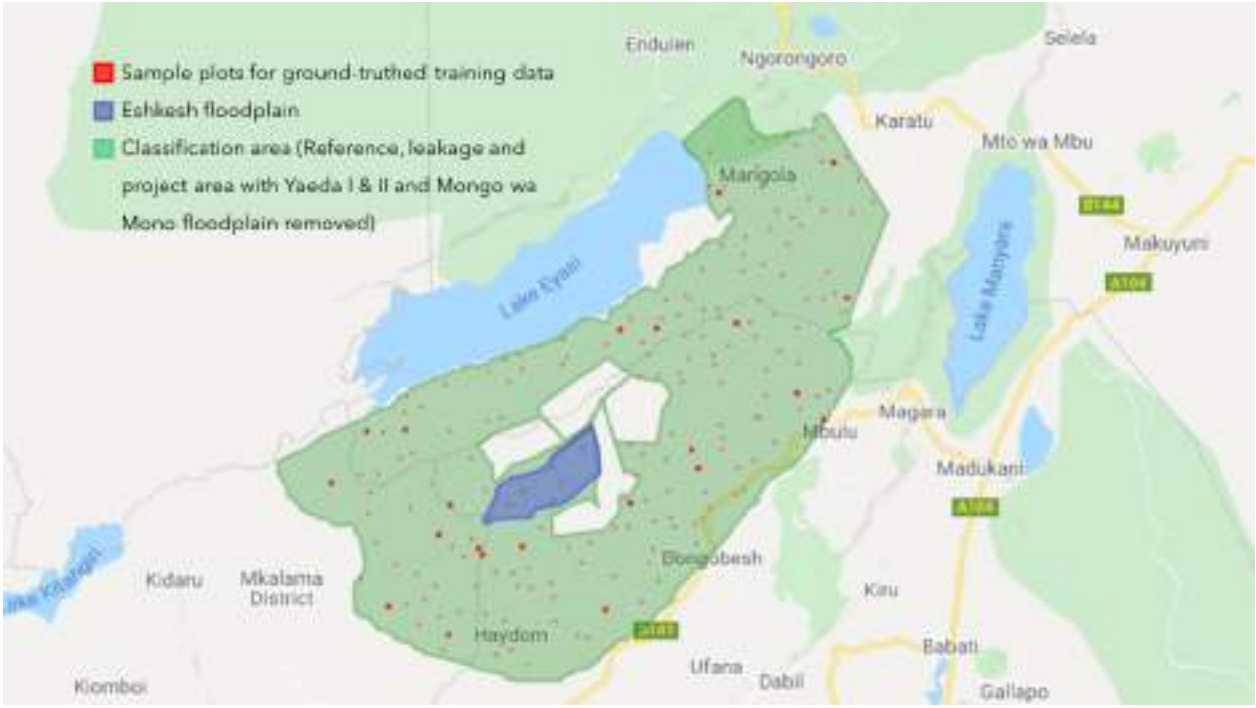
Define the land area within the project boundary that is under threat of deforestation

The project area is the 110,526.54 ha of land designated in the CCROs and Village Land Use Plans (implemented by UCRT and the participating communities as part of project interventions) as protected area for utilization for cultural livelihoods by the Hadzabe and for utilization by pastoralists. The entire project area is of the same soil type, habitat type and aspect as the reference region and is therefore considered under threat of deforestation and conversion to agricultural land. This assessment is based on the estimates of local stakeholders, observations from satellite analysis of the surrounding area and the expert advice of agricultural experts.

Determine baseline scenario using historical deforestation rate

Ground-truthed data was collected from 488 30m^2 plots using a 30m resolution, 6-month composite image from each reference period. The land cover for each plot was individually recorded for each reference year that it was used to train to ensure the correct classification was used in training each supervised classification. A Landsat 7 image was used for the reference periods prior to 2015 and a sentinel 2 image was used for the reference periods from 2015 onwards. The image was manually inspected, and each sample plot was classed as forest or non-forest for each date range. For a plot to be classed as forest, it needed to be at least 50% covered by forest. Forest was classified according to the national definition of 10% tree crown cover [23]. The datasets of ground-truthed sample plots for each time period were then randomly split, with 75% of the data going into a training partition used for training the classifier and 25% of the data going into a testing partition used to test the accuracy of the classification.

Figure G4f. The sample plots used for training the supervised classification of land cover



The sample plots for collecting ground truthed land cover data (shown in red) were randomly allocated across the reference region, leakage area and project area, with the previous Yaeda Valley project area and Mongo wa Mono floodplain removed. The plots in the Eshkesh floodplain (shown in blue) were later removed from the collection, as swampland covered a clearly defined area of land that is unrepresentative of both forest and agricultural land. This resulted in a dataset of 488 sample plots with ground-truthed land cover for each classification time period, taken from high resolution satellite imagery.

The forest area in the reference region was calculated for 4 reference periods. Each of these was from the 1st July to 30th June of the next year. A composite image was created for each period from the available satellite data for the year. Pre-processing of these datasets were done to calculate wet and dry season characteristics. The pre-processing was adapted to what data was available for the time period but included generating vegetation indices and seasonality characteristics (see Table G4h below for details). The median of every characteristic, represented by image bands, were collated in one composite image.

The reason for using a 12-month composite image was to capture the dry and wet season characteristics and to include as much data as possible to increase the accuracy of the land cover classification. Shorter periods, including one- and six-month periods, were tested, but they resulted in lower accuracy in classifying the land cover. The time periods used to calculate the historical deforestation rate each span 12 consecutive months over two calendar years due to Sentinel 2 availability starting 23/06/2015. Including the sentinel 2 dataset is beneficial for the accuracy and it was preferable to have each reference period use the same start and end date, so the decision was made to make all reference periods start on 1st July and end on 30th June.

A supervised classification was used to classify land cover type for each 12-month composite. From this we derived the size of the area covered by forest in the 2007/2008, 2010/2011, 2015/2016 and 2019/2020 time periods. A random 75% of the ground-truthed data was used as a training dataset for training the classifier. A random forest classifier was used (with 400 decision trees and requiring a minimum of 5 training points for each node to

be created for maximum accuracy) to classify each 30m^2 pixel as either forest or non-forest. The accuracy of the classifier was then tested using the testing dataset generated from the 25% of the ground-truthed data that was not used for training the classifier. The same classifier was used for the 2015/2016 and 2019/2020 time periods as the same data was available, and, as a result, the classifier was trained to identify land cover using the same data for both years. The 2007/2008 and 2010/2011 time periods used different classifiers as they had differing data availabilities.

Table G4g. Details of data used to classify forest in the RRD

Table G4g. Details of data used to classify forest in the RRD				
Date	Input datasets	Input bands	Classification bands	Accuracy
01/07/2007-30/06/2008	Landsat 7, Global Surface Water	Landsat 7: B1-8, EVI, NDVI, NDWI, atmospheric opacity and cloud, pixel and radsat QA, Global Surface Water: Occurrence	Landsat 7: B1-7 for the wet and dry seasons, EVI, NDVI and NDWI for the wet and dry seasons, magnitude, phase and val of the NDVI harmonic curve, atmospheric opacity, cloud quality, radiometric saturation quality for the wet and dry seasons	79.8% *Forest:* *False positives 11.0%* *False negatives 9.2%* *Non-forest:* *False positives 9.2%* *False negatives 11.0%*
01/07/2010-30/06/2011	Landsat 5, Landsat 7, Global Surface Water	Landsat 5: B1-7, atmospheric opacity and cloud, pixel and radsat QA Landsat 7: B1-8, EVI, NDVI, NDWI, atmospheric opacity, cloud, pixel and radsat QA, Global Surface Water: Occurrence	Landsat 5: B1-7 for the wet and dry seasons, atmospheric opacity and cloud, pixel and radsat QA for the wet and dry seasons Landsat 7: B1-7 for the wet and dry seasons, EVI, NDVI and NDWI for the wet and dry seasons, magnitude, phase and val of the NDVI	87.5% *Forest:* *False positives 10.8%* *False negatives 1.7%* *Non-forest:* *False positives 10.8%* *False negatives 1.7%*

			harmonic curve, atmospheric opacity, cloud quality, radiometric saturation quality for the wet and dry seasons	
01/07/2015-30/06/2016	Landsat 7, Landsat 8, Sentinel 1, Sentinel 2, Global Surface Water	Landsat 7: B1-8, Landsat 8: B1-11, EVI, NDVI, NDWI Sentinel 1: VH Sentinel 2: B1-12, AOT, WVP, SCL, TCI_R, TCI_G, TCI_B SRTM: Elevation, Global Surface Water: Occurrence	Sentinel 1: p90, p10, diff bands for wet and dry season, Sentinel 2: B1, B2, B3, B4, B5, B6, B7, B8, B8A, B9, B10, B11, B12, QA10, QA20, QA60, MSAVI, NDVI, BSI bands for wet and dry season, the magnitude, phase and val of the NDVI and BSI harmonic curves, entropy for wet and dry season, elevation, Landsat 7: EVI, NDVI and NDWI bands for wet and dry season, Landsat 8: EVI, NDVI and NDWI bands for wet and dry season	Classification used 2019/2020 classifier – accuracies shown below 90.8% *Forest:* *False positives 2.3%* *False negatives 6.9%* *Non-forest:* *False positives 6.9%* *False negatives 2.3%*
01/07/2019-30/06/2020	Landsat 7, Landsat 8, Sentinel 1, Sentinel 2, SRTM Digital Elevation, Global Surface Water	Landsat 7: B1-8, Landsat 8: B1-11, EVI, NDVI, NDWI Sentinel 1: VH Sentinel 2: B1-12, AOT, WVP, SCL, TCI_R, TCI_G, TCI_B	Sentinel 1: p90, p10, diff bands for wet and dry season, Sentinel 2: B1, B2, B3, B4, B5, B6, B7, B8, B8A, B9, B10, B11, B12, QA10, QA20, QA60, MSAVI, NDVI, BSI	86.2% *Forest:* *False positives 5.2%* *False negatives 8.6%* *Non-forest:* *False positives 8.6%* *False negatives 5.2%*

		SRTM: Elevation, Global Surface Water: Occurrence	bands for wet and dry season, the magnitude, phase and val of the NDVI and BSI harmonic curves, entropy for wet and dry season, elevation, Landsat 7: EVI, NDVI and NDWI bands for wet and dry season, Landsat 8: EVI, NDVI and NDWI bands for wet and dry season	

For the periods prior to 2015, these include NDVI, EVI, NDWI and the seasonality of NDVI represented by the magnitude, val and phase of the NDVI temporal curve. For the periods 2015 and onwards, these include NDVI, EVI, NDWI, the difference in lower and upper height within the season and seasonality of NDVI represented by the magnitude, val and phase of the NDVI temporal curve.

This same methodology was then used to calculate the extent of forest area within the project area.

Application of the historical deforestation rate in the reference region, 4.95%, to the land under threat in the project area results in a projected loss of 1,894 ha per year. After 20 years, the remaining Acacia-Commiphora would be reduced to 21,503 ha, a total loss of 37,881 ha from the project start.

G5: Ecosystem service benefits

G5.1: Climate benefits methodology

The existing carbon content, 35.44 tC/ha is calculated from the AGB surveys and application of the BGB root-to-shoot ratio. Application of the 35.44 tC/ha carbon content and 4.95% baseline deforestation rate to the 59,385 ha of conserved Acacia-Commiphora woodland, the total carbon benefit of the project is 1,343,058 tC. This figure is based on the assumption that when woodland is converted to shifting agriculture, the above- and below-ground biomass and associated carbon stock is removed, and the stored carbon is released to the atmosphere. This assumption is supported by the lack of potential for woodland regeneration after conversion. After deforestation, whilst the crop grown may change with the decreasing productivity of the land, the land is permanently used for agriculture, resulting in complete loss of both above- and below-ground biomass. Carbon is converted to CO2e by multiplying the carbon by 44/12, the molecular weight ratio of elemental carbon to gaseous carbon dioxide. The carbon benefits of this project are 130tCO2e/ha or 4,924,547 tCO2e over the lifetime of the project, before risk and leakage are accounted for (see Figure G4e).

We propose to use a constant deforestation rate of 4.95% per year based on forest loss in the reference region of 34,833 ha in the first three years of the reference period, 14,738 ha in the following five years and a 4,486 increase in the final four years of the 12-year period (see section G4). When applied to the project area this equates to an average of 1,894 ha forest loss per year. This was calculated by dividing the percentage of forest loss between each reference year by the number of years in the given time period.

As in the scenario for the current project (Yaeda I & II), the project has set a 20% risk buffer as a protective measure in the case of non-delivery and non-permanence and another 10% to be held as a leakage buffer. An explanation of how these figures were set can be found in sections G6 & H. In Yaeda I & II, the combination of project activities used were sufficient to prevent all deforestation in the project area. The project area is not expected to be affected by agricultural expansion by the local communities because it is outside of the planned area for agricultural use in the land use plans. As a result, we expect the effectiveness of the project to be 100%. At the end of the project period, analysis of remote sensing data will be used to estimate the actual percentage of emissions from deforestation avoided.

Creditable carbon benefits are therefore 3,447,183 tCO2e over the project lifetime or 172,359 tCO2e per year over the 20-year crediting period.

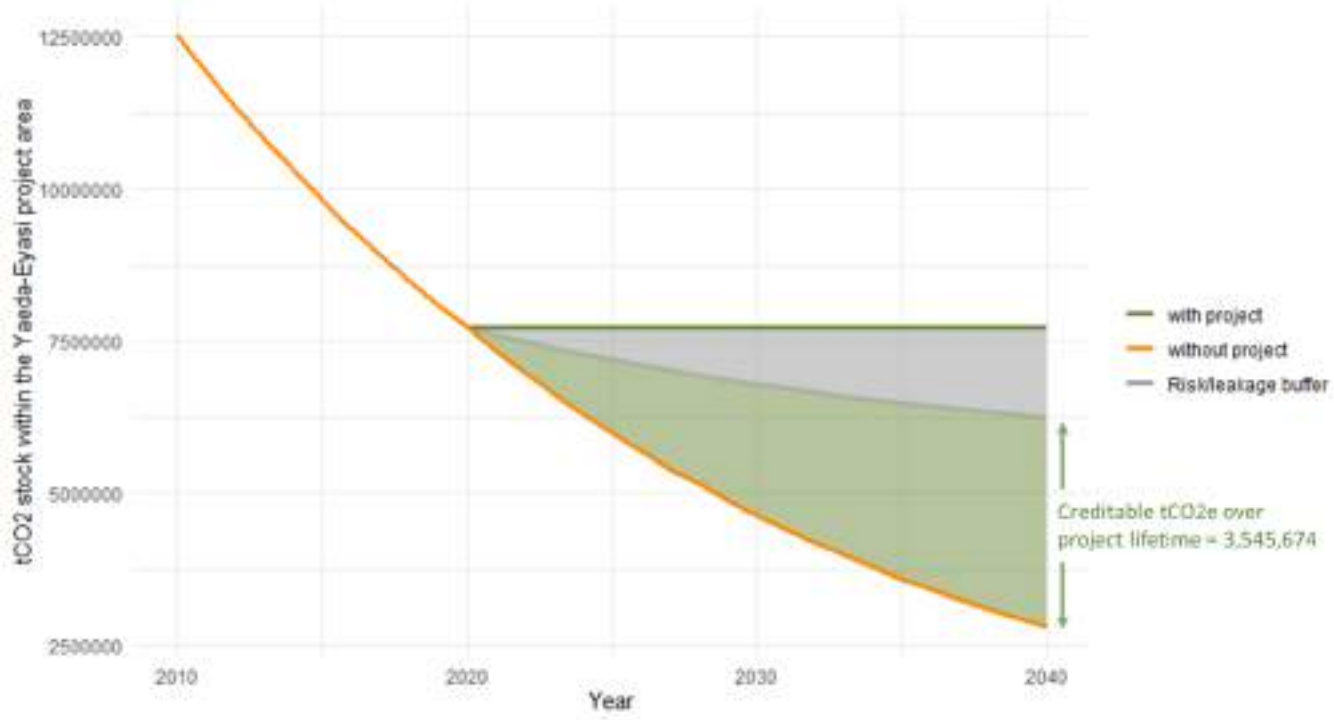
The baseline, or 'without project' scenario, was determined by applying the historical rate of deforestation in the reference area to the land within the project area that is likely to be cleared without the intervention of this project. The assumption that the deforestation rate going forward would remain at least as high as the historical rate is justified by the continued land conversion in the reference region and the documented population growth (see Part C1) in the area which points strongly to land hunger being a constant and increasing pressure.

G5.2: Expected climate benefits

Table G5a. Baseline emission calculations

Table G5a. Baseline emission calculations			
1. Area of woodland under threat in project area	**59,385**	ha	Project area minus the area that doesn't meet the forest criteria
2. Ha of woodland at end of 20-year crediting period without project	**21,503**	ha	Application of 4.95% deforestation rate, with annual loss of 1,894 ha
3. Loss of woodland without project over 20-year crediting period	**37,881**	ha	= Row 1 – Row 2
4. Total tCO2e avoided during project lifetime	**4,924,547**	tCO2e	= Row 3 x 130tCO2e
5. Leakage 10% removed	**4,432,092**	tCO2e	= Row 4 x 0.9
6. Risk buffer 20% removed	**3,447,183**	tCO2e	= Row 4 x 0.7
7. Annual carbon benefits of project eligible for crediting	**172,359**	tCO2e	= Row 6 / 20 years

Figure G5b. Baseline emission calculations



G5.3: Summary

Table G5c summarises the projected net carbon benefits attributable to this REDD project and the carbon eligible for crediting. The projected carbon benefits are based on an effectiveness of 100%, 10% leakage buffer and 20% risk buffer (See section G6 & H).

Table G5c. Projected net carbon benefit

Table G5c. Projected net carbon benefit					
Project	Project start date	Baseline Carbon emissions (without project scenario) over 20-year crediting period	Carbon benefit eligible for crediting deducting 10% leakage buffer	Carbon benefit attributable to project with 20% risk buffer deducted	Annual carbon benefits of project eligible for crediting
		(tCO2e)	(tCO2e)	(tCO2e)	(tCO2e)
Yaeda-Eyasi	2021	4,924,547	4,432,092	3,447,183	**172,359**

G6: Leakage and uncertainty

G6.1: Measures to address leakage

This project does not have external threats which drive leakage and by which the communities have no control, this project will account for leakage from local and internal threats. Land use planning is a participatory process that works with communities to identify areas to meet all local resource needs and uses within the landscape and is evidenced in the Village Land Use Plans (see Annex 5). To determine probable sources of leakage and to develop a strategic response to it, this project uses the participatory land use planning process outlined in section E2. The project will mitigate leakage through the main project activity, land use planning, implementation and enforcement of CCROs on protected land. 10% leakage buffer has been included within the project's accounting. This leakage buffer is a

conservative measure as there was no leakage detected in the leakage monitoring of Yaeda I & II.

The leakage from the project will be monitored in a leakage area surrounding the project. The leakage area consists of the remaining land belonging to the participating villages. This area is allocated for agriculture and settlement in the village land use plans and if there is displacement of agricultural encroachment in the project area, this would occur in the land belonging to the same communities where agriculture is allowed. The leakage area is 96,503 ha in size, and its location alongside the project and the reference region, is shown in figure G6.1.1 below. At verification, if the amount of leakage experienced in the monitoring period is below the 10% buffer, the withheld PVC's may be claimed back by the project coordinator. See section K6 for the leakage monitoring method.

Figure G6a. A map of the project area, leakage area and reference region

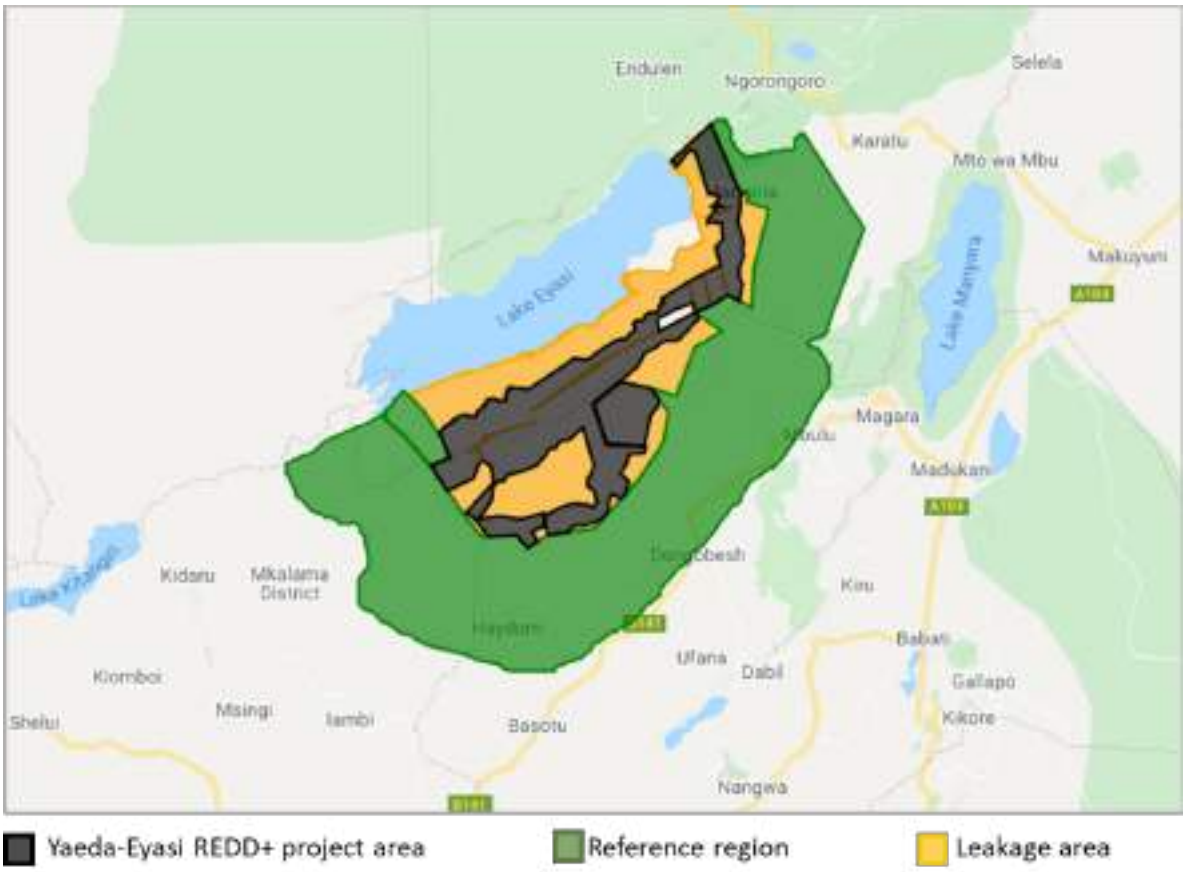


Table G6b. Leakage risks and management measures

Table G6b. Leakage risks and management measures					
Leakage threat	**Description**	**Scale (large/medium/small)**	**Likelihood of occurrence (low/medium/high)**	**Mitigating actions**	**Monitoring actions**
Local threats	Displacement of biomass collection or charcoal manufacture for local markets exceeds local use.	Small	Low	Biomass collection is currently not a major driver of deforestation Charcoal is currently not a major driver of deforestation Local firewood use is not a major driver of deforestation	VGS patrol and collect data within and beyond the project area. Project engagement with the village government ensure enforcement of land use plans Localised management structure ensures constant monitoring Annual socio-economic survey includes understanding fuelwood and charcoal use
Internal threats	Displacement of agricultural activity outside the project area, within the village land set aside for agriculture	Medium	Medium	The land use planning process incorporates all resource uses to ensure that planned agriculture in	Activity based monitoring ensures land use plans are followed.

	within the VLUP.			agricultural areas replaces unplanned agriculture across the landscape. The VLUP is 210,000ha and the project area is 106,000ha, within the VLUP area. The area set aside for other land use types is sufficient to provide the resource needs of the communities .	

G6.2: Uncertainty

There is uncertainty in the expected emission reduction calculations from two key areas; data and assumptions used.

Firstly, the remotely sensed land cover maps used were consistently >80% accurate. However, as multiple maps (from differing time periods) were used to calculate the baseline deforestation rate, the accuracy of the land cover change maps is likely less that the accuracy presented in each individual land cover map. Considerable effort was made to ensure the accuracy of these maps were as high as possible and the resulting land cover change maps are considered to provide a description of land cover change in the area with an acceptable level of uncertainty. Secondly, the carbon density estimates introduce uncertainty into the baseline scenario calculations. The carbon density values for each species were taken from the Kasigau Corridor REDD project after an extensive review of relevant studies in the region. The mean values were adopted to give the most accurate reflection of the carbon stocks in each tree species. The standard error in the results from the carbon stock field surveys at the project site were acceptable with a 95% confidence interval. As a result, whilst there is some uncertainty in the carbon stock calculations, effort was made to reduce error as much as possible and the level of uncertainty involved is considered to be acceptable.

There is further uncertainty introduced into the project emission reduction estimations by the assumptions made. These include the assumptions that; the deforestation occurring in the reference region would occur in the project area during the project period in the project activities aren't carried out, the effectiveness of the project will be 100%, and the leakage will remain similar to the leakage from Yaeda I & II. The project uses a number of

approaches to prevent the uncertainty associated with assumptions used in the emission reduction estimations from resulting in an over-estimation of emission reductions from the project.

The assumption that the patterns of deforestation occurring in the reference region would occur in the project area during the project period, if project activities aren't carried out introduces some uncertainty into the expected baseline scenario emissions. If the baseline scenario emissions are overestimated, it could result in an over-estimation of climate benefits. To reduce the likelihood of overestimating baseline emissions, the forest used in the reference region was required to be under the same forest classification, governance structures and drivers of deforestation. The actual deforestation that occurred in the reference region during the project period is also used to verify the emission reductions achieved.

Assuming the project will be effective in reducing deforestation may also introduce some uncertainty that could lead to overestimation of the project's climate benefits. In order to ensure effectiveness, a range of project activities are carried out to tackle the drivers of deforestation in the area. These project activities don't eliminate the uncertainty, an estimation of the expected effectiveness of the Yaeda-Eyasi REDD project can be derived from the effectiveness of the Yaeda Valley REDD project and will be applied to this project to reduce uncertainty. After the project period, climate benefits will be verified by assessing the amount of deforestation that occurred during the project period.

There is also uncertainty associated with the estimation of leakage, and again a conservative estimate of expected leakage is applied to reduce the likelihood that leakage is underestimated prior to verification at the end of the project period. The leakage monitoring for the Yaeda Valley project showed a 0.4% annual deforestation rate in the leakage area, compared to 2.6% annual deforestation in the reference region in the 2010-2015 period. This suggests there was no leakage effect from the project. However, in order keep the climate benefit estimations conservative, we will employ a 10% leakage buffer.

Part H: Risk Management

To account for the risk of a) the project activities not achieving in the expected climate benefits and b) the risk of non-permanence of the climate benefits achieved during the project period, a proportion of PVC's will be held in a risk buffer. This will help ensure the environmental integrity of emission reductions achieved by the project.

The PVC's held in the risk buffer will be retired at the end of the project period if the verified climate benefits are lower than the benefits estimated at the start of the project period. This will ensure against under-achievement of expected climate benefits during the project period and potential non-permanence of climate benefits achieved in previous project periods.

H1: Identification of risk areas

H1.1: Risk assessment methodology

To ensure the number of PVCs held in the risk buffer is proportional to the risk of non-delivery and non-permanence in the project, key risk areas are identified and the level of risk in these areas considered to provide an overview of the risk levels.

The categories of risk considered were: Political, Financial, Technical, Institutional, Social, and Environmental. Within each of these categories, specific risk factors were identified. Project activities were designed to mitigate the identified risks as far as possible. The level or risk that remains after the application of these migrating activities was scored for: i) impact – the proportion of climate benefits that would be lost if the risk factor was realised; and ii) likelihood – the probability of the risk factor occurring. Both impact and likelihood were scored on a five-point scale: Very low = 0.05, Low = 0.1, Moderate = 0.25, High = 0.5, Very high = 0.75.

The impact and likelihood scores were multiplied to give a risk score for each risk factor and a total risk score was calculated as the sum of the risk scores for each risk factor. The proportion of certificated held in the risk buffer was then determined using the total risk score.

The risk assessment will be reassessed at least every 5 years in line with verification cycles and will be updated if appropriate by revision of this PDD.

H1.2: Risk assessment result

The results of the assessment of risks of non-delivery and reversals of climate benefits are summarised in Table H1a.

Table H1a. Assessment of risks of non-delivery and non-permanence of climate benefits

Table H1a. Assessment of risks of non-delivery and non-permanence of climate benefits			
Risk	**Mitigation Actions**	**Impact**	**Likelihood**
Political			
Land law changes: Land laws change dispossessing communities of land and resource rights	This project is built on existing laws and has support of national government.	Moderate – CCROs and VLUPs provide a legal recognition of communities' land	Low – The government Tanzania and its local representatives value land use planning as a means

		tenure and ownership rights	of reducing conflict and providing sustainable income
Political instability: Government of Tanzania suffers political instability resulting in internal migration or changes in land ownership	Community payments to district government promotes motivation to maintain land ownership for participating communities.	Low – The government of Tanzania and its local representatives value land use planning as a means of reducing conflict and providing sustainable income	Very Low – Tanzania is a democratic and stable country
Financial			
Carbon Tanzania fails to support project development and implementation	Carbon Tanzania has been working in the landscape for 9 years and has significant trust and experience. Carbon Tanzania is fully financed to develop and implement this project	High – Project revenue and training are required for successful project implementation	Low – Carbon Tanzania is fully financed to develop and implement this project
Non-delivery of revenue: Communities and village and district government do not receive revenue from this project that leads to seeking alternative income sources from protected CCROs	Carbon Tanzania has multiple projects and revenue streams that support management and operational activities.	Moderate – Carbon Tanzania is fully financed to develop and implement this project	Very Low – Carbon Tanzania has signed an ERPA for this project and has a broad sales base
Technical			
Carbon management changes: The Tanzanian government implements a national system of carbon management that precludes local or regional projects and or changes	Carbon Tanzania works closely with the national entities responsible for climate change.	Moderate – Government policies stating 'carbon trade opportunities and other benefits will be promoted and supported' show governmental support for community rights	Low – CT is in communication with district official and the government.

rights to emission reductions from project level activities		to emission reductions	
Institutional			
The community participants and Carbon Tanzania fails to deliver expected climate benefits	Community training on responsibilities and project development, and further training for VGS, ensures the project activities are well understood. Results-based payments ensures incentive to achieve expected climate benefits is maintained.	High – Lack of financial means and training are major barriers to implementation of land use plans	Very Low – CT has been working in the landscape for 9 years and has significant trust and experience
Carbon Tanzania fails to function as an organisation	Carbon Tanzania has multiple projects and revenue streams that support management and operational activities	Moderate – The detrimental impact of lack of on-going support is slightly reduced by training and support already provided, as well as PVC sales secured for first 3 years of project period	Low – CT has been working in the landscape for 9 years and has significant trust and experience
Social			
Communities do not value their own land use traditions	These communities are well understood to place value in land use and traditional values. The participating communities, alongside UCRT, ensured their priorities and resource needs are reflected in the land use planning and are highly unlikely to reverse land use planning.	Low – Revenue from the project provides motivation to maintain project activities	Low – Both cultural groups' traditions and land use is based on maintaining natural landscapes for food security
Environment			
Climatic conditions e.g. drought events or climate variability, force communities to abandon lifestyle	Maintaining ecosystem health, through preventing deforestation, increases the resilience of the landscape and its ability	Low – Landscape connectivity ensures mobility and access for both pastoralists and the movement of wildlife	Low – The predicted hotter and wetter conditions are more likely to impact agricultural groups rather than

	to support traditional livelihoods.		hunter-gather and pastoralists

Table H1b. Risk scores

Table H1b. Risk scores			
Risk factor	**Risk score**		
Risk	**Impact**	**Likelihood**	**Total**
Political			
Land laws change	M – 25%	L – 0.1	2.5%
Political instability	L – 10%	VL – 0.05	0.5%
Financial			
Carbon Tanzania fails to support project development and implementation	H – 50%	L – 0.1	5%
Non-delivery of revenue	M – 25%	VL – 0.05	1.25%
Technical			
Carbon management changes	M – 25%	L – 0.1	2.5%
Institutional			
Carbon Tanzania fails to deliver expected climate benefits	H – 50%	VL – 0.05	2.5%
CT fails to function	H – 25%	L – 0.1	2.5%
Social			
Communities do not value their own land use traditions	L – 10%	L – 0.1	1%
Environment			
Climatic conditions	L – 10%	L – 0.1	1%
TOTAL			**18.75%**

H2: Risk buffer

The risk buffer was calculated according to the risk assessment methodology above. The results of the risk assessment, shown in Table H1b, identified a risk buffer percentage as 18.75%. In order to be conservative in our PVC claims, we will adopt a risk buffer of 20%.

Part I: Project Coordination & Management

I1: Project organisational structure

Carbon Tanzania Ltd (CT) is incorporated under the company laws of the United Republic of Tanzania. Carbon Tanzania 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, wildlife management, sales and marketing.

Carbon Tanzania organisational structure

Organisational profile 2019 – 2021

Core Operations

Carbon Tanzania – Core Team

Marc Baker - Director
Partner engagement
Project development & operations

David Beroff
Technical Advisor – Project Operations

St John Anderson - Director
Business Development
Finance and Sales

Alphael Jackson – Finance Manager
Business administration
Tax compliance (Tanzania)

Sarah Borman – Marketing and Communications Manager
Social media, website and marketing content
Customer relationships and sales

NRVW Pointon - Chief Financial Officer
Business administration
Tax compliance (UK)

Partners

The Nature Conservancy
Technical support
Satellite mapping
Global carbon market perspective

Ujamaa Community Resource Team
Land rights/ land use planning
Community / indigenous peoples' representation

Maliasili Initiatives
Strategic advice / Global perspectives

Northern Tanzania Rangelands Initiative
Collaborating and co-ordinating strategy across Northern Tanzania

Tuungane
Collaboration with The Nature Conservancy and Pathfinder International in Western Tanzania.

Honeyguide Foundation
Wildlife protection work
Community management / capacity building

Independent Service Providers

Terra Carbon LLC
Satellite modelling
Project Design consultancy
Project Description development

Nikita / Roshni Pakhare
Branding & Design
Marketing materials (images / video)

Mizani Ltd
Financial management and accounting (Tanzania)

Ward MacKenzie LLP
Financial management and accounting (United Kingdom)

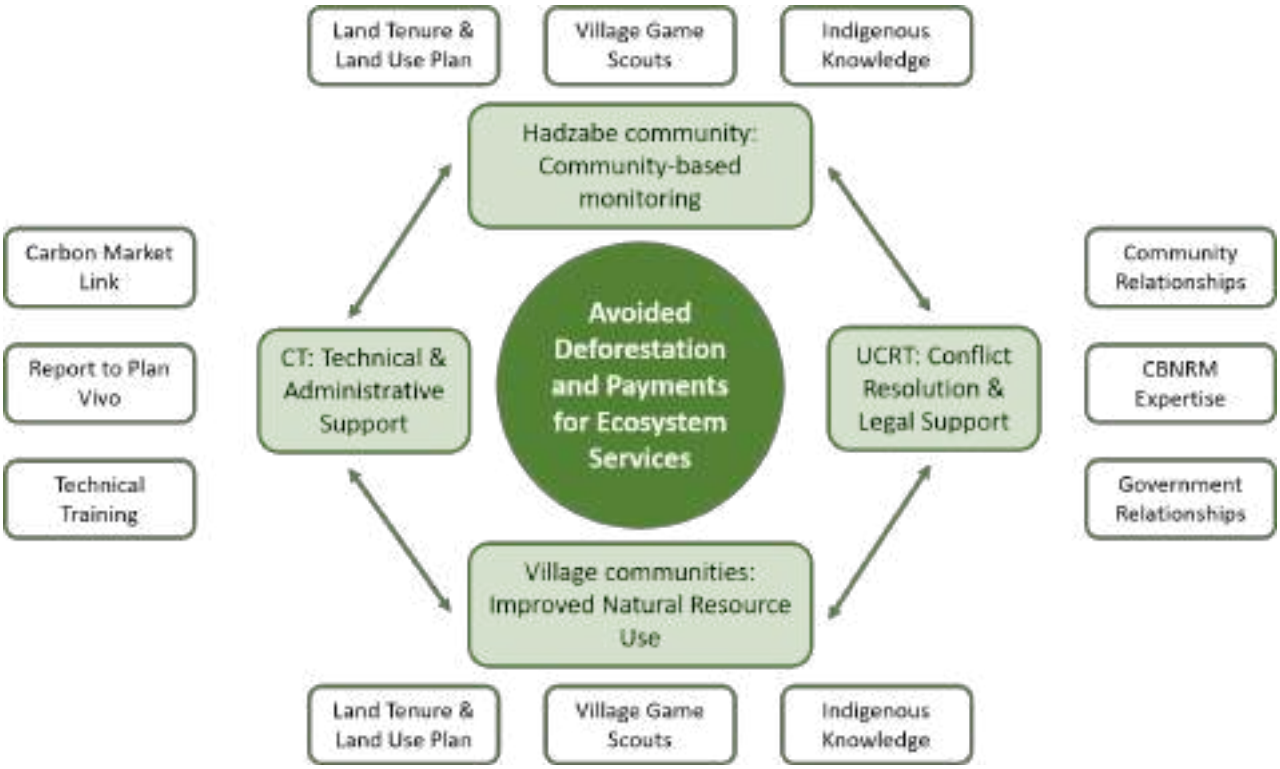
Dr Kate McAlpine
Organisational learning and capacity assessment

Troy Corporate Attorneys
Legal compliance (Tanzania)

Brown Rudnick LLP
Legal compliance (United Kingdom)

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 with the participating villages for at least 4 years, working with some of them for up to 15 years, and has established itself as a responsible and transparent partner with the communities. UCRT also works with the neighbouring villages and is held in high regard by community members and district government alike.

Project organisational structure and areas of responsibility



UCRT to Hadzabe and the Villages of Domanga, Dumbechand, Endamaghan, Endanyawish, Endesh, Eshkesh, Jobaj, Mbuganyekundu, Mikocheni, Mongo wa Mono, Qangdend and Yaeda Chini

Educating the community about land law, good governance and leadership responsibilities has been an ongoing process for UCRT; this is especially the case for the Village Land Act. While the Hadzabe are intimately connected to the land, the process of village mapping and the concept of land ownership were new to the community. The majority of this training has been directed at the members of the village council and other traditional and influential community leaders, who then spread the information within the village, often through verbal and informal communication. Further training, including how to engage with outsiders who fail to respect the land use plan, will take place with Village Game Scouts (VGS) who patrol and monitor the project area. Community empowerment is a critical aspect to the project, as the Hadzabe and village community participants will be relied upon to discourage and respond to natural resource use not in compliance with their land use plan and village by-laws. UCRT will facilitate this process in addition to educating the communities of their legal rights and appropriate conflict resolution and enforcement strategies.

Carbon Tanzania to Hadzabe and the Villages of Domanga, Dumbechand, Endamaghan, Endanyawish, Endesh, Eshkesh, Jobaj, Mbuganyekundu, Mikocheni, Mongo wa Mono, Qangdend and Yaeda Chini

Sensitizing the communities to the concept of climate change and the role of forests in mitigation and adaptation strategies is a slow process given the scientific nature of the issue, but efforts to improve the communities' understanding are ongoing. More important to the project's success is the enhancement of technical capacity of project participants. Carbon Tanzania employs community members in all activities such as doing AGB surveys. This process of collecting data on the carbon content within the project area was designed to be educational as the project developer introduced the participants to community-based carbon

measurement and monitoring as well as the use of certain technologies such as global positioning systems (GPS). The community has also been made aware of certain key concepts of carbon sequestration such as additionality and leakage. Community members active in the project will receive training pertaining to their roles in patrolling, data collection and monitoring of carbon stocks as well as socioeconomic and biodiversity impacts. In order to obtain reliable data a level of expertise is required and will be built up over time through continued engagement with participants.

Carbon Tanzania has designed a Swahili '*Guide to developing carbon projects on community land*' in response to community needs. This forms the basis of an educational program that the project manager conducts with community groups.

Long-term roles

All community members, including those who are not directly involved in project activities, are aware of the project and will continue to be involved in its planning and implementation through a process of information dissemination included within the contract that ensures the main aims of the project are well known and understood (see community PES agreement, Annex 3). As the project fieldwork becomes more ingrained in the regular activities of the Hadzabe and village communities, participants become more practiced at accurately measuring project indicators, and communities gain confidence in their ability to enforce their land use plan, the communities will take on a greater management role in project. However, given the desire amongst the Hadzabe to continue their traditional lifestyle, it is not practical to ask community members to take on the administrative responsibilities of the project. Additional legal support may also be required as the community exercises its rights. Support of this nature will continue to be provided by Carbon Tanzania and UCRT as required.

Community Partner – Ujamaa Community Resource Team

UCRT serves as the intermediary between Carbon Tanzania and the community on certain issues. UCRT receives outside funding to carry out its mission and is self-sustaining. Should UCRT require financial support to cover its costs associated with this project, Carbon Tanzania will factor that into its implementation costs.

Stakeholder analysis

Carbon Tanzania and Ujamaa Community Resource Team are both registered entities bound within the tax and business laws of Tanzania. Both organizations are audited and submit annual returns to national and regional regulatory bodies. Both Carbon Tanzania and Ujamaa Community Resource Team work in strict compliance with the laws of the United Republic of Tanzania and have a history of engagement at all levels with government agencies.

All operations regarding forest activities are carried out under the guidance of and in accordance with the Land Act (1999) and, where relevant, in accordance with the Forest Act (2002). Carbon Tanzania and UCRT have been fully introduced and communicate with the district officials within the project area (see relevant letters and documentation, Annex 6).

The Hadzabe are fully supportive of the project and are an ideal population to engage with on such an initiative because they understand the importance of preserving their natural

environment despite lacking the skills and knowhow to do so before this project was introduced. As people who are dependent upon the land for their livelihood, they will benefit not only from the expanded and diversified income from PES payments but also from the enhanced protection of their land which supports their traditional way of life. Pastoralists in the region will benefit from the protection of the project area and its natural resources that will remain accessible for sustainable use, specifically as they are the primary users of the grazing areas and CCROs.

The following table outlines the various stakeholders in the Yaeda-Eyasi Project:

Stakeholder	Roles and Responsibilities	Influence on the Project (1= very weak, 5= very strong)	Influence by the Project (1= very weak, 5= very strong)
FIRST TIER STAKEHOLDERS			
Village Governments	• Comply with the PES Agreement • Carry out responsibilities based on PES agreement • Utilize project revenue for community benefit and development • Maintain good governance in the Village • Employ Village Game Scouts from community to ensure natural resource protection	5	5
Hadzabe Community	• Comply with the PES agreement • Carry out responsibilities based on PES agreement • Utilize project revenue for community benefit and development	5	5
Carbon Tanzania	• Coordinate the project • Provide technical support • Bring the project and its credit to market	5	5
UCRT	• Coordinate all community issues • Mitigate any conflict • Ensure community interests and free prior informed consent for project decisions	5	4
Ward Governments	• Maintain good governance in the Wards where project villages communities are • Support the villages and communities in project activities • Utilize project revenue for community benefit and development	4	4

District Governments	• Maintain good governance in the District of which the project villages and communities live • Support the villages and communities in project activities • Leverage higher-level authority on behalf of the villages or communities when needed • Utilize project revenue for community benefit and development	5	4
SECOND TIER STAKEHOLDERS			
Division Governments	• Maintain good governance in the Division of which the project villages and communities live • Support the villages and communities in project activities	4	3
National Government of the United Republic of Tanzania	• Maintain legal frameworks and policies that promote community-based conservation and offsetting initiatives	4	3
Carbon Buyers	• Enter an agreement with project coordinator (Carbon Tanzania) to purchase credits from project thus providing critical revenue.	4	3

I2: Relationships to national organisations

The project is in direct contact with the Government of the United Republic of Tanzania at many levels from local to national. The village governments of the project villages are one of the primary stakeholders and heavily involved in all aspects of the project. The project also communicates with ward (level above village) leadership and the division (level above ward) through the division officer, who is a direct representative of the national government. The project has also signed MOU's with both district governments (level above division) which encompass the project area (Annex 6.4). The project has also received official approval from the National Ministry of Health, Community Development, Gender, Elderly and Children (Annex 6.5). Carbon Tanzania the project proponent is also in regular communication with the Minister of Environment and the Vice President's Office which houses the Environment Ministry. Carbon Tanzania also communicates with the National Carbon Monitoring Centre (NCMC) an institution designed to co-ordinate national MRV processes in Tanzania at the Sokoine University of Agriculture.

I3: Legal compliance

The project is fully in compliance with the law of the United Republic of Tanzania, as is the project coordinator Carbon Tanzania which is a legally registered Tanzanian company headquartered in Arusha, Tanzania. As stated in the previous section and provided here for evidence the project has also signed MOU's with both district governments which encompass the project area and has received official approval from the National Ministry of Health, Community Development, Gender, Elderly and Children. The project is built directly on

Tanzanian law particularly the Land Act No. 4 of 1999, and the Village Land Act No. 5 of 1999. Combating deforestation which is contrary to Community Customary Rights of Occupancy (CCRO), village by-laws and village land use plans means the project is directly in line with national laws governing land acquisition and utilization within Tanzania. This is also supported by The Local Government Authorities Act of 1982 and The Environmental Management Act of 2004. All project revenue will be professionally handled in compliance with Tanzania financial law and tax codes.

In regard to the policies of the project coordinator to ensure equal opportunities for employment and other legal compliance please see the following statements directly from Carbon Tanzania's official company policies. The Company rrecruitment policy states "We are an equal opportunity employer and do not tolerate discrimination on any grounds". The company code of conduct states "Always treat people with respect regardless of race, colour, gender, sexuality, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status. Comply with all relevant local legislation and uphold my legal duty in all circumstances. Respect the cultural traditions and practices of Carbon Tanzania's partner communities, without prejudice or value judgement. Demonstrate commitment to learning and continuous improvement. Create a professional environment that values openness and respect. Commit to equality, diversity and inclusion. We provide opportunities for people who show a commitment to advancing the conservation and wise use of natural resources agenda. We are an equal opportunities employer. We do not tolerate discrimination on the grounds of status, religion, ethnicity, age, race, sex, gender, ability or sexual orientation. We consider such discrimination an abuse of human rights." Furthermore, as policy, no persons under the age of 15 will be employed in this project. These same policies apply to our projects and any secondary employment generated by them.

I4: Project management

I4.1: A timeline (approximate) for project establishment, piloting, scaling up and monitoring

A timeline for the Yaeda-Eyasi project includes Yaeda I having been validated in 2012 and verified in 2017, and the first expansion (Yaeda II) having been validated in 2017. The activity-based monitoring system first implemented in 2014 forms the basis for annual ex-post issuance of Plan Vivo Credits. This was last updated in 2016 to include specific Sustainable Development Goal (SDG) targets that are being monitored and delivered by the project. In 2018, the SMART/Cybertracker monitoring system was introduced. This innovative software contains a module designed specifically for project needs, including an app (Cybertracker) that incorporates all monitoring requirements, pictorially and in Swahili, allowing for use even among illiterate team members and community guards. The current expansion activities began in September 2020, with MOU's signed with both district governments and FPIC meetings held with all villages, including both those previously in the project and those that are being added. In October 2020 an experiential learning field visit to Yaeda I/II was conducted by leadership from the new villages, followed by contract discussions and contract signing by all villages and communities. During this time the PDD was also being updated to match the new project information and technical specifications. During this major scaling up of the project, routine monitoring continues for Yaeda I/II. Post the signing of the PES agreement monitoring in the expanded area commenced, this monitoring is laid out in this PDD and based on the monitoring framework used in Yeada I/II. This includes the activation of Village Game Scouts in the added villages. This process is being overseen by the highly experienced and locally based project manager; however, Carbon Tanzania is actively looking to hire a second project manager to be based in the northern part of the project to support this scaling up. Once the project villages begin

receiving increased revenue from the sale of Plan Vivo credits approximately by the end of 2021 or early 2022 protection and monitoring will again increase in frequency and vigour as the number of village game scouts employed by the community will rise dramatically.

I4.2: The project record keeping system

All village land use plans and CCRO documents are kept on multiple separate Carbon Tanzania staff computers and backed up automatically in the project cloud. These documents are also independently available and backed up through project partner UCRT and at various government levels from local to national. The project contracts which serve as the PES agreements are also are kept in hard copy in the Carbon Tanzania office and on multiple separate Carbon Tanzania staff computers which are backed up automatically in the project cloud, these contracts are also independently available at the community level. Project monitoring results and records of PES disbursed are kept on multiple separate Carbon Tanzania staff computers and backed up automatically in the project cloud.

I4.3: Responsibility for business development, sales and managing transactions on the Markit environmental registry (Markit)

Carbon Tanzania is a global trading entity represented by a commercial sales and marketing company in the UK (Carbon Tanzania UK Ltd) and a project implementation company in Tanzania (CT Limited). The sales of the PVCs from this project, as well as the management of the PVCs on the HIS Markit Environmental Registry will be mediated by Carbon Tanzania UK Ltd.

This arrangement continues the approach that has been taken to developing business relationships, generating sales and delivering PVCs to the market previously adopted by Carbon Tanzania for the Yaeda Valley REDD Project. The expansion of this existing project, which this PDD describes, will draw on the marketing infrastructure already in place for the marketing and sales of the annually issued PVCs from this original project.

I5: Project financial management

Based on Carbon Tanzania's existing Plan Vivo registered Yaeda Valley REDD Project, which distributes revenues to three participating villages in the Yaeda Valley, a system for disbursement of revenues from the sale of PVCs will be extended and scaled up across the 12 villages that are included in the expanded Yaeda-Eyasi Landscape REDD Project.

The PES contracts, which are signed with each of these 12 villages, and ratified by the respective District Government authorities, require that each village hold biannual payment and grievance meetings during which questions can be raised about the project, its activities and impacts, and about the use of funds derived from the sale of PVCs from the project. One or more Carbon Tanzania representatives attend the meeting (the Project Manager(s) and the finance manager, plus any other company representative who may need to attend) and these representatives provide detailed information to the assembled members regarding the amount of revenue available for distribution in that village, based on sales of PVCs in the preceding six-month period. Due to the ERPA signed with a dedicated buyer (see below) the revenues are already known and largely reliable, so the amounts will recur regularly and in a predictable manner. These meetings are also used to disseminate any project information and monitoring results.

The village government first reports on the use of carbon revenues during the preceding six-month period, explaining any deviations from the previously agreed schema, and answers any questions from community members about the use of funds. The Village Government then discusses with its members the desired uses of the revenues, which themselves must align and conform to the legal requirements of village governance as defined by the Local Government Act of Tanzania. Revenues must be committed to activities, implemented by the village governments themselves, that are needed to fulfil the obligations of the PES contract itself (such as by-law enforcement, governance and project management meetings, data collection and reporting tasks etc…). Remaining revenues can then be allocated to specific, consensually agreed and locally relevant social and economic development needs. In the case of this project (which differs from the existing arrangement for the Yaeda Valley REDD Project) the PES contracts prescribe that 10% of the revenues received by the communities be paid directly to the respective District Government authorities. This voluntary contribution of funds to the District Authority by the communities allows and incentivises the district to take a greater interest in the project. Some project activities and some legal enforcement require higher level engagement from the district, however limited resources at the district level can be a major barrier to this engagement. For example, without this revenue in a non-project scenario the communities may catch a land-use offender or poacher who needs to be held accountable in a legal setting, however the district lacking funds for fuel to transport the offender may prevent them from taking up the case and with no alternative the offender may just be released . The communities providing this revenue creates the ability and the responsibility for the district to increase support. Furthermore, the communities now have a financial lever they control that encourages the district to ensure their work is perceived as beneficial by the communities so as they continue to provide funding, a truly novel grassroots approach. Subsequent allocations will then be made to support the perceived and agreed development needs of each village community.

Carbon Tanzania's experience of this process in the current Yaeda Valley REDD Project shows that funds are spent primarily on costs associated with sending children to school (tuition fees in the case of secondary schools, as well as uniforms, educational resources, potential boarding fees and food), support to individuals requiring health care at the District hospital, the costs of field clinics for trachoma and TB, emergency food relief when crops fail, training costs for village game scouts and costs associated with governance and management activities (travel, food and meeting costs).

The respective village governments then complete the formal minutes of these meetings and submit a copy to the Carbon Tanzania operations team. The operations team review the requests to ensure that the amounts are correct as per the available revenue, to ensure that spending commitments conform to local laws and regulations, and that planned spending does not undermine the terms of the PES agreement. If adjustments are required at this time to account for funds advanced to communities, or revenues deducted for project failure in one or more areas, these changes are made and the final disbursement figures are submitted to Carbon Tanzania's financial management team, accompanied by the details of bank accounts to be credited.

The finance team then transfers funds to the respective bank accounts, the receipt of which must be formally acknowledged by each recipient.

Table I5. Project budget and financial plan

Financial plan	YR 0 Pre-2020	YR 1 2020	YR 2 2021	YR 3 2022	YR 4 2023	YR 5 2024
Revenues						
Pre-payments		$80,000	$80,000			
Purchase of VERs			$165,000	$325,000	$650,000	$750,000
Total revenues	**$0**	**$80,000**	**$245,000**	**$325,000**	**$650,000**	**$750,000**
Investment costs						
Developer research / feasibility work	$15,000	$12,000				
Project design work		$17,000				
FPIC work (community partner)		$50,000				
Validation and Verification (external consultants)		$23,000	$57,000			
Project equipment		$7,000	$5,000			
Total investment costs	**$15,000**	**$109,000**	**$62,000**	**$0**	**$0**	**$0**
Operational costs						
Community revenue share		$25,000	$120,000	$245,000	$390,000	$450,000
Developer direct project related costs		$25,000	$60,000	$50,000	$50,000	$50,000
Developer overhead / admin costs (includes local taxes)		$20,000	$65,000	$65,000	$90,000	$120,000
Total operational costs		**$70,000**	**$245,000**	**$360,000**	**$530,000**	**$620,000**
Total costs	**$15,000**	**$179,000**	**$307,000**	**$360,000**	**$530,000**	**$620,000**
Gross profit (revenues minus costs)	**-$15,000**	**-$99,000**	**-$62,000**	**-$35,000**	**$120,000**	**$130,000**
Funding from other sources						
Cash from Project Developer (Carbon Tanzania)	$25,000	$50,000	$65,000	$30,000		
Donor Grant (to UCRT for FPIC)		$50,000				
Total capital flows	$25,000	$100,000	$65,000	$30,000	$0	$0
Annual project cash surplus	**$10,000**	**$1,000**	**$3,000**	**-$5,000**	**$120,000**	**$130,000**

*based on existing sales agreements, price per PVC at 5$

No co-financing from partner organisations for the operational phase of the project is being sought. Expenses incurred during the operational phase of the project will be covered from revenues generated through the sales of PVCs.

I6: Marketing

I6.1: Plan Vivo certificates marketing

Due to the success of the Yaeda Valley REDD Project in issuing credits on an annual basis, and in subsequently selling these credits on the Voluntary Carbon Market, Carbon Tanzania has already secured a buyer for the initial three years issuances of PVCs that are anticipated to be generated by the expanded Yaeda-Eyasi Landscape REDD Project. An ERPA has been negotiated and signed in October 2020 which commits the customer to purchasing three years of project PVCs. The ERPA also provides the customer with an option to extend the purchase agreement for a further 7 years' credit issuance.

In the case that the customer does not extend the purchase agreement through the exercise of the option, Carbon Tanzania will be in strong position to take the PVCs to the market which continues to expand year on year. Demand for the high-quality Plan Vivo Certificates generated by this specific project design (REDD, or avoided deforestation on communal lands) is strong and expected to increase as the benefits of protecting wildlife-rich, high biodiversity and culturally important forest habitats continues to be recognised through the promotion of "nature-based" solutions to climate change and the acceptance that "natural climate solutions" are necessary to address climate change.

I6.2: Preparing a marketing plan for the project

In 2015 Carbon Tanzania conducted an in-depth marketing analysis of the international voluntary carbon market, as well as reviewing the developing market for carbon credits for offset use by tourism companies within the Tanzanian tourism sector. Based on this market research exercise, the company developed a comprehensive marketing strategy which is put in place and subsequently reviewed and updated in March 2018.

The strategy provides for incremental expansion of sales to the local Tanzanian market (dominated by tourism operators and suppliers to the tourism industry), as well as a significant expansion of sales through intermediaries in the VCM such as US and European resellers, direct large corporate clients and individual offsetters by means of a web portal embedded in the company website.

Since 2015 Carbon Tanzania has nearly doubled its Tanzanian customer base, adding tour operators, local airline companies and non-governmental organisations. More significantly, sales to international resellers increased with long-term purchase agreements being signed to guarantee an offtake of the majority (80%) of issued PVCs in the past 5 years. This trend has continued and strengthened and evidenced by the ERPA which has been put in place for the present project expansion. The company will be reviewing and updating its marketing plan in 2021 to ensure that it has the ability to market the annual issuance of PVCs from the newly expanded project even in the case that the currently contracted buyer does not exercise their option in 2024. The links and relationships established by the company with important actors in the VCM over the past 5 years through its marketing strategy form the basis of being able to sell the project PVCs to a wide variety of potential buyers in the ever-growing global VCM.

I7: Technical support

Carbon Tanzania will provide ongoing support to project participants to build their capacity to monitor carbon, biodiversity and socioeconomic impacts.

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, for example through focus groups. 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. 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.

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 and Datooga. 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 is transferred directly into village government and Hadzabe community accounts, one for each village and community. 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 fulfil these purposes will be earmarked for community-wide development or for the purpose of increasing human capital (i.e., teaching or medical training) that benefits the community-at-large. This approach to benefit sharing is modelled after a pre-existing village mechanism originally used to dispense funds generated from tourism and later from early carbon revenue.

Carbon Tanzania directly provides technical support required for the project on an on-going basis. This includes primarily all the satellite analysis and carbon accounting required for the generation of PVCs. Carbon Tanzania maintains all the project documents and databases on behalf of the project and the communities. The intelligent SMART/Cybertracker mobile system and module the community VGS use to monitor land use and biodiversity is built and maintained by Carbon Tanzania. Carbon Tanzania prepares the project documents and facilities communication channels from the community, and the project, to local and global stakeholders. Though all project decisions are made by the community, Carbon Tanzania staff have extensive experience in the biodiversity, development, and conservation fields and advise the community on technical issues when requested. Carbon Tanzania also regularly provides various technical trainings to project participants.

In regard specifically to training offered by CT to project participants there is a full spectrum. The project in previous iterations has offered training to VGS around natural resource protection and many of the project VGS received training and certification in wildlife management and general conservation as Village Game Scouts (VGS) through official government training institutions. Project and community leadership have received management training in how to use management structures with the community to lead to better project outcomes and efficiency. The project, through the Sentinel Outdoor Institute has offered a program of first aid and wilderness medicine to VGS working with the project.

UCRT has also previously undertaken training work with village leadership around transparency and good governance. Similar opportunities and trainings will undoubtably be available and continue to present themselves during future project cycles.

Part J: Benefit Sharing

J1: PES agreements

PES agreements were developed from a standardized contract format used by UCRT elsewhere. This format required the contract development process to follow a strict pathway through community for initial agreement and then through the village, ward, and district government as outlined below. The contracts were signed by the community members and governments who hold the CCRO and land use titles and Carbon Tanzania. UCRT and the district governments serve as witnesses to the process and contract to ensure free prior and informed consent to the contractual agreement and to ensure that all community members understand the nature of the project.

Specific meetings around free prior and informed consent were held with all communities and villages prior to any further PES discussions.
Land tenure was not infringed during the process and the PES through its connection to Village Land Use Plans actually strengthens the local tenure system. Carbon Tanzania interacts through the PES with the democratically elected village and community leadership which is highly representative and functions all the way to the sub-village and household levels.

The PES agreements are directly tied to the legal Village Land Use Plans and CCROs of the participating communities. The PES supports the implementation of these plans, which were independently created through a grassroots participatory process and are now legal documents in Tanzania. All payments are tied to the communities fulfilling the plans they themselves laid out, and therefore the signing of the PES itself does not have any risk with it associated to the communities or environment. The PES does not place any new restrictions or conditions on the communities, only sets out the framework and provides for resources for how the communities can economically benefit as they implement the management strategies they planned, which inherently include well thought-out land use distribution and future challenge mitigation measures.

Activity timeline and reporting

The project's revenue is directly correlated to attainment of targets set by activity-based monitoring. It is expected that these targets will be met if activities are implemented and monitored in accordance with the project activity timeline, see below. If the project participants fail to adhere to their responsibilities resulting in deforestation of the project areas revenue could be withheld.

Table J1. CCRO and land use management and activity timeline

Table J1. CCRO management and activity timeline		
Activity	**Responsible Party**	**Timeline**
Patrol project area for forest disturbances and activities in violation of land use plan and village by-laws.	Village Governments, Village Game Scouts	Ongoing

Utilize SMART/Cybertracker (GPS, Camera, ETC) to record disturbances and violations	Village Game Scouts	Monthly on an ongoing basis as necessary
Utilize SMART/Cybertracker (GPS, Camera, ETC) to record presence of large mammals	Village Game Scouts	Monthly on an ongoing basis as necessary
Utilize conflict resolution mechanisms as outlined in the Village Land Act for land and land use disputes	Village Governments, Community Members, Village Game Scouts	As necessary
Provide Carbon Tanzania with information on how revenue is spent and its impacts	Village Governments, Communities	Bi-Annually
Create any committee required by law for the purposes of managing the project area according to the village land use plan	Village Governments, Communities	As necessary

J2: Payments and benefits sharing

The project coordinator has already made payments to communities of Mongo Wa Mono and Domanga starting in June 2011, and Yaeda Chini starting in 2016, as well as community members and government officials involved in project planning through the customary payment of sitting allowances. These payments will continue over the life of the project in accordance with the results-based payment plan outlined in the community PES agreement (Annex 3). To spread benefits throughout the target group, different community members are being and will continue to be trained and employed as Village Game Scouts (VGS) and responsibilities will rotate among willing participants.

Carbon Tanzania will manage all revenue flows from the year-on-year sale of PVCs, either brokered or sold in the "over-the-counter" (OTC) market, less any commissions and premiums demanded by the aggregators. 60% of the net revenues will be payed directly to the resource owners (the villages/communities. This revenue will be split between the participating villages and communities based on the size of land contributed, with potential adjustment based on community agreement, and 10% of the payments to each village government/community given to the district on their behalf, as agreed in previous community meetings and the PES agreement. Carbon Tanzania will make payments to the community every six months based upon annual monitoring results as outlined in the community sale agreement. These payments will be deposited directly into the village accounts and community funds accounts and dispersed according to the percentages shown in the revenue

sharing agreement J2 and community agreement. The Hadzabe may decide to allot some of these funds to the villages and, while UCRT may help to facilitate those decisions, it is not an official element of this project. Whilst only the Hadza have community accounts, both villages and community groups may choose to open specific accounts. Four signatories are required to access the money in either the village or Hadzabe community accounts. In the Hadzabe community bank accounts these consist of a Hadza chairperson plus three other community signatories. The salaries for the VGS will be paid out of the community division of the revenue. Carbon Tanzania will retain 40% of the revenue. The Carbon Tanzania division of the revenue will cover project implementation costs such as those associated with project development, certification, the sale of credits, annual monitoring of all variables and reporting, and verification.

Community Partner – Ujamaa Community Resource Team

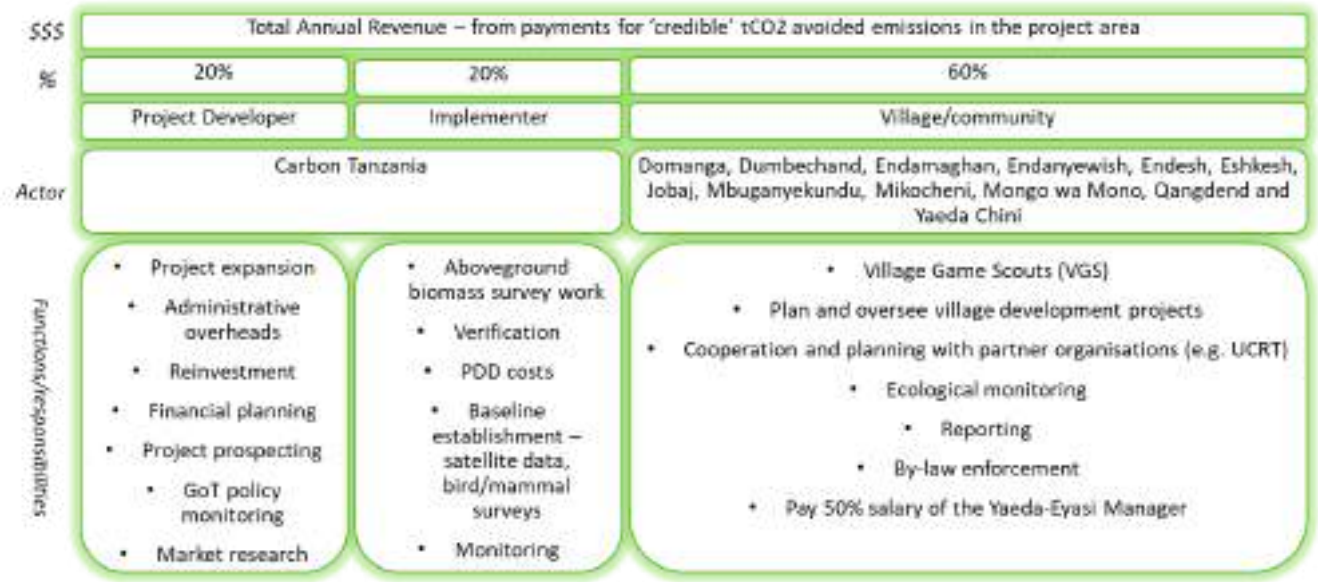
UCRT serves as the intermediary between Carbon Tanzania and the community for some project related issues. UCRT receives outside funding to carry out its mission and is self-sustaining. Should UCRT require financial support to cover its costs associated with this project, Carbon Tanzania will factor that into its implementation costs.

Community participants – Villages of Domanga, Dumbechand, Endamaghan, Endanyawish, Endesh, Eshkesh, Jobaj, Mbuganyekundu, Mikocheni, Mongo wa Mono, Qangdend and Yaeda Chini

The project coordinator has already made payments to community members involved in project planning through the customary payment of sitting allowances and to the technical team who took part in the aboveground biomass surveys. Carbon Tanzania, through UCRT, began making monthly payments to VGS in June of 2011 and to a community coordinator shortly thereafter. These payments will continue over the life of the project in accordance with the result- based payment plan outlined in the community sale agreement (Annex 3). Carbon Tanzania is currently paying Tshs 3,080,000 (Roughly 1350 USD) each month, an amount that is subject to adjustment should additional guards be required for the project's success. To spread benefits throughout the target group, different community members will be trained and employed as VGS and responsibilities will rotate among willing participants.

Carbon revenue 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 fulfil these purposes will be earmarked for community-wide development initiatives according to the financial flow diagram (see section J2) and be made available to individuals 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 modelled after a pre-existing village mechanism used to dispense funds generated from tourism and later from early carbon revenue.

Revenue sharing diagram



The revenue from the sale of PVCs will be shared between the participating villages and communities and Carbon Tanzania. The village/community payments are split between the community owners of the 18 participating CCROs and land use areas, according to the forest area contributed to the project. 12 of these CCROs and areas are owned by the village governments and 6 are owned by the Hadzabe community, which will likely choose to share a proportion of their revenue with their village government – although this is not part of the project. The village and communities have also decided to give 10% of their payments to their district governments, but this is also not a required part of the project's revenue sharing. The payments are results-based, according to the activity monitoring outlined in Section K1.

Table J2. Village revenue division

Village	Area ha	Percentage of project area
Endanyawish	7,800.20	7%
Endesh	12,754.00	12%
Endamaghan	3,769.35	3%
Mbuga Nyekundu	2,542.41	2%
Qangdend	2,015.37	2%
Eshkesh	6,561.00	6%
Jobaj	2,102.21	2%

Dumbechand	16,894.00	15%
Yaeda Chini	13,990.00	13%
Domanga	14,233.00	13%
Mikocheni	3,355.00	3%
Mongo wa Mono	24,510.00	22%
Total	110,526.54	

Part K: Monitoring

K1: Ecosystem services benefits

The monitoring plan uses activity-based monitoring indicators to trigger annual issuance of PVCs and deforestation analysis to verify the project on a 5-year basis. Activity-based monitoring is used to demonstrate whether the project is on course to achieve the expected climate benefits and non-carbon benefits outlined in Part G. Each indicator has annual performance thresholds throughout the monitoring period (see Table K1). These indicators include a range of potential changes in the legal status and institutional capacity of the participating villages and organisations, as well as land use changes that may result in failure of the project to achieve its stated carbon and non-carbon benefits.

Annual issuance will be triggered by a continuous process of qualifying the incidence or reporting of changes in community user rights over forest-based resources, community land rights and village land use plans, the consistency of management institutions, effort spent on conflict resolution and the monitoring reports by the VGS of land use change, and finally the payments to VGS and communities from carbon revenue. Indicators that relate to policy, law, management capacity and financial payments are monitored by both UCRT and CT as part of normal operating procedures to ensure contractual obligations to participating villages and communities. Community-based monitoring sheets are completed monthly by the project coordinators in Domanga and Mongo Wa Mono, these are sent to the project coordinator in Arusha and added to the activity monitoring database (see monitoring sheet Annex 6).

A results-based payment plan has been included with the contracts to ensure payments to the communities are related to results and the issuance of Plan Vivo Certificates (see Table K1b). These performance targets are set to ensure payments to the communities are related to the issuance of PVCs and result from all monitoring protocols. Monitoring frameworks work on an annual schedule, in line with annual reporting to Plan Vivo, and are expected to function through the entire crediting period of the project.

K1a. Activity monitoring indicators for issuance of annual credits

Green: Indicates that the project is on track to achieve the expected climate benefits and issuance continues as per the performance targets and contractual agreements with the communities.

Orange: Indicates some project activities are not on track to deliver the expected climate benefits. If one or more of these indicators are orange, then corrective actions are needed and are to be reported in the annual report to Plan Vivo. Issuance is withheld from Carbon Tanzania and revenue may be withheld from communities until evidence is shown of a corrective action being taken and having an impact.

Red: Indicates that project activities are not on track to deliver the expected climate benefits. If the project has one or more red indicators, corrective actions are required, and issuance is withheld from Carbon Tanzania and payments are withheld from communities until evidence is shown of corrective action being taken.

Table K1a. Activity-based indicators

Table K1a. Activity-based indicators

Indicator	Thresholds			Means of verification	Corrective action
	Green	Orange	Red		
Community user rights over forest-based resources	User rights over forest-based resources are enacted through national laws and acts governing natural resource use. Knowledge of these laws and acts is understood by participating communities.	User rights over forest-based resources are enacted through national laws and acts governing natural resource use. These laws and acts are not fully understood by participating communities.	New acts governing resource use are proposed by the government removing ownership rights from participating communities that directly impact the legal basis of this project.	1. CT and UCRT closely engaged and follow policy development with local and national government. 2. Training is continually being conducted on user rights with participating communities. 3. Records of process kept as well as all relevant legal documentation.	Project coordinator works with communities on a plan to resolve any issues and secure rights are protected and understood.
Community tenure and ownership over land	Land use plan and associated by laws are documented and implemented. Boundaries are clear and well understood. Community rights over land are secure through Community Customary Rights of Occupancy (CCRO).	Conflict over land use zones, the land use plan or changes to village land planning laws create unplanned changes to the current land use plan and associated Community Customary Rights of Occupancy (CCRO).	Conflict over land use zones, the land use plan or changes to village land planning laws create unplanned changes resulting in voiding of current land use plan, management regime and CCRO.	1. CT and UCRT and closely engaged and follow policy development with local and national government. 2. Boundary markers are in place and accompanied by clearly marked signs. 3. UCRT work to manage any potential land use conflicts. 4. Records of process kept as well as all	Project coordinator works with communities on a plan resolve any issues and secure rights are protected and understood.

				relevant legal documentation.	
Management Institutions	UCRT, CT, village government and tribal leaders continue to work towards the common goal of improved land management. Project equipment is functioning, and meetings and reports are continuing as normal.	Either UCRT, CT, village government or tribal leaders decide to opt out of the goals of improved land management resulting in a restructuring of contractual agreements. Some project equipment is not functioning, and some meetings or reports are not continuing as normal.	Management institutions collapse leading to lack of cohesion within local government or tribal leadership. CT or UCRT cease to operate resulting in a failure of project operations. Project equipment is not functioning meetings or reports are not continuing as normal.	Reports from village government and tribal leadership. Monthly monitoring indicates discourse between parties. CT and UCRT work closely with local, regional and national government agencies. equipment checks and review of meeting and reports by project coordinator.	Fix or provide any missing or broken equipment. Schedule missed meeting or address reason for failure to meet/report. Address any issues to arise in meetings.
Effort spent on conflict resolution by UCRT	UCRT spend <=14 days a year dedicated to land conflict in the project area. No grievances are logged through CT official grievance mechanism	UCRT spend <= 1 month a year dedicated to land conflict in the project area and/or a grievance is logged through CT official grievance mechanism	UCRT spend >=2months a year dedicated to land use conflict in the project area and/or multiple grievances are logged through CT official grievance mechanism	UCRT report activities to Carbon Tanzania through scheduled communication meetings. Carbon Tanzania policies allow for official grievance reporting and redress.	Address any specific grievance logged directly with CT through relevant company and contract mechanisms. Work to understand any land conflict and how it may affect the project, support UCRT and the

		and not addressed	and not addressed		community to resolve conflict fairly.
Coverage by Village Game Scouts (VGS)	VGS have patrolled and reported on >=50% of project area	VGS fail to cover or report on >=20% of project	VGS fail to patrol, collect data or report on project area	Smart / cybertracker provide quantitative data on movement by VGS.	Work with community to ensure VGS are patrolling sufficiently, including supporting the VGS in whatever may be holding them back from achieving proper level of coverage.
Land use change	VGS reporting through the monthly monitoring system indicate no significant land use change occurred within the project area.	VGS reporting through the monthly monitoring system indicate significant farming or land clearance within the project area. The village government immediately acts on information and reports to CT and UCRT.	VGS reporting through the monthly monitoring system indicate significant farming or land clearance within the project area. village government fails to act on information and report to CT and UCRT.	Monitoring by VGS is continuous SMART / Cybertracker provides evidence of land use change which is reported to village and district government. By-laws enacted through the land use plan make it illegal to farm or clear land in the project area. CT receives regular reports on land use changes.	Review land use change and causes with community. Make sure support is available to remove barriers to community action. May effect PES payments if no action is taken and performance targets not met.
Payments to the VGS, communitie	Monthly payments to the VGS	Monthly payments to the patrol	No payments are made to	CT conducts its own sales and marketing	If payments are not being made, follow up and

s and local government	provide the incentive to carry out project activities and community payments are realized to ensure all community members and local government parties benefit from carbon revenue.	teams provide the incentive to carry our project activities however revenue to communities and local government parties is not paid.	patrol teams, communities, or local government and no benefits are realized from carbon revenue.	to ensure revenue is available from sales of carbon offsets and is able to predict and manage payments to communities, village and district government. Payment records kept are kept by CT.	resolve specific barrier to completing payments. Potentially review and augment process of VGS/Community payments if the systems aren't working or communities aren't satisfied.

Table K1b. Performance targets linked to issuance and payments to communities

Table K1b. Performance targets linked to issuance and payments to communities		
Performance target	**Payment response / adjustment**	**Indicators for carbon payments based on activity-based monitoring**
Deforestation reduced by >80% of baseline conditions (risk and permanence buffer already removed)	Payment continues as per schedule	All green Indicates that the project is on track to achieve the expected climate benefits and issuance continues as per the project performance targets and contractual agreements with the communities.
Deforestation reduced by 40% - 80% of baseline	Payments reduced until corrective measures are taken and evidenced	Indicates some project activities are not on track to deliver the expected climate benefits. If one or more of these indicators are orange, then corrective actions are needed and are to be reported in the annual report to Plan Vivo. Issuance maybe withheld from Carbon Tanzania and revenue maybe withheld from communities depending on the indicator or the project targets. (Deforestation reduced by 40% - 80% of baseline) until evidence in shown of a corrective action being taken and having an impact.
Deforestation reduced by <40% of baseline	Payments suspended until evidence showing corrective measures and reported	Indicates that project activities are not on track to deliver the expected climate benefits. If the project has one or more red indicator, corrective actions are required, and issuance is withheld from Carbon Tanzania and payments are withheld from communities

		until evidence is shown of corrective action being taken.

K2: Socio-economic impacts

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 and Datooga communities. Carbon Tanzania has developed a tailored socio-economic survey, the socio-economic baseline survey identified areas in which Carbon Tanzania needs to monitor on an annual basis and focuses on main thematic areas that relate specifically to successful project operations, these include; roles and responsibilities, understanding of land use planning and user rights, understanding of carbon project development, global climate change, carbon markets and revenue.

In addition to the socio-economic survey there will be additional impacts as a result of the revenue generated through the sale of PVCs (see Table K2 below). Minutes of meetings show that communities' engagement in revenue sharing is authorized by village government and all attendees at meetings sign the minutes. Individual payment records indicate that revenue is paid to operational employees and signatures (usually fingerprints) by the recipient confirm receipt of revenue.

The projects socioeconomic impact plan is comprised of 3 parts built from a participatory process during FPIC and PES agreement meetings. It was made clear that the communites' priorities from the project were 1. Understanding and Awareness 2. Access to Financial Resources 3. Improved Community Capacity and Opportunity and the plan represents this.

Table K2. Socio-economic impact monitoring plan

<table>
<tr><th>Impacts</th><th>Assumption</th><th>Indicator</th><th>Methodology</th></tr>
<tr>
<td>Awareness of project participants about the project</td>
<td>If people in the project are actively participating in project activities and decision-making, they will be more aware about the project

Projects that follow participatory processes to work with communities will be more</td>
<td>% of project participants who feel they have good/medium/poor knowledge about the project

EXAMPLE
<table>
<tr><td></td><td>Good</td><td>Medium</td><td>Poor</td></tr>
<tr><td>Men</td><td>60%</td><td>25%</td><td>15%</td></tr>
<tr><td>Women</td><td>30%</td><td>30%</td><td>40%</td></tr>
</table>
Results are reported in the Project's Annual</td>
<td>During yearly meetings, participants are given an opportunity to state whether they feel they have good/medium/poor knowledge about the project

Gender disaggregated results are compiled by the meeting facilitator and shared and discussed with participants. Note that no data is recorded from individuals</td>
</tr>
</table>

	likely to deliver socio-economic and livelihoods benefits		
Community income from carbon sales	If income from carbon sales increases, there will be enhanced benefits for the community (in terms of more project-supported activities)	Income from sales Amount of sales income spent on community activities Figures are included in the Project's Annual Report	An annual record is kept of the income by the project coordinator and how much was deposited into community development accounts Financial information is made available for participants at project meetings e.g. account records, minutes of meetings, bank deposits, etc. Participants are encouraged to ask questions – especially about how the money was spent and explain how they benefitted
Individuals benefitting from project training and education payments	If community income is invested into education, educational standards will be raised, and individuals will get long-term benefits (in terms of work and social status)	Number of individuals receiving training, education, or employment through the project Records of payments made to education accounts due to carbon revenues. Numbers are included in the Project's Annual Report	Project coordinator keeps records of numbers of individuals receiving training, education, or employment from the project. This is compiled annually and compared with previous years Project coordinator keeps records of payments made to individual education accounts. This is compiled annually and compared with previous years

K3: Environmental and biodiversity impacts

Data on the biodiversity impacts of the project will be collected and analyzed to determine change over time. The VGS are issued with CAT-31 Smartphones and a tailored

Cybertracker / Smart platform (see Annex 4). The tracks, dung and observations of target species: Lion, Wild Dog, Zebra, Eland, Impala, Lesser Kudu and Elephant, will be monitored using this method. This information will be collated on a six-monthly basis and presented in the annual report. These species were chosen because their presence is indicative of a healthy ecosystem.

The project will 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.

Table K3. Environmental impact monitoring

Table K3. Environmental impact monitoring			
Impacts	Assumption	Indicator	Methodology
Biodiversity	Project activities conserve or enhance biodiversity Giraffe, Elephant, Zebra, Impala, Lesser Kudu, Eland, Buffalo, Warthog, Leopard, Lion, and Wild dog are chosen because their presence is indicative of a healthy ecosystem and/or they are culturally important to the local peoples. Note some are migratory and will not always be present VGSs visit the forest regularly and are able to readily observe signs of the target species if they are present	Monthly presence/absence of tracks, dung and sightings of Giraffe, Elephant, Zebra, Impala, Lesser Kudu, Eland, Buffalo, Warthog, Leopard, Lion, and Wild dog observed by VGSs, compiled annually	VGSs record the number of times they have observed tracks, dung and sightings of target species i.e Giraffe, Elephant, Zebra, Impala, Lesser Kudu, Eland, Buffalo, Warthog, Leopard, Lion, and Wild dog, compiled each month Each month, project coordinator/VGSs compile their records Each year, the annual summary is compiled, and data is included
Water availability	Water availability is affected by ecosystem (forest) condition in the catchment Project activities affect the forest condition	Monthly availability of surface water Water availability is reported in the Project's Annual Report	For several important community and biodiversity water sources that are known to have seasonal participants record the monthly water availability Based on monthly records, an annual figure is compiled Since water availability also depends on annual weather conditions, trends over 5 years can be assessed as well as annual comparisons

K4: Other monitoring

This project does not have external threats which drive leakage, by which the communities have no control. This project will account for leakage from local and internal threats. Land use planning is a participatory process that works with communities to identify areas to meet

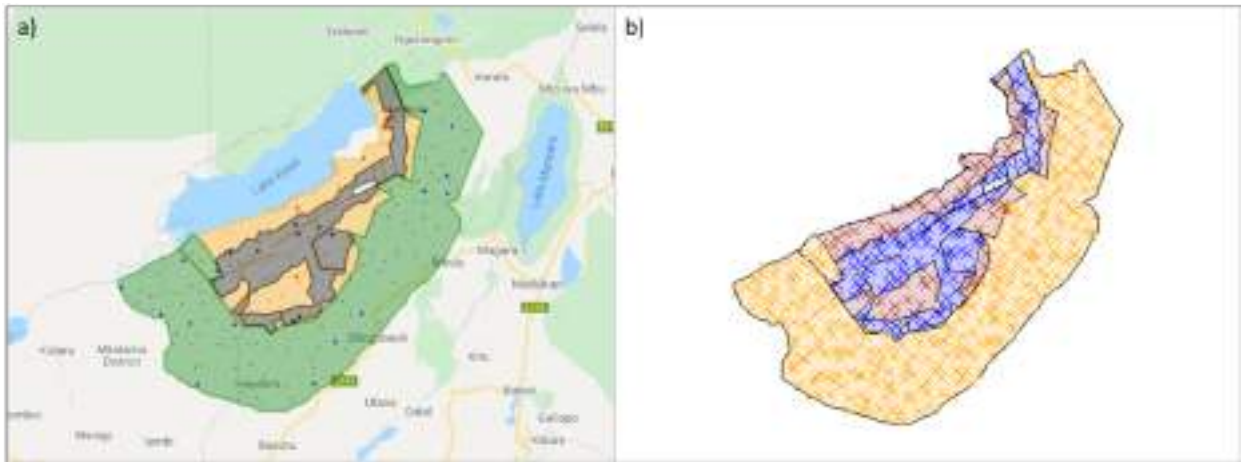
all local resource needs and uses within the landscape and is evidenced in the Village Land Use Plans (see sections E2 and Annex 5). To determine probable sources of leakage and to develop a strategic response to it, this project uses the participatory land use planning process outlined in section E2. The project will mitigate leakage through the main project activity, land use planning and implementation of CCROs on protected land. An additional 10% leakage buffer has been included within the project's accounting.

The project's primary strategy to prevent leakage involves tackling the underlying causes of the historic deforestation pattern, shifting unplanned agriculture. By conducting land use planning in project villages that surround the project area, shifting unplanned agriculture becomes planned agricultural within measured boundaries and is implemented according the plans designed by participating communities. It is expected that the threat of leakage will reduce over time as a result of expanded land use planning. As a result, it is likely that this project will have a positive effect on forest carbon stocks beyond what is credited within the project area.

K5: Verification of climate benefits

The emission reductions from the project will be verified after every five-year monitoring period. This will be done by generating a land cover map showing forest area in the project area, leakage area and reference region. 500 sample plots (shown below in figure K5) will have their land cover ground-truthed using high resolution satellite imagery (at least 30m^2 resolution) for the time period. A supervised classification on Google Earth Engine (GEE), trained on the ground-truthed sample plots (see Figure K5), will be used to create the land cover map. The area of forest in each area will be quantified in R studio. The carbon benefit of the project will be assessed relative to the deforestation rate in the reference region during the verification period.

Figure K5. A map of the 500 sample plots used for ground-truthing, displayed through Google Earth Engine and RStudio.



300 sample plots were randomly allocated in the reference region, 100 in the leakage area and 100 in the project area to ensure the highest accuracy of the supervised classification. The maps were plotted in a) Google Earth Engine and b) RStudio.

K6: Leakage monitoring

The leakage assessment will be carried out at the end of each verification period. The land use map generated for verification will be used to compare the annual deforestation rate in the leakage area and in the reference region. If the leakage area is experiencing a greater rate of deforestation than the baseline scenario, this is assumed to be leakage. If the amount of

leakage is less than the leakage buffer set (10% of the climate benefits), the PVC's held in the leakage buffer may be claimed at the end of the monitoring period, which is carried out alongside the verification.

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Annexes

Annex 1. List of key people involved with contact information

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Annex 2. Information about funding sources

Yaeda phase I. Validated in 2012, this initial project did not receive any funding from sources other than through the sale of ex-ante carbon credits. The project is grateful for the in-kind support received from The Nature Conservancy (TNC) and Brandeis University. TNC provided analysis of satellite imagery for the purpose of establishing the historical deforestation rate and assisted with mapping activities. Master's Candidates in Sustainable International Development from Brandeis University provided project planning and programmatic support.

Yaeda phase II. To expand the project and employ a business development manager to expand sales of PVC, Carbon Tanzania received investment from HRSV, a social impact investment fund that seeks to capitalize small to medium commercial enterprises that work to improve the quality of life of poor and low-income people in East Africa. HRSV has invested in Carbon Tanzania by providing a long-term, favorable loan facility. It has also provided capital for Carbon Tanzania to develop and greatly expand its communications, marketing and sales platforms through which we sell our internationally certified forest carbon offsets. This is the critical part of our financial, social and environmental sustainability, and will allow us to achieve long-term success.

Yaeda-Eyasi. As noted in I4 above, we have negotiated and signed an ERPA with a European project developer and reseller (myclimate) for the purchase of the first three annual issuances of PVCs from the expanded project. The ERPA includes the provision for the payment of USD160,000 representing a pre-purchase of 32,000 PVCs from the initial issuance. These pre-payments will support the development and early implementation phases of the project, with Carbon Tanzania providing all other funds as a combination of cash for specific activities and professional time and services as an established REDD project developer.

Annex 3. Producer/group agreement template with signpages

Contract agreement between

Carbon Tanzania (CT LTD) and the Villages/Communities of the

Yaeda-Eyasi REDD Project

Day…….Month……..Year……

This agreement is between:

Carbon Tanzania (CT LTD), hereinafter referred to as "**Carbon Tanzania",** a Tanzanian owned company, registered under the laws of the United Republic of Tanzania.

The Village Councils and Communities of Mongo Wa Mono, Yaeda Chini, Eshkesh, Domanga, Endesh, Dumbechand, Endanyawish, Jobaj, Mbuganyekundu, Qanqdend, Mikocheni and Endamaghan are hereinafter referred to as "**The Village/Community**", meaning the village government corporate and its demarcated boundaries, as registered under the laws of the United Republic of Tanzania.

This agreement concerns the initiation of an avoided deforestation project for the purpose of carbon sequestration for the reduction of unsustainable and destructive land use and facilitating the instigation of long-term sequestration of carbon dioxide through community-based

management, implemented through a partnership between **Carbon Tanzania** and **The Villages/Communities.**

1. Objectives and Roles

The overall objectives of this contract are as follows:

a) To enable **Village/Community** to generate revenue from the legal sale of verified emission reductions, which are non-timber forest products, to be used for the benefit and general economic and social development of the community.

b) To ensure continued and strengthened customary ownership and management of the land remains with **Village/Community** according to the Village Land Act No 5 of 1999, subsequent acts and other relevant laws of the United Republic of Tanzania.

c) To improve the environmental conditions and sustainability of natural resource uses in **The Village/Community** according to the land use plan and by-laws.

d) To reduce emissions of carbon dioxide and therefore contribute to global climate initiatives in line with Tanzania's national policies.

e) To enable **The Village/Community** to derive revenue from the provision of ecosystem services in the form of verified emission reductions through improved land use planning and sustainable forest management.

1. Mutual and general responsibilities

a) All parties shall adhere to the Village Land Act No 5 of 1999 and subsequent acts relating to land management in Tanzania and conduct all activities according to the laws of the United Republic of Tanzania.

b) All parties agree to prevent any activities that contradict the village land use plan and by-laws.

c) All parties shall, with due diligence, commit to work to minimize the transfer of activities that are contrary to the aims of the project, primarily conversion of woodland to agricultural land, to adjacent areas outside of the project area (a process known as leakage).

d. All parties shall commit to monitoring how much carbon has been stored or lost within the project area.

e) All parties shall commit to monitoring the socioeconomic changes in **The Village/Community** and surrounding areas as a result of the initiative.

f) All parties may review and, when necessary, agree to adjust payments and expenditures as required to meet the aims of the project.

g) All parties shall take steps to ensure that village members and **Village/Community** understand and know their responsibilities in relation to this project and are provided with the opportunity to participate.

1.2 The responsibilities of Carbon Tanzania

Carbon Tanzania shall hereby:

a. Provide expert services, training and support to **The Village/Community** as necessary for successful joint implementation of the forest carbon project, including mapping, habitat assessment, measurement of carbon content, and other processes required by **The Village/Community** to meet their aims of sustainable forest management.

b. To be a good, faithful and honest partner with the **The Village/Community** in the project

c. Secure appropriate buyers for the carbon stored in the project area as a result of the efforts of **The Village/Community**

d. Provide **The Village/Community** with reports every six months on the development of the project through relevant committees and meetings.

e. Only claim Verified Emission Reductions produced by project activites and will at no point claim ownership over the "carbon right" on **Village/Community** land.

f. Pay **The Villages/Communities 60% of total revenue from the sale of verified emission reductions**, if the villages follow their land use plans and village by laws thus reducing deforestation. From this 60% the villages/communities agree to pay 10% to the District.

1.3 The responsibilities of The Village/Community

The Village/Community shall hereby:

a) Ensure improved land use through the implementation of the approved and adopted land use plan and by-laws, which protect the forest area for the benefit of all community members and future generations.

b) Diligently partner in avoided deforestation through improved forest management, monitoring and enforcement activities in accordance with the forest management activity timeline.

c) Take steps to ensure that village/community members understand and know their responsibilities in relation to this project and are provided with the opportunity to participate.

d) Refrain from selling carbon (verified emission reductions) through any other person or entity in respect of the same piece of land covered by the land use plan attached.

e) Ensure that any information provided to Carbon Tanzania under this agreement is truthful and accurate and inform Carbon Tanzania of any valid changes resulting in reports that are no longer truthful or accurate.

f) The Village/Community agrees to protect the area of the village demarcated for the purposes of protected as shown in the land use plan and supported by by laws.

2. Terms of Contract

The terms of the contract are as follows:

2.1 Contract Validity

This contract will be implemented over a 20 (twenty) year period starting on the date of signing of this agreement and shall expire after this period of 20 (twenty) years.

The parties may renegotiate or amend this contract at any time upon agreement by all parties for the purposes of extending or reducing the contract's expiry date. However, any valid amendment or renegotiation shall be in writing and through all parties appending their signatures.

2.2 Amendments

This agreement can only be amended or improved in writing as shall be mutually agreed and through appending the signatures of all parties, **Carbon Tanzania, The Village/Community.**

2.3 Dispute resolution

In the event of any dispute that may arise between the parties in relation to this contract, all parties will meet to discuss how to resolve the dispute. If one party remains unsatisfied or if the parties fail to reach an agreement, they will refer their dispute to the Appeal and Complaints Committee. The Committee will be constituted of the following people:

1. A representative from Carbon Tanzania.
2. An elected representative from each village/community participating in the avoided deforestation programme.
3. Two persons of appropriate qualifications and expertise chosen by both parties to represent them.

Either party has the right to bring a dispute to court after exhausting the processes above.

2.4 Issues beyond normal human control / force majeure

None of the parties to this contract shall be liable for any failure to perform its obligations where such failure is as a result of acts of nature including fire, flood, earthquake, storm, hurricane or other natural disaster, war, invasion, act of foreign enemies, hostilities (whether war is declared or not), civil war, rebellion, revolution, insurrection, military or usurped power or confiscation, terrorist activities, nationalisation, government sanction, blockage, embargo, labour dispute, strike, lockout or interruption or failure of electricity.

The party, **Carbon Tanzania** or **The Villages/Communities** asserting force majeure as an excuse shall have the burden of proving that reasonable steps were taken (under the circumstances) to minimise delay or damages caused by the foreseeable events, that all non-excused obligations were substantially fulfilled, and that the other party was timely notified of the likelihood or actual occurrence which would justify such an assertion, so that other prudent precautions could be contemplated.

This agreement is hereunder signed by both parties of this contract and so witnessed this …….. day in the month of ……..……. in the year …… and has been concluded in the Village of …….. in the ward of ……in the district of .....

A. On behalf of Carbon Tanzania

1. Name……. Position……..

   Signature……

B. On behalf of Village/Community

1. Name……. Position……..

   Signature……

2. Name……. Position……..

Signature……

C. Witnessed

1. Name……. Position……..

   Signature……

2. Name……. Position……..

Signature……

Annex 1: Forest Management Activity Timeline

Activity	Responsible Party	Timeline
Patrol project area for forest disturbances and activities in violation of land use plan and village by-laws.	Village Governments, Village Game Scouts	Ongoing
Utilize SMART/Cybertracker (GPS, Camera, ETC) to record disturbances and violations	Village Game Scouts	Monthly on an ongoing basis as neccesary
Utilize SMART/Cybertracker (GPS, Camera, ETC) to record presence of large mammals	Village Game Scouts	Monthly on an ongoing basis as neccesary

Utilize conflict resolution mechanisms as outlined in the Village Land Act for land and land use disputes	Village Governments, Community Members, Village Game Scouts	As necessary
Provide Carbon Tanzania with information on how revenue is spent and its impacts	Village Governments, Communities	Bi-Annually
Create any committee required by law for the purposes of managing the project area according to the village land use plan	Village Governments, Communities	As necessary

Annex 2: Results Based Payment Plan

The project's revenue is directly correlated to attainment of certain carbon storage targets. It is expected that these targets will be met if activities are implemented and monitored in accordance with the project. Alternatively, if **The Village/Community** fail to adhere to the project plan, less carbon will be stored resulting in less revenue. Given that, the semi-annual payments to the The Village/Community accounts will comply with the results-based payment plan in the table below.

Annex 3: Payment Distribution Plan for Carbon Payments

Green: Indicates that the project is on track to achieve the expected climate benefits and issuance continues as per the performance targets and contractual agreements with the communities.

Orange: Indicates some project activities are not on track to deliver the expected climate benefits. If one or more of these indicators are orange, then corrective actions are needed and are to be reported in the annual report to Plan Vivo. Issuance is withheld from Carbon Tanzania and revenue may be withheld from communities until evidence is shown of a corrective action being taken and having an impact.

Red: Indicates that project activities are not on track to deliver the expected climate benefits. If the project has one or more red indicators, corrective actions are required, and issuance is withheld from Carbon Tanzania and payments are withheld from communities until evidence is shown of corrective action being taken.

Indicator	**Thresholds**			**Means of verification**	**Corrective action**
	Green	**Orange**	**Red**		
Community user rights	User rights over forest-	User rights over forest-	New acts governing	1. CT and UCRT closely	Project coordinator

over forest-based resources	based resources are enacted through national laws and acts governing natural resource use. Knowledge of these laws and acts is understood by participating communities.	based resources are enacted through national laws and acts governing natural resource use. These laws and acts are not fully understood by participating communities.	resource use are proposed by the government removing ownership rights from participating communities that directly impact the legal basis of this project.	engaged and follow policy development with local and national government. 2. Training is continually being conducted on user rights with participating communities. 3. Records of process kept as well as all relevant legal documentation.	works with communities on a plan to resolve any issues and secure rights are protected and understood.
Community tenure and ownership over land	Land use plan and associated by laws are documented and implemented. Boundaries are clear and well understood. Community rights over land are secure through Community Customary Rights of Occupancy (CCRO).	Conflict over land use zones, the land use plan or changes to village land planning laws create unplanned changes to the current land use plan and associated Community Customary Rights of Occupancy (CCRO).	Conflict over land use zones, the land use plan or changes to village land planning laws create unplanned changes resulting in voiding of current land use plan, management regime and CCRO.	1. CT and UCRT and closely engaged and follow policy development with local and national government. 2. Boundary markers are in place and accompanied by clearly marked signs. 3. UCRT work to manage any potential land use conflicts. 4. Records of process kept as well as all relevant legal documentation.	Project coordinator works with communities on a plan resolve any issues and secure rights are protected and understood.

Management Institutions	UCRT, CT, village government and tribal leaders continue to work towards the common goal of improved land management. Project equipment is functioning, and meetings and reports are continuing as normal.	Either UCRT, CT, village government or tribal leaders decide to opt out of the goals of improved land management resulting in a restructuring of contractual agreements. Some project equipment is not functioning, and some meetings or reports are not continuing as normal.	Management institutions collapse leading to lack of cohesion within local government or tribal leadership. CT or UCRT cease to operate resulting in a failure of project operations. Project equipment is not functioning meetings or reports are not continuing as normal.	Reports from village government and tribal leadership. Monthly monitoring indicates discourse between parties. CT and UCRT work closely with local, regional and national government agencies. equipment checks and review of meeting and reports by project coordinator.	Fix or provide any missing or broken equipment. Schedule missed meeting or address reason for failure to meet/report. Address any issues to arise in meetings.
Effort spent on conflict resolution by UCRT	UCRT spend <=14 days a year dedicated to land conflict in the project area. No grievances are logged through CT official grievance mechanism	UCRT spend <= 1 month a year dedicated to land conflict in the project area and/or a grievance is logged through CT official grievance mechanism and not addressed	UCRT spend >=2months a year dedicated to land use conflict in the project area and/or multiple grievances are logged through CT official grievance mechanism and not addressed	UCRT report activities to Carbon Tanzania through scheduled communication meetings. Carbon Tanzania policies allow for official grievance reporting and redress.	Address any specific grievance logged directly with CT through relevant company and contract mechanisms. Work to understand any land conflict and how it may affect the project, support UCRT and the community to resolve conflict fairly.

Coverage by Village Game Scouts (VGS)	VGS have patrolled and reported on >=50% of project area	VGS fail to cover or report on >=20% of project	VGS fail to patrol, collect data or report on project area	Smart / cybertracker provide quantitative data on movement by VGS.	Work with community to ensure VGS are patrolling sufficiently, including supporting the VGS in whatever may be holding them back from achieving proper level of coverage.
Land use change	VGS reporting through the monthly monitoring system indicate no significant land use change occurred within the project area.	VGS reporting through the monthly monitoring system indicate significant farming or land clearance within the project area. The village government immediately acts on information and reports to CT and UCRT.	VGS reporting through the monthly monitoring system indicate significant farming or land clearance within the project area. village government fails to act on information and report to CT and UCRT.	Monitoring by VGS is continuous SMART / Cybertracker provides evidence of land use change which is reported to village and district government. By-laws enacted through the land use plan make it illegal to farm or clear land in the project area. CT receives regular reports on land use changes.	Review land use change and causes with community. Make sure support is available to remove barriers to community action. May effect PES payments if no action is taken and performance targets not met.
Payments to the VGS, communities and local government	Monthly payments to the VGS provide the incentive to carry out project	Monthly payments to the patrol teams provide the incentive to carry our	No payments are made to patrol teams, communities, or local	CT conducts its own sales and marketing to ensure revenue is available from sales of	If payments are not being made, follow up and resolve specific barrier to completing payments.

	activities and community payments are realized to ensure all community members and local government parties benefit from carbon revenue.	project activities however revenue to communities and local government parties is not paid.	government and no benefits are realized from carbon revenue.	carbon offsets and is able to predict and manage payments to communities, village and district government. Payment records kept are kept by CT.	Potentially review and augment process of VGS/Community payments if the systems aren't working or communities aren't satisfied.

Performance target	**Payment response / adjustment**	**Indicators for carbon payments based on activity-based monitoring**
Deforestation reduced by >80% of baseline conditions (risk and permanence buffer already removed)	Payment continues as per schedule	All green Indicates that the project is on track to achieve the expected climate benefits and issuance continues as per the project performance targets and contractual agreements with the communities.
Deforestation reduced by 40% - 80% of baseline	Payments reduced until corrective measures are taken and evidenced	Indicates some project activities are not on track to deliver the expected climate benefits. If one or more of these indicators are orange, then corrective actions are needed and are to be reported in the annual report to Plan Vivo. Issuance maybe withheld from Carbon Tanzania and revenue maybe withheld from communities depending on the indicator or the project targets. (Deforestation reduced by 40% - 80% of baseline) until evidence in shown of a corrective action being taken and having an impact.
Deforestation reduced by <40% of baseline	Payments suspended until evidence showing corrective measures and reported	Indicates that project activities are not on track to deliver the expected climate benefits. If the project has one or more red indicator, corrective actions are required, and issuance is withheld from Carbon Tanzania and payments are withheld from communities until evidence is shown of corrective action being taken.

Annex 4: Potential Quantity of Ecosystems Services Transacted and Risk Buffer Deduction

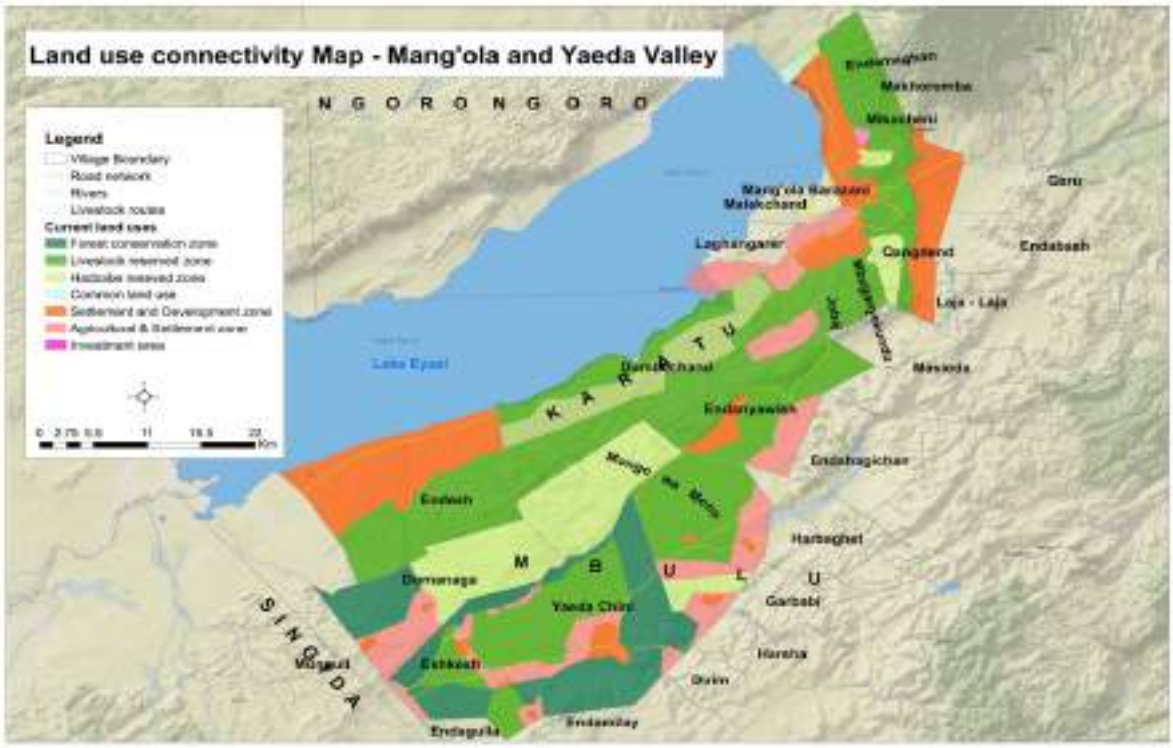
The maximum number of sellable carbon credits (after the deduction of 10% leakage and a 20% risk buffer) that this project may produce is 3,447,183or 172,359 per year for 20 years (see table 1). Sixty percent of sales revenue will be distributed to the community, divided based on village/community land contribution (see table 2).

Table 1. Emissions, Deductions, Eligible Benefit			
Baseline Carbon emissions (without project scenario) over 20-year crediting period	**Carbon benefit eligible for crediting deducting 10% leakage buffer**	**Carbon benefit attributable to project with 20% risk buffer deducted**	**Annual carbon benefits of project eligible for crediting**
(tCO2e)	(tCO2e)	(tCO2e)	(tCO2e)
4,924,547	4,432,092	3,447,183	172,359

Table 2.

Village	Area ha	Percentage of project area
Endanyawish	7,800.20	7%
Endesh	12,754.00	12%
Endamaghan	3,769.35	3%
Mbuga Nyekundu	2,542.41	2%
Qangdend	2,015.37	2%
Eshkesh	6,561.00	6%
Jobaj	2,102.21	2%
Dumbechand	16,894.00	15%
Yaeda Chini	13,990.00	13%
Domanga	14,233.00	13%
Mikocheni	3,355.00	3%
Mongo wa Mono	24,510.00	22%
Total	110,526.54	

Annex 5: Land Use Plans Under PES



Mkataba huu umesainiwa hapa chini na pande zote za mkataba huu zinazohusika na kushuhudiwa siku ya 18 katika mwezi wa Novemba mwaka 2020 na imehitimishwa katika wilaya ya Karatu

Kwa niaba ya Carbon Tanzania

1. Jina David Beiff Cheo Meneja Mkuu Saini

Kwa niaba ya Kijiji Cha Endesh

1. Jina GEWEY NANYAKI Cheo MWENYEKITI Saini
2. Jina ABDALLAH SECHONGE AG VEO Saini

Kwa niaba ya Kijiji Cha Dumbechand

1. Jina SALUSTIAN H. MATI Cheo MWENYEKITI Saini
2. Jina LAURENT CREDENI Cheo VEO Saini

Kwa niaba ya Kijiji Cha Jobaj

1. Jina ERASTO NUSSA Cheo MWENYEKITI Saini
2. Jina KILANGO B. MGONJA Cheo AG VEO Saini

Kwa niaba ya Kijiji Cha Mbuganyekundu

1. Jina DANIEL MHANU Cheo M/KITI Saini
2. Jina JOSEPH N. MICHAEL Cheo VEO Saini

Kwa niaba ya Kijiji Cha Qangdend

1. Jina HARUNA KASSIM Cheo MWENYEKITI Saini
2. Jina EMANUEL KAJIA Cheo VEO Saini

Kwa niaba ya Kijiji Cha Mikocheni

1. Jina JANUARI SAFARI Cheo M/MWENYEKITI Saini
2. Jina SIMON MAFIE Cheo VEO Saini

Kwa niaba ya Kijiji Cha Endamaghan

1. Jina JOSEPH MARCO Cheo M/TARIRE Saini
2. Jina JOSEPHAT E. TEMU Cheo VEO Saini

Kwa niaba ya Jamii ya Mbuganyekundu

1. Jina JULIUS INDANYA Cheo LIDERAI community Saini

2. Jina ALLY YOHANNA Cheo KAMUTI/KIJIJI Saini

Kwa niaba ya Jamii ya Qangdend

1. Jina MARIAMU ANYAWEG Cheo MKASIBU Saini

2. Jina NYERERE ISMAIL Cheo MWENYEKITI Saini

Kwa niaba ya Jamii ya Mikocheni

1. Jina SWADI MANDILA Cheo MWALIMU Saini

2. Jina MAMBOSI JOJA Cheo MWALIMU Saini

Kwa niaba ya Jamii ya Endamaghan

1. Jina DAUDI JULIUS Cheo HADZABE Saini

2. Jina ADAMU SIGWATZ Cheo HADZABE Saini

Kushuhudiwa

1. Jina PROSPER S. NDOMBA Cheo MWANASHERIA (W) Saini

2. Jina Mdangaya Ally J Cheo Afisa Mazingira (W) Saini

Mkataba huu umesainiwa hapa chini na pande zote za mkataba huu zinazohusika na kushuhudiwa siku ya 26 katika mwezi wa Novemba mwaka 2020 na imehitimishwa katika wilaya ya Monduli

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1. Jina David Beroff Cheo Meneja Mkuu Saini

Kwa niaba ya Kijiji Cha Mongo wa Mono

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Kwa niaba ya Kijiji Cha Yaeda Chini

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2. Jina Patu R. Ismail Cheo Mtendaji Y/chini Saini

Kwa niaba ya Kijiji Cha Eshkesh

1. Jina Gidamkuba/Gidabi Cheo M/kiti Saini
2. Jina Juma Mohamed Kwati Cheo Mtendaji Eshkesh Saini

Kwa niaba ya Kijiji Cha Domanga

1. Jina Shangada Gidabi Cheo M/kiti Saini
2. Jina Ibrahimu Dalibi Isere Cheo VEO Domanga Saini

Kwa niaba ya Kijiji Cha Endanyawish

1. Jina Dadtaqi Gidoma Cheo Mwekiti Saini
2. Jina Nicodemus Lagwen Cheo VEO Saini

Kwa niaba ya Jamii ya Mongo wa Mono

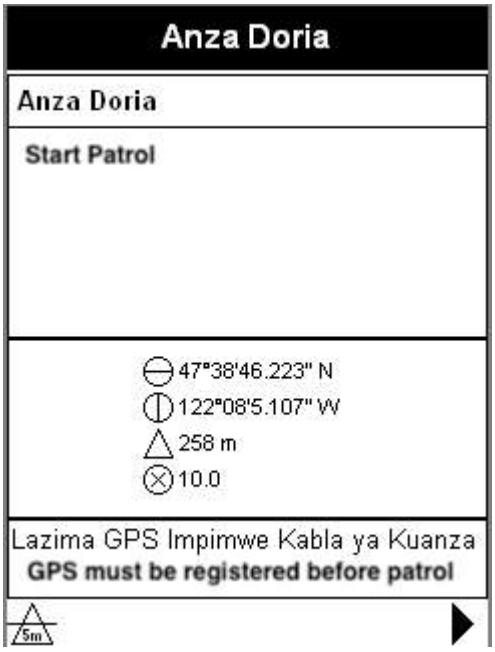
1. Jina Endeko s/o Endeko Cheo Kiamii M/mono Saini
2. Jina Moses s/o Gichigi Cheo M/kiti Jamii Mongo Saini

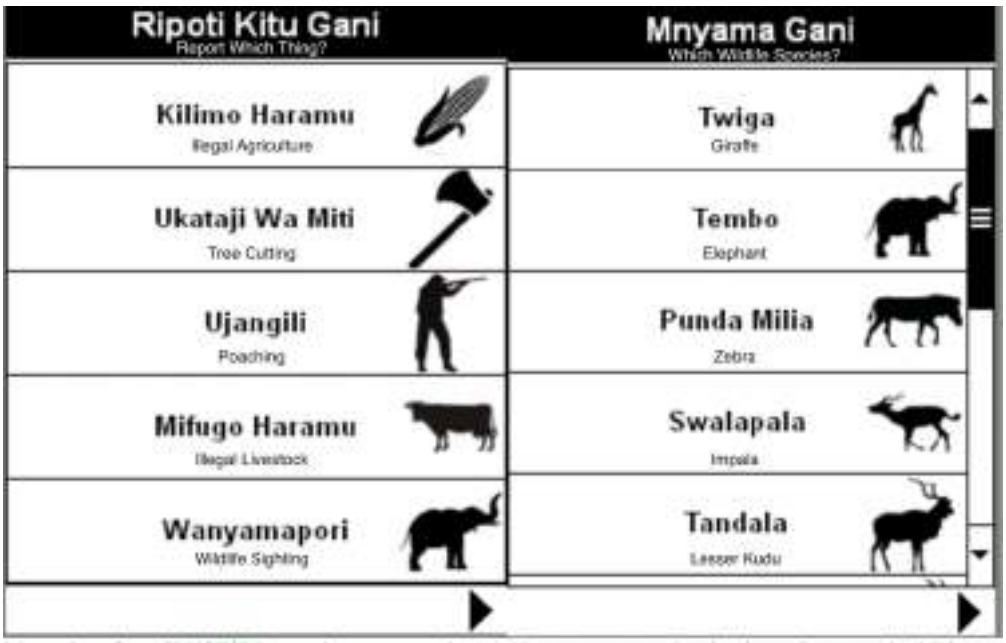
Kwa niaba ya Jamii ya Domanga

1. Jina Jenero Mathias Cheo M/kiamii Domanga Saini
2. Jina Beniamin - Paul Cheo K/jamii Domanga Saini

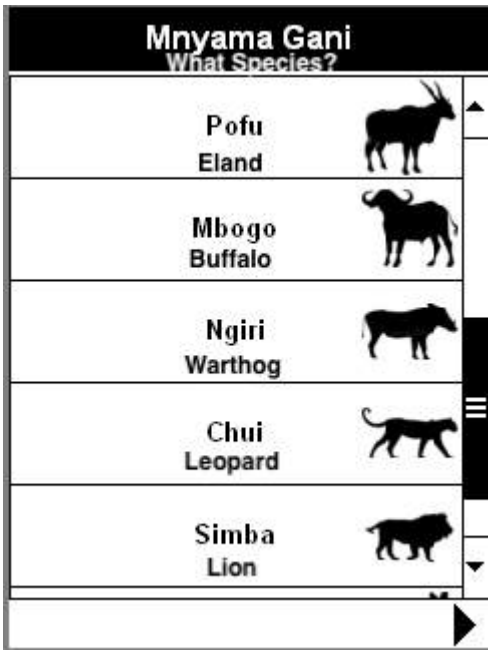
Annex 4. Database Template

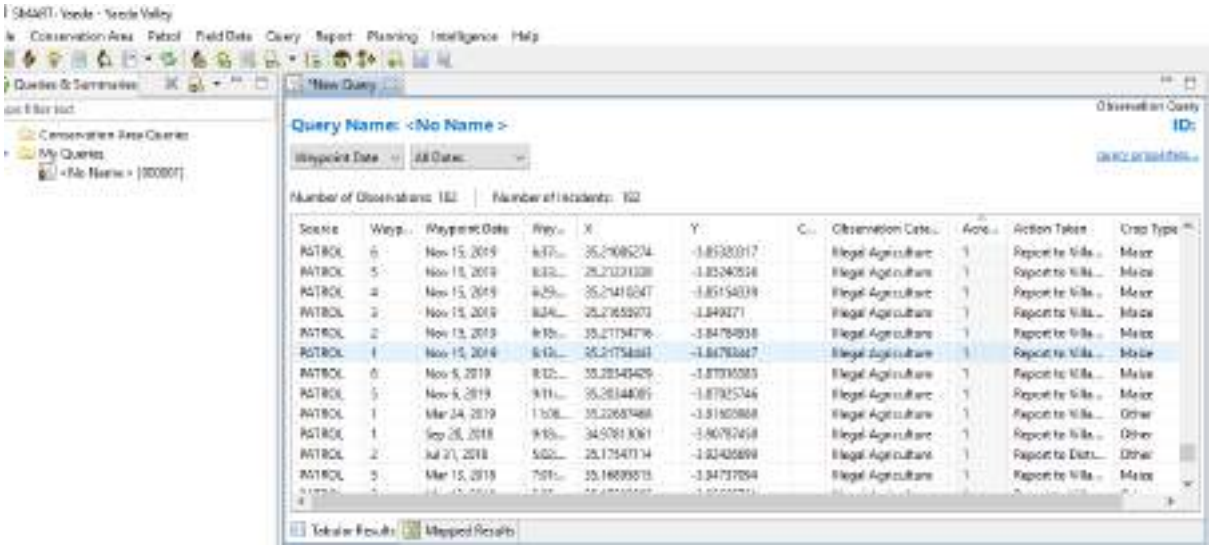
Screenshots from the SMART/Cybertracker monitoring system

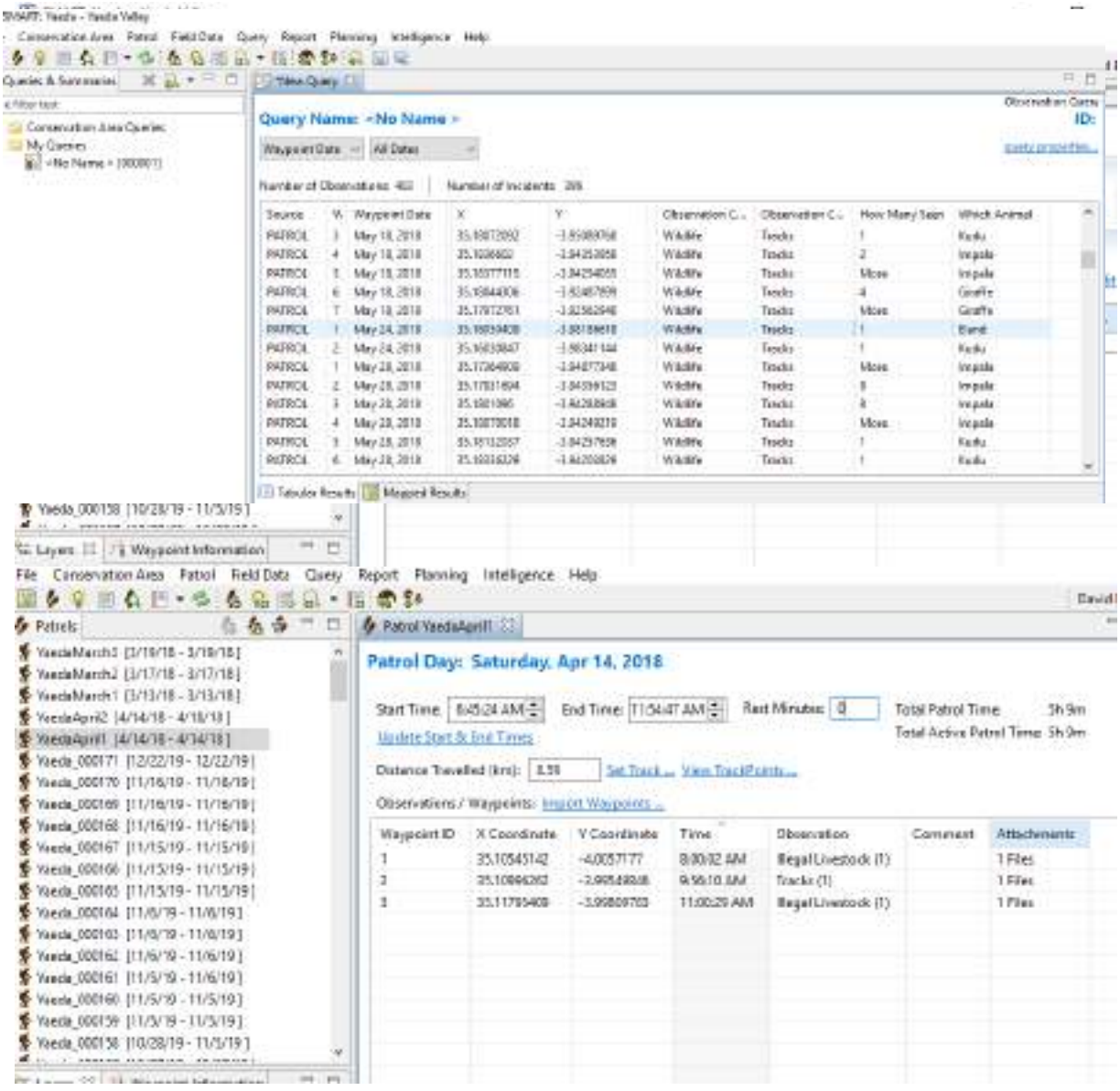




Screenshots from SMART/Cybertracker system to be used by scouts to monitor land use change and wildlife




Query Name: <No Name>


Query Name: <No Name>
Patrols
Patrol YeedaApril1
Patrol Day: Saturday, Apr 14, 2018

Form for tracking payments to VGS

Form for tracking payments to community guards (walinzi wajadi) (*English added for the benefit of the PDD)*

P.O. Box 15111, Arusha. Tel: +255-27-2502300
Email:
Info@ujamaa-crt.org Emai:
info@carbontanzania.com

FOMU KWA AJILI YA MALIPO YA POSHO WALINZI WAJADI MONGO WA MONO/DOMANGA/BONDE YA YAIDA

PURPOSE/ACTIVITY…….....DATE……..

NO.	**Jina** *(name)*	**Kiasi** *(amount)*	**Sahihi** *(signature)*
1.			
2			
3.			
4.			
5.			
6.			
7.			
8.			
	TOTAL		

Database for tracking payments to community members

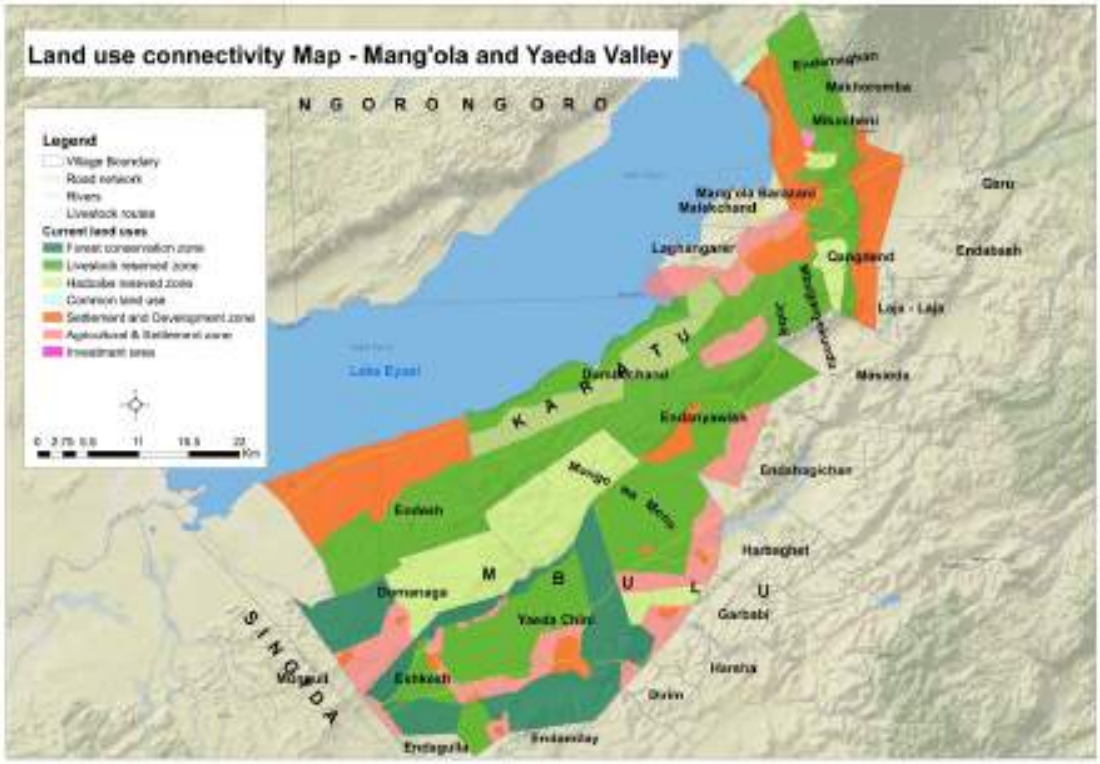
2012

# PVCs Issued	# PVCs Sold	Revenue from PVCs (US$)	Revenue from PVCs (Tshs) Exchange at 1:1500

Payments to Producers	Date Paid	Amount Paid US/TZS	% of Surplus Revenue	% of Total Revenue
Mongo Wa Mono Village Account		/		
Domanga Village Account		/		
Jamii Fund (Mongo Wa Mono)		/		
Jamii Fund (Domanga)		/		
Community Guards and Coordinator		/		
Community Guards and Coordinator		/		
Community Guards and Coordinator		/		
Community Guards and Coordinator		/		
Community Guards and Coordinator		/		
Community Guards and Coordinator		/		
Mongo Wa Mono Village Account		/		
Domanga Village Account		/		
Jamii Fund (Mongo Wa Mono)		/		
Jamii Fund (Domanga)		/		
Community Guards and Coordinator		/		
Community Guards and Coordinator		/		
Community Guards and Coordinator		/		
Community Guards and Coordinator		/		
Community Guards and Coordinator		/		
Community Guards and Coordinator		/		
	Totals:		100%	60%*

*Project coordinator to pay producers a minimum of 60% of of revenues over the lifetime of the project. The project coordinator will recoup initial start up and technical costs in the first two years of the project and encounter higher project development costs within the first few years after certification, after which project development and management costs will reduce substantially to a smaller percentage of the overall project costs, thereby leaving a larger surplus year-on-year for local producers.

Annex 5. Example forest management plans/plan vivos



Annex 6. Permits and legal documentation

Annex 6.1: Photos of the Community Customary Right of Occupancy (CCRO) deeds

JAMHURI YA MUUNGANO WA TANZANIA

Fomu ya Ardhi ya Vijiji Na. 21

Namba ya Hati ya Hakimiliki 17/kati/1

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

HATI YA HAKIMILIKI YA KIMILA
(CHINI YA FUNGU LA 25)

Leo tarehe 28 mwezi Novemba mwaka 2016

Hii ni kuthibitisha kwamba Halmashauri ya Kijiji cha (jina na anwani) **JOBAJ, S.L.P 33 KARATU, WILAYA YA KARATU** imetoa kwa (jina la Mmiliki) **HALMASHAURI YA KIJIJI CHA JOBAJ** (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 masdhui na tafsiri halisi ya Sheria ya Ardhi ya Vijiji na kwa kuzingatia vipengele vyake na kanuni zozote zinazotungwa chini ya sheria hiyo au sheria mbadala au marekebisho yake na kwa mujibu wa masharti yafuatayo:

*Futa lisilohusika

i) Mmiliki atalipa kodi ya mwaka ya Shs.....kabla ya tarehe.....ya mwezi.....kila mwaka (kama inahusika).
ii) Mmiliki itatumika kwa ajili ya **MALISHO YA MIFUGO NA HIFADHI YA MISITU**
iii) Mmiliki atawajibika kuhifadhi mazingira (ardhi na maji)
iv) Mmiliki atahakikisha kwamba mipaka ya ardhi inalindwa na kutunzwa na idumu kuwa bayana kwa kipindi chote cha hakimiliki.
v) Mmiliki ataheshimu 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 la ukubwa wa **EKARI 5192.198(HEKTA 2101.208)**, iko katika Kitongoji cha **MIEMBENI,KISIRIRI,SHULENI na GIDABOGHARGA.**
Kaskazini inapakana na ENEO LA MAKAZI
Kusini inapakana na WILAYA YA MBULU
Mashariki inapakana na MBUGANYEKUNDU
Magharibi inapakana na DUMBECHAND.
Kama inavyoonyeshwa katika mchoro/ramani hapa kulia.

06/02/2017 11

HATI NA 13/KRI/1
IMESAJILIWA TAREHE
28/NOV/2016
MUDA 4:25
AFISA ARDHI WA WILAYA

JAMHURI YA MUUNGANO WA TANZANIA

Fomu ya Ardhi ya Vijiji Na. 21

Namba ya Hati
ya Hakimiliki. 13/KRI/1

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

HATI YA HAKIMILIKI YA KIMILA

(CHINI YA FUNGU LA 25)

Leo tarehe 25 mwezi NOVEMBA mwaka 2016

Hii ni kuthibitisha kwamba Halmashauri ya Kijiji cha (jina na anwani) **MBUGANYEKUNDU, S.L.P 255 KARATU, WILAYA YA KARATU** imetoa kwa (jina la Mmiliki) **HALMASHAURI YA KIJIJI CHA MBUGANYEKUNDU** (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 kanuni zozote zinazotungwa chini ya sheria hiyo au sheria mbadala au marekebisho yake na kwa miujibu wa masharti yafuatayo:

*Futa lisilohusika

i) Mmiliki atalipa kodi ya mwaka ya Shs.....kabla ya tarehe.... ya mwezi.....kila mwaka (kama inahusika).
ii) Mmiliki itatumika kwa ajili ya **ENEO LA MALISHO NA HIFADHI**
iii) Mmiliki atawajibika kuhifadhi mazingira (ardhi na maji)
iv) Mmiliki atahakikisha kwamba mipaka ya ardhi inalindwa na kutunzwa na idumu kuwa bayana kwa kipindi chote cha hakimiliki.
v) Mmiliki ataheshimu 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 la ukubwa wa **EKARI 6108.828 (HEKTA 2472.560).**
iko katika Kitongoji cha
DARAJANI,BARAY,MPOMENI
Kaskazini inapakana na ENEO LA MAKAZI
Kusini inapakana na WILAYA YA MBULU
Mashariki inapakana na QANGDEND
Magharibi inapakana na JOBAJ
Kama inavyoonyeshwa katika mchoro/ramani

06/02/2017

HATI NA 13/KRI/2
IMESAJILIWA TAREHE
22/Nov/2016
MUDA 4:45

JAMHURI YA MUUNGANO WA TANZANIA

Fomu ya Ardhi ya Vijiji Na. 21

Namba ya Hati ya Hakimiliki 13/KRI/2

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

HATI YA HAKIMILIKI YA KIMILA

(CHINI YA FUNGU LA 25)

Leo tarehe 28 mwezi NOVEMBA mwaka 2016

Hii ni kuthibitisha kwamba Halmashauri ya Kijiji cha (jina na anwani) **MBUGANYEKUNDU, S.L.P 255 KARATU, WILAYA YA KARATU** imetoa kwa (jina la Mmiliki) **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 masdhui na tafsiri halisi ya Sheria ya Ardhi ya Vijiji na kwa kuzingatia vipengele vyake na kanuni zozote zinazotungwa chini ya sheria hiyo au sheria mbadala au marekebisho yake na kwa mujibu wa masharti yafuatayo:

*Futa linalohusika

i) Mmiliki atalipa kodi ya mwaka ya Shs.....kabla ya tarehe.....ya mwezi.....kila mwaka (kama inahusika).
ii) Mmiliki itatumika kwa ajili ya **MAKAZI NA MATUMIZI YA ASILI YA WAHADZABE**
iii) Mmiliki atawajibika kuhifadhi mazingira (ardhi na maji)
iv) Mmiliki atahakikisha kwamba mipaka ya ardhi inalindwa na kutunzwa na idumu kuwa hayana kwa kipindi chote cha hakimiliki.
v) Mmiliki ataheshimu 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 la ukubwa wa **EKARI 172.601(HEKTA 69.849).**
iko katika Kitongoji cha **DARAJANI**
Kaskazini inapakana na ENEO LA MALISHO YA MIFUGO
Kusini inapakana na ENEO LA MALISHO YA MIFUGO
Mashariki inapakana na QANGDEND
Magharibi inapakana na ENEO LA MAKAZI,
Kama inavyoonyeshwa katika michoro/ramani

JAMHURI YA MUUNGANO WA TANZANIA

Fomu ya Ardhi ya Vijiji Na. 21

Namba ya Hati ya Hakimiliki 19/KRI/2

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

HATI YA HAKIMILIKI YA KIMILA

(CHINI YA FUNGU LA 25)

Leo tarehe 28 mwezi November mwaka 2016

Hii ni kuthibitisha kwamba Halmashauri ya Kijiji cha (jina na anwani) **MIKOCHENI, S.L.P 211 KARATU, WILAYA YA KARATU** imetoa kwa (jina la Mmiliki) **HALMASHAURI YA KIJIJI CHA MIKOCHENI** (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 masdhui na tafsiri halisi ya Sheria ya Ardhi ya Vijiji na kwa kuzingatia vipengele vyake na kanuni zozote zinazotungwa chini ya sheria hiyo au sheria mbadala au marekebisho yake na kwa mujibu wa masharti yafuatayo:

*Futa lisilohusika

i) Mmiliki atalipa kodi ya mwaka ya Shs.....kabla ya tarehe..... ya mwezi.....kila mwaka (kama inahusika).

ii) Mmiliki hatumika kwa ajili ya **MALISHO YA MIFUGO**

iii) Mmiliki atawajibika kuhifadhi mazingira (ardhi na maji)

iv) Mmiliki atahakikisha kwamba mipaka ya ardhi inalindwa na kutunzwa na idumu kuwa bayana kwa kipindi chote cha hakimiliki.

v) Mmiliki ataheshimu na kuhifadhi haki za njia ziliopo.

vi) Uhakilishi wa hakimiliki kwa mtu yeyote au kikundi chochote cha watu umbao kwa kawaida si wakazi wa kijiji lazima uidhinishwe na Halmashauri ya Kijiji.

JEDWALI

(Maelezo kamili ya eneo na mipaka yake)

Ardhi hii yenye eneo la ukubwa wa **EKARI 7546.257(HEKTA 3,053)**, iko katika Kitongoji cha **KISIMANGEDA,HARIABI,ENDABESH**
Kaskazini inapakana na ENDAMAGHANG
Kusini inapakana na QANGDEND
Mashariki inapakana na MAKHOROMBA
Magharibi inapakana na ENEO LA MAKAZI,UWEKEZAJI na WAHADAZABE
Kama inavyoonyeshwa katika mchoro/ramani

HATI NA 19/KRI/3
IMESAJILIWA TAREHE
28/NOV/2016
MUDA 4:50
AFISA ARDHI WA WILAYA

JAMHURI YA MUUNGANO WA TANZANIA

Fomu ya Ardhi ya Vijiji Na. 21

Namba ya Hati
ya Hakimiliki 19/KRI/3

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

HATI YA HAKIMILIKI YA KIMILA

(CHINI YA FUNGU LA 25)

Leo tarehe 24 mwezi NOVEMBA mwaka 2016

Hii ni kuthibitisha kwamba Halmashauri ya Kijiji cha (jina na anwani) **MIKOCHENI, S.L.P 211 KARATU, WILAYA YA KARATU** imetoa kwa (jina la Mmiliki) **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 masdhui na tafsiri halisi ya Sheria ya Ardhi ya Vijiji na kwa kuzingatia vipengele vyake na kanuni zozote zinazotungwa chini ya sheria hiyo au sheria mbadala au marekebisho yake na kwa mujibu wa masharti yafuatayo:

*Futa lisilohusika

i) Mmiliki atalipa kodi ya mwaka ya Shs.....kabla ya tarehe..... ya mwezi.....kila mwaka (kama inahusika).
ii) Mmiliki itatumika kwa ajili ya **MAKAZI NA MATUMIZI YA ASILI YA WAHADZABE.**
iii) Mmiliki atawajibika kuhifadhi mazingira (ardhi na maji)
iv) Mmiliki atahakikisha kwamba mipaka ya ardhi inalindwa na kutunzwa na idumu kuwa bayana kwa kipindi chote cha hakimiliki.
v) Mmiliki ataheshimu 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 la ukubwa wa **EKARI 746.287(HEKTA 302.012).**
iko katika Kitongoji cha **KISIMANGEDA**
Kaskazini inapakana na ENEO LA MALISHO YA MIFUGO
Kusini inapakana na QANGDEND
Mashariki inapakana na ENEO LA MALISHO YA MIFUGO
Magharibi inapakana na ENEO LA MAKAZI,
Kama itavyoonyeshwa katika michoro/ramani

HATI NA: 19/KRT/1
IMESAJILIWA TAREHE
28/NOV/2016
MUDA 4:35

JAMHURI YA MUUNGANO WA TANZANIA

Fomu ya Ardhi ya Vijiji Na. 21

Namba ya Hati
ya Hakimiliki 19/KRT/1

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

HATI YA HAKIMILIKI YA KIMILA

(CHINI YA FUNGU LA 25)

Leo tarehe 28 mwezi NOVEMBA mwaka 2016

Hii ni kuthibitisha kwamba Halmashauri ya Kijiji cha (jina na anwani) **MIKOCHENI, S.L.P 211 KARATU, WILAYA YA KARATU** imetoa kwa (jina la Mmiliki) **HALMASHAURI YA KIJIJI CHA MIKOCHENI** (humu ndani akirejewa kama "Mkazi") hakimiliki ya kimila (itaitwa "hakimiliki") juu ya ardhi iliyofafanuliwa katika Jedwali (humu ndani itarwa "ardhi") kwa kipindi kisicho na kikomo*/kwa miaka 99*/kwa miaka.....tangu tarehe.....mwezi.....mwaka 20....kwa masdhui na tafsiri halisi ya Sheria ya Ardhi ya Vijiji na kwa kuzingatia vipengele vyake na kanuni zozote zinazotungwa chini ya sheria hiyo au sheria mbadala au marekebisho yake na kwa mujibu wa masharti yafuatayo:

*Futa lisilohusika

i) Mmiliki atalipa kodi ya mwaka ya Shs.....kabla ya tarehe.... ya mwezi.....kila mwaka (kama inahusika)
ii) Mmiliki atatumika kwa ajili ya **ENEO LA UWEKEZAJI**
iii) Mmiliki atawajibika kutunfadhi mazingira (ardhi na maji)
iv) Mmiliki atahakikisha kwamba mipaka ya ardhi inalindwa na kutunzwa na idumu kuwa bayana kwa kipindi chote cha hakimiliki.
v) Mmiliki atahesbimo na kuhifadhi haki za njia zilizopo.
vi) Uhakikishi 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 la ukubwa wa **EKARI 515.748(HEKTA 208.716).** iko katika Kitongoji cha **HARIABI**
Kaskazini inapakana na ENEO LA MALISHO
Kusini inapakana na ENEO LA WAADZABE
Mashariki inapakana na ENEO LA MALISHO
Magharibi inapakana na ENEO LA MAKAZI
Kama inavyoonyeshwa katika mchoro/ramani hapo kulia

HATI NA. 12/KA/1
IMESAJILIWA TAREHE
28/NOV/2016
MUDA 4:15

JAMHURI YA MUUNGANO WA TANZANIA

Fomu ya Ardhi ya Vijiji Na. 21

Namba ya Hati
ya Hakimiliki 12/KA/1

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

HATI YA HAKIMILIKI YA KIMILA

(CHINI YA FUNGU LA 25)

Leo tarehe 28 mwezi NOVEMBA mwaka 2016

Hii ni kuthibitisha kwamba Halmashauri ya Kijiji cha (jina na anwani) **QANGDEND, S.L.P 96 KARATU, WILAYA YA KARATU** imetoa kwa (jina la Mmiliki) **HALMASHAURI YA KIJIJI CHA QANGDEND** (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 masharti na tafsiri halisi ya Sheria ya Ardhi ya Vijiji na kwa kuzingatia vipengele vyake na kanuni zozote zinazotungwa chini ya sheria hiyo au sheria mbadala au marekebisho yake na kwa mujibu wa masharti yafuatayo:

*Futa lisilohusika

i) Mmiliki atalipa kodi ya mwaka ya Shs.....— kabla ya tarehe.— ya mwezi.....— kila mwaka (kama inahusika).
ii) Mmiliki itatumika kwa ajili ya **MALISHO YA MIFUGO**
iii) Mmiliki atawajibika kuhifadhi mazingira (ardhi na maji)
iv) Mmiliki atahakikisha kwamba mipaka ya ardhi inalindwa na kutunzwa na idumu kuwa hayana kwa kipindi chote cha hakimiliki.
v) Mmiliki ataheshimu 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 la ukubwa wa **EKARI 13,459.00 (HEKTA 5,446.666).**
Iko katika Kitongoji cha **KAMBI YA SIMBA,MURUS,MANDAGEW,MBUYUNI**
Kaskazini inapakana na ENEO LA WAHADZABE,KIBR CHA MIKOCHENI
Kusini inapakana na WILAYA YA MBULU
Mashariki inapakana na ENEO LA MAKAZI/KILIMO
Magharibi inapakana na ENEO LA MAKAZI /WAHADZABE/MBUGANYEKUNDU
Kama mavyoonyeshwa katika mchoro/ramani hapa kulia.

06/02/2017 11

HATI NA/12/KAT/13
IMESAJILIWA TAREHE
28/nov/2016
MUDA 4:55

JAMHURI YA MUUNGANO WA TANZANIA

Fomu ya Ardhi ya Vijiji Na. 21

Namba ya Hati
ya Hakimiliki 12/KAT/13

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

HATI YA HAKIMILIKI YA KIMILA

(CHINI YA FUNGU LA 25)

Leo tarehe 28 mwezi NOVEMBA mwaka 2016

Hii ni kuthibitisha kwamba Halmashauri ya Kijiji cha (jina na anwani) **QANGDEND, S.L.P 96 KARATU, WILAYA YA KARATU** imetoa kwa (jina la Mmiliki) **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 masharti na tafsiri halisi ya Sheria ya Ardhi ya Vijiji na kwa kuzingatia vipengele vyake na kanuni zozote zinazotungwa chini ya sheria hiyo au sheria mbadala au marekebisho yake na kwa mujibu wa masharti yafuatayo:

*Futa lisilohusika

i) Mmiliki atalipa kodi ya mwaka ya Shs.....kabla ya tarehe.....ya mwezi.....kila mwaka (kama inahusika).
ii) Mmiliki atatumika kwa ajili ya **MAKAZI NA MATUMIZI YA ASILI YA WAHADZABE**
iii) Mmiliki atawajibika kuhifadhi mazingira (ardhi na maji)
iv) Mmiliki atahakikisha kwamba mipaka ya ardhi inalindwa na kutunzwa na idumu kuwa bayana kwa kipindi chote cha hakimiliki.
v) Mmiliki ataheshimu na kuhifadhi haki za njia zilizopo.
vi) Uhakikishi 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 la ukubwa wa **EKARI 630.593 (HEKTA 255.1926),**
iko katika Kitongoji cha **MANDAGEW**
Kaskazini inapakana na MIKOCHENI
Kusini inapakana na ENEO LA MALISHO
Mashariki inapakana na ENEO LA MALISHO
Magharibi inapakana na ENEO LA MALISHO
Kama inavyoonyeshwa katika mchoro/ramani hapa kulia.

06/02/2017

JAMHURI YA MUUNGANO WA TANZANIA

Namba ya Hati ya Hakimiliki

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

HATI YA HAKIMILIKI YA KIMILA

(CHINI YA FUNGU LA 25)

Leo tarehe 27 mwezi NOVEMBA mwaka 2016

Hii ni kuthibitisha kwamba Halmashauri ya Kijiji cha (jina na anwani) **QANGDEND, S.L.P 96 KARATU, WILAYA YA KARATU** imetoa kwa (jina la Mmiliki) **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 masdhui na tafsiri halisi ya Sheria ya Ardhi ya Vijiji na kwa kuzingatia vipengele vyake na kanuni zozote zinazotongwa chini ya sheria hiyo au sheria mbadala au marekebisho yake na kwa mujibu wa masharti yafuatayo:

*Futa lisilohusika

i) Mmiliki atalipa kodi ya mwaka ya Shs.....kabla ya tarehe.....ya mwezi.....kila mwaka (kama inahusika).
ii) Mmiliki itatumika kwa ajili ya **MAKAZI NA MATUMIZI YA ASILI YA WAHADZABE**
iii) Mmiliki atawajibika kuhifadhi mazingira (ardhi na maji)
iv) Mmiliki atahakikisha kwamba mipaka ya ardhi inalindwa na kutunzwa na idumu kuwa bayana kwa kipindi chote cha hakimiliki.
v) Mmiliki atabeshimu 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 la ukubwa wa **EKARI 4522.152 (HEKTA 1830.050).**
iko katika Kitongoji cha **MBUYUNI/MURUSI**
Kaskazini inapakana na ENEO LA MALISHO
Kusini inapakana na WILAYA YA MBULU.
Mashariki inapakana na ENEO LA MALISHO
Magharibi inapakana na MBUGANYEKUNDU
Kama inavyoonyeshwa katika mchoro/ramani hapa kulia.

06/02/20

HATI NA 18/KAT/3
IMESAJILIWA TAREHE
28/Nov/2016
MUDA 4:10

JAMHURI YA MUUNGANO WA TANZANIA

Fomu ya Ardhi ya Vijiji Na. 21

Namba ya Hati
ya Hakimiliki. 18/KAT/3

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

HATI YA HAKIMILIKI YA KIMILA

(CHINI YA FUNGU LA 29)

Leo tarehe 28 mwezi November mwaka 2016

Hii ni kuthibitisha kwamba Halmashauri ya Kijiji cha (jina na anwani) **ENDAMAGHAN, S.L.P 211 KARATU, WILAYA YA KARATU** imetoa kwa (jina la Mmiliki) **HALMASHAURI YA KIJIJI CHA ENDAMAGHAN** (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 masdhui na tafsiri halisi ya Sheria ya Ardhi ya Vijiji na kwa kuzingatia vipengele vyake na kanuni zozote zinazotungwa chini ya sheria hiyo au sheria mbadala au marekebisho yake na kwa mujibu wa masharti yafuatayo:

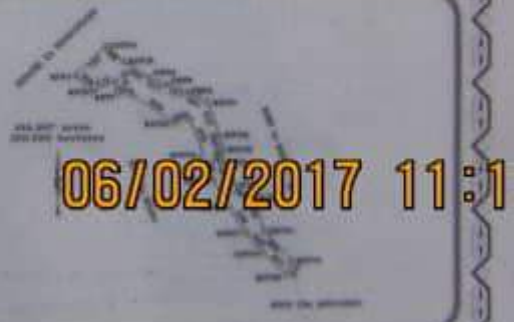
*Futa lisilohusika

i) Mmiliki atalipa kodi ya mwaka ya Shs.....kabla ya tarehe..... ya mwezi.....kila mwaka (kama inahusika).
ii) Miliki itatumika kwa ajili ya **HIFADHI YA MSITU.**
iii) Mmiliki atawajibika kuhifadhi mazingira (ardhi na maji)
iv) Mmiliki atahakikisha kwamba mipaka ya ardhi inalindwa na kutunzwa na idumu kuwa bayana kwa kipindi chote cha hakimiliki.
v) Mmiliki atahesbimu 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 la ukubwa wa **EKARI 494.927 (HEKTA 200.290).**
iko katika Kitongoji cha **GETAWASTA JANGWANI**
Kaskazini inapakana na HIFADHI YA NGORONGORO
Kusini inapakana na KIJIJI CHA MIKOCHENI
Mashariki inapakana na ENEO LA MAKAZI
Magharibi inapakana na ENEO LA KILIMO
Kama inavyoonyeshwa katika mchoro/ramani hapa kulia.



HATI NA 18/KRI/2
IMESAJILIWA TAREHE 28/Nov/2016
MUDA 4:05
AFISA ARDHI WA WILAYA

JAMHURI YA MUUNGANO WA TANZANIA

Fomu ya Ardhi ya Vijiji Na. 21

Namba ya Hati ya Hakimiliki 18/KRI/2

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

HATI YA HAKIMILIKI YA KIMILA

(CHINI YA FUNGU LA 25)

Leo tarehe 25 mwezi Novemba mwaka 2016

Hii ni kuthibitisha kwamba Halmashauri ya Kijiji cha (jina na anwani) **ENDAMAGHAN, S.L.P 211 KARATU, WILAYA YA KARATU** imetoa kwa (jina la Mmiliki) **HALMASHAURI YA KIJIJI CHA ENDAMAGHAN** (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 kanuni zozote zinazotungwa chini ya sheria hiyo au sheria mbadala au marekebisho yake na kwa mujibu wa masharti yafuatayo:

*Futa lisilohusika

i) Mmiliki atalipa kodi ya mwaka ya Shs.....kabla ya tarehe..... ya mwezi.....kila mwaka (kama inahusika).
ii) Mmiliki itatumika kwa ajili ya **ENEO LA MALISHO.**
iii) Mmiliki atawajibika kuhifadhi mazingira (ardhi na maji)
iv) Mmiliki atahakikisha kwamba mipaka ya ardhi inalindwa na kutunzwa na idumu kuwa bayana kwa kipindi chote cha hakimiliki.
v) Mmiliki ataheshimu 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 la ukubwa wa **EKARI 8,813.154 (HEKTA 3,566.557),** iko katika Kitongoji cha **GETAWASTA,MIGUNGANI**

Kaskazini inapakana na HIFADHI YA NGORONGORO
Kusini inapakana na KIJIJI CHA MIKOCHENI
Mashariki inapakana na MAKHOROMBA
Magharibi inapakana na ENEO LA MAKAZI
Kama inavyoonyeshwa katika michoro/ramani hapa kufia.


HATI NA. 18/KAT/1
IMESAJILIWA TAREHE
28/Nov/2016
MUDA 4:00

JAMHURI YA MUUNGANO WA TANZANIA

Fomu ya Ardhi ya Vijiji Na. 21

Namba ya Hati
ya Hakimiliki...18/KAT/1

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

HATI YA HAKIMILIKI YA KIMILA

(CHINI YA FUNGU LA 25)

Leo tarehe.....25.....mwezi...NOVEMBA.....mwaka...2016.....
Hii ni kuthibitisha kwamba Halmashauri ya Kijiji cha (jina na anwani) **ENDAMAGHAN, S.L.P 211 KARATU, WILAYA YA KARATU** imetoa kwa (jina la Mmiliki) **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 masdhui na tafsiri hafisi ya Sheria ya Ardhi ya Vijiji na kwa kuzingatia vipengele vyake na kanuni zozote zinazotungwa chini ya sheria hiyo au sheria mbadala au marekebisho yake na kwa mujibu wa masharti yafuatayo:

*Futa lisilohusika

i) Mmiliki atalipa kodi ya mwaka ya Shs...✓.....kabla ya tarehe...✓ ya mwezi.....✓.....kila mwaka (kama inahusika).
ii) Mmiliki ituumika kwa ajili ya **MAKAZI NA MATUMIZI YA ASILI YA WAHADZABE**
iii) Mmiliki atawajibika kuhifadhi mazingira (ardhi na maji)
iv) Mmiliki atahakikisha kwamba mipaka ya ardhi inalindwa na kutunzwa na idumu kuwa hayuna kwa kipindi chote cha hakimiliki.
v) Mmiliki atabeshimu 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 la ukubwa wa **EKARI 501.119 (HEKTA 202.796).**
iko katika Kitongoji cha **MIGUNGANI**
Kaskazini inapakana na HIFADHI YA NGORONGORO
Kusini inapakana na ENEO LA MAKAZI
Mashariki inapakana na ENEO LA MALISHO
Magharibi inapakana na ENEO LA MAKAZI
Kama inavyoonyeshwa katika mchoro/ramani iapa kulia.

06/02/2017

Annex 6.2: CT letter to the communities

P.O. Box 425
Arusha, Tanzania
info@carbontanzania.com
carbontanzania.com

July 3rd, 2020

Viongozi vya Vijiji Vya Mongo Wa Mono, Yaeda Chini, Eshkesh, Domanga, Endesh, Dumbechand, Endanyawish, Jobaj, Mbuganyekundu, Qanqdend, Mikocheni and Endamaghan na Wilaya za Mbulu na Karatu

YAH: Mradi wa Carbon (Yaeda-Eyasi), Utangulizi na "Free Prior Informed Consent"

Waheshimiwa,

Sisi wa Carbon Tanzania tunatuma barua huu kuwajulisha kwamba bada ya muda fupi tutaomba kuanza kuwatembelea kwenye vijiji na wilaya zenu kwaelezea juu ya mradi ya carbon (hewa ya ukaa) "Yaeda-Eyasi REDD" ambacho tunataka kuanza na ninyi. Mradi inaleniga kulinda maneo yenu na kuhifadhi mazingira na kuleta faidha na maendeleo kwa jamii. Tukija tuta toa ufafanuzi juu ya mradi na pia kuhakikisha kwamba kabla ya kuanza mradi, mmeelezewa vzuri na mmeikubali kwa uhuru (Free Prior Informed Consent). Baada la hapo tutaweza kuendelea kujadili mradi hatua kwa hatua. Tunamini kwamba tutaweza kufanya kazi nzuri pamoja.

Asanteni Sana,

CT LIMITED
P. O. Box 425 ARUSHA

Bw. Marc Baker
Mkurugenzi
Carbon Tanzania

Translation:
We at Carbon Tanzania are sending you this letter to inform you that in the near future we will ask you to start visiting your villages and districts to explain about the carbon (carbon dioxide) project "Yaeda-Eyasi REDD" which we want to start with you. The project aims to protect your land and preserve the environment and bring benefits and development to the community. When we come to you we will explain the project and also make sure that before you start the project, you have been well informed and accepted freely (Free Prior Informed Consent). After that we will be able to continue discussing the project step by step. We believe that we will be able to work well together. Thank you!

Annex 6.3: MoU between CT and UCRT

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 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 been much work to build local natural resource management capacity over the past decade.

1. Assistance in strategic organizational planning, including identification of technical, human resource, and financial requirements and gaps, and development of strategies to address them;
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 areas of collaboration:

- 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 in 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 and areas in the Yaeda Valley as CCROs, conservation areas under the village's control.

- Makame WMA, 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 as 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.

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 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 [illegible] 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.

- In the last few years UCRT and partners have created new CCROs and land use lands connecting the Yaeda Valley to Mangola in Karatu District. This area of acacia-commiphora woodland would provide an opportunity for CT to expand the Yaeda Valley REDD project or start another carbon project in these new CCROs.

I. Parties

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

Carbon Tanzania, (CT Ltd), registered in Tanzania and having official plot [illegible], [illegible], 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 [illegible], [illegible] premises, Arusha District, P.O.Box 15111, Arusha Tanzania, and with vision to improved livelihoods for pastoralists, hunter-gatherers and agro-pastoralist 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 14th May 2019 until 14th May 2021. The MoU has been renewed from a previous MoU signed in 2012 by both parties and may further 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 produce 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 fulfil 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 fulfil their missions and aims.

The partnership includes:

Both organizations shall follow normal practice of duly acknowledging the partnership described in this MoU when presenting or publishing 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: 14th May 2019

Signed on behalf of Ujamaa Community Resource Team

Mr. Makko Sinandei
Executive Director
Ujamaa Community Resource Team

Signed on behalf of Carbon Tanzania

CT LIMITED

Mr. M. Baker
Director Carbon Tanzania

Annex 6.4: MoU between CT and Karatu/Mbulu District

Memorandum of Understanding

between

Karatu/Mbulu District Council

and

Carbon Tanzania

for collaboration in the

Yaeda-Eyasi REDD Project

July 2020 — July 2025

1. Preamble
This Memorandum of Understanding (this "MoU") governs the collaboration between KARATU/MBULU District Council on the one hand, and Carbon Tanzania LTD on the other hand, in the development and implementation of the Yaeda-Eyasi REDD Project. The KARATU/MBULU District Council and Carbon Tanzania shall be referred to herein, individually, as a "Party" and collectively as the "Parties".

The overall objectives of this MoU are to set up a framework for the development and implementation of the Yaeda-Eyasi Reduced Emissions from Deforestation and Degradation (REDD) Project and ensure the sustainability of the project activities through collaboration, integration, and alignment between the KARATU/MBULU District Council and Carbon Tanzania.

2. Project Scope
Carbon Tanzania has for almost 10 years operated the Plan Vivo accredited Yaeda Valley REDD (Reduced Emissions from Deforestation and Degradation) project and has successfully delivered hundreds of thousands of dollars to the communities and government authorities generated through the sale of Verified Emission Reductions (VERs) (Carbon Credits) from the project. In early 2020, Carbon Tanzania's operational partner in Northern Tanzania, Ujamaa Community Resource Team (UCRT) completed new village land use plans in the Yaeda – Eyasi landscape. This increased the area under community ownership and legal protection to 125,000ha, all set aside for pastoralist communities and indigenous use by Hadza hunter gathers. These VLUPs create an opportunity for conserving a culturally and ecologically important landscape that incorporates 12 villages and links the Yaeda Valley to the Ngorongoro Crater Conservation Area. These VLUPs and associated CCROs will now form the new Carbon Tanzania Yaeda – Eyasi REDD project, with the potential, through the sale of VERs, to generate significantly increased revenue for development, both at the local and district levels. Carbon Tanzania has been in communication with Plan Vivo and has secured finance for the development phase of the project. This process will start with village meetings and go through the submission of the Project Development Document, culminating in the implementation of project activities, project validation, and the issuance of VERs by Plan Vivo.

3.Geography
The current Yaeda Valley REDD project is situated in the villages of Mongo Wa Mono, Domanga, and Yaeda Chini, at 34°30'E/03°30'S in the Central Rift Valley, at an altitude of 1200-1400 MASL, in the southwest of Mbulu District, Manyara Region, Northern Tanzania.
The extension to this project will include 12 villages, linking the Yaeda Valley to the Ngorongoro Conservation Area. This would create a project area covering an area of 124,500 Ha of combined protected area CCROs. The villages involved in the project will be Domanga, Dumbechand, Endamaghan, Endanyewish, Endesh, Eshkesh, Jobaj, Mbuganyekundu, Mikocheni, Mongo wa Mono, Qangdend and Yaeda Chini. These 12 villages cover a total area of 212,390 Ha. Land use plans, developed by the villages in conjunction with district government, divides the entire area into land use zones, each designated as one of three land use types: housing and farming, grazing, and village level protected areas.
The project area will incorporate 18 CCROs protected for livestock grazing or use by the Hadza creating a total area of 124,500Ha. This includes the current project area which covers 36,257Ha.

4. Specific Project Objective
The objective of the proposed Yaeda-Eyasi REDD project is to support the development of the local communities and villages, as well as the district, through revenue provided by the sale of Verified Emission Reductions. The Verified Emission Reductions will be generated by the communities, with district support, adhering to their Village Land Use Plans which were developed in a participatory manner, and more specifically through avoiding deforestation in the areas where deforestation was not designated as a legal land use.

5.Principal Contacts
The following entities are party to this MoU:

Host District

KARATU/MBULU District Council
KARATU/MBULU
Represented by the KARATU/MBULU District Executive Director

Developing and Implementing Partner

Carbon Tanzania
P.O. Box 425, Arusha
Represented by the Technical Advisor, David Beroff

6.Responsibilities
General responsibilities:

- All parties recognize that they have a shared responsibility in the timely and professional development and implementation of the Project.
- Representatives of all parties will attend meetings aiming at proper coordination of the Project.
- All parties will try to keep each other informed about activities that are implemented under the Project.
- Payments made to staff involved in activities under the Project are the responsibility of the employer of such staff.
- Minutes of coordination meetings and other relevant meetings will be shared with all parties.
- Information generated by the Monitoring and Evaluation system of the project will be shared with all parties.

Specific responsibilities:
KARATU/MBULU District
- The District contributes by supporting the implementation of the project within KARATU/MBULU District.
- The District will appoint a Liaison Officer or Contact Person from amongst the relevant Heads of Departments at the District Council, who will coordinate the involvement of the District in the implementation of the project.

Carbon Tanzania

- Carbon Tanzania will maintain close contact with the beneficiaries, and with the Local Government Authorities at District, Village, and Ward level.
- Carbon Tanzania will collect the required information for the Monitoring and Evaluation system that is in use for the project.

7. Term
This MoU will begin on KARATU/MBULU 2020 and represents the start of project activities. This MoU will remain in full force and effect until KARATU/MBULU 2025 ("Expiration Date"}, or until terminated, whichever occurs first. Any extension beyond the Expiration Date must be in writing and signed by the Parties before the Expiration Date.

8.Non-binding Language
The Parties agree that nothing in this MoU shall imply in any way that any provision of this MoU is legally binding or capable of generating any contractual obligations.

9. Transfer of Funds
This MoU does not obligate any Party to provide financial support of any sort to any other Party. Any transfer of funds between the Parties will be the object of an independent contract, with the inclusion of clauses and other conditions in accordance with the internal procedures of each Party and will be duly signed by both Parties.

10.Termination
Any Party will have the right to withdraw from this MoU by giving 30 (thirty) days written notice to the other Party of intent to withdraw.

11.Title and Use of Intellectual Property
a) Intellectual Party
Under the provisions of this MOU, the Parties may produce documents, reports, studies, photographs, maps, and similar types of intellectual property (collectively "Works"). Unless otherwise agreed to by the Parties in writing, the copyright and other intellectual property rights in any such work will belong to the Party that produces the work, if a work is jointly produced by two or more Parties, the copyright will be owned jointly by the Parties that produced it. In all cases of co-authorship, the Parties are hereby authorized to use the work, without prior authorization from the other, for commercial or non-commercial purposes or public benefit.

b) Distribution
No Party will publish or otherwise distribute the Work of another Party without
both the previous written consent of the other Party and crediting the other Party in such Work.

c) Names and Logos
The names and logos of the Parties are trademarks; as such, they may not be
used for any purpose without the prior express written permission of their owners.

12. Confidentiality
During the course of the performance of this MoU, one Party may have access to materials, data, strategies, systems or other information relating to another Party and its programs which would reasonably be construed as intended for internal use only. Any such information shall not be used, published or divulged to any individual or corporation, in any manner or for whatever purpose, except through the Party's previous written permission, which may be withheld by the respective party at its sole discretion.

13.Other Partners
This MoU does not preclude the Parties from establishing similar agreements and/or contracts with other individuals, corporations, agencies, and public or private organizations. The Parties recognize the importance of continuing to cooperate and work with other partners in programs of mutual interest and to be able to, by means of a written document signed by both Parties, invite other partners to participate in the activities implemented under this MoU.

14.Dispute Resolution
The Parties hereby agree that, in the event of any dispute relating to this MoU, they shall first seek to resolve the dispute through informal discussions. If a dispute cannot be resolved informally within sixty (60) consecutive working days, the Party subject to the dispute shall have the right to withdraw immediately from the MoU.

15. Responsibility
Each Party shall be solely responsible for the actions and/or omissions carried out by its own
employees, agents, and representatives involved in the implementation of the objective of this MoU, accepting responsibility for the repair of any possible damage caused in the execution of this MoU, whether to the other Party, or to third parties. Nothing herein shall be construed as creating joint liability between the Parties.

16. Compliance with Laws
The Parties will observe all the applicable laws and regulations during the execution of the work
implemented under the provisions of this MOU.

17. Severability
If any provision of this MoU is held invalid, the other provisions herein shall not be affected thereby.

18. Entirety
This MoU, including any attachments, embodies the entire and complete agreement and
understanding between the Parties, and any amendment to this MoU will only be valid if in writing and signed by both Parties.

IN WITNESS WHEREOF, the parties execute this Memorandum of Understanding, effective of the last date written below.

Organization	Main Activities	Signed
Karatu District Council	Support Carbon Tanzania and the project villages in the development and implementation of the REDD Project	Name: Title: Signature: Date: 03 SEPTEMBER 2020
Carbon Tanzania	Develop and Implement REDD Project Generate VERs Facilitate the purchase of VERs	Name: David Beroff Title: Technical Advisor Signature: Date:

IN WITNESS WHEREOF, the parties execute this Memorandum of Understanding, effective of the last date written below.

Organization	Main Activities	Signed
Mbulu District Council	Support Carbon Tanzania and the project villages in the development and implementation of the REDD Project	Name: Title: Ag. DED Signature: Date: 14/09/2020
Carbon Tanzania	Develop and Implement REDD Project Generate VERs Facilitate the purchase of VERs	Name: David Beroff Title: Technical Advisor Signature: Date: 14/09/2020

Annex 6.5: received official approval from the National Ministry of Health, Community Development, Gender, Elderly and Children

THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF HEALTH, COMMUNITY DEVELOPMENT, GENDER, ELDERLY AND CHILDREN
(COMMUNITY DEVELOPMENT)

Tel: 255-26-2963341/2963342/2963346
fax: 255-26-2963348
Email: ps@jamii.go.tz
Website www.mcdgc.go.tz

Government City – Mtumba,
Afya Road,
P.O. Box 573,
40478 DODOMA

In reply please quote:

Ref. No. EF.168/196/01/151/11 27th August, 2020

Executive Director,
Ujamaa Community Resource Team,
P.O. Box 15111,
Email: director@ujamaa-crt.org
ARUSHA

RE: APPROVAL OF FUNDING CONTRACT/AGREEMENT

Reference is made from your letter with Reference No. UCRT/ED/2020/07/01 dated 03rd July, 2020.

2. Pursuant to the provision of regulation 13(b) of The Non-Governmental Organizations Act (Amendment) Regulations, Government Notice No.609 of 2018, I hereby, approve the Funding Contract/Agreement Extension entered between your organization and The Nature Conservancy entered on 26th June, 2020 for provision of **TZS 124,003,835** for the purposes of implementing a project known as "**FREE, PRIOR AND INFORMED CONSENT FOR YAEDA VALLEY REDD+PROJECT EXTESNION.**"

3. Kindly be informed that such fund is subjected to auditing pursuant to the provision of section 29 (1) (b) of the NGOs Act, No.24 of 2002 (as amended).

4. Thank you for your cooperation.

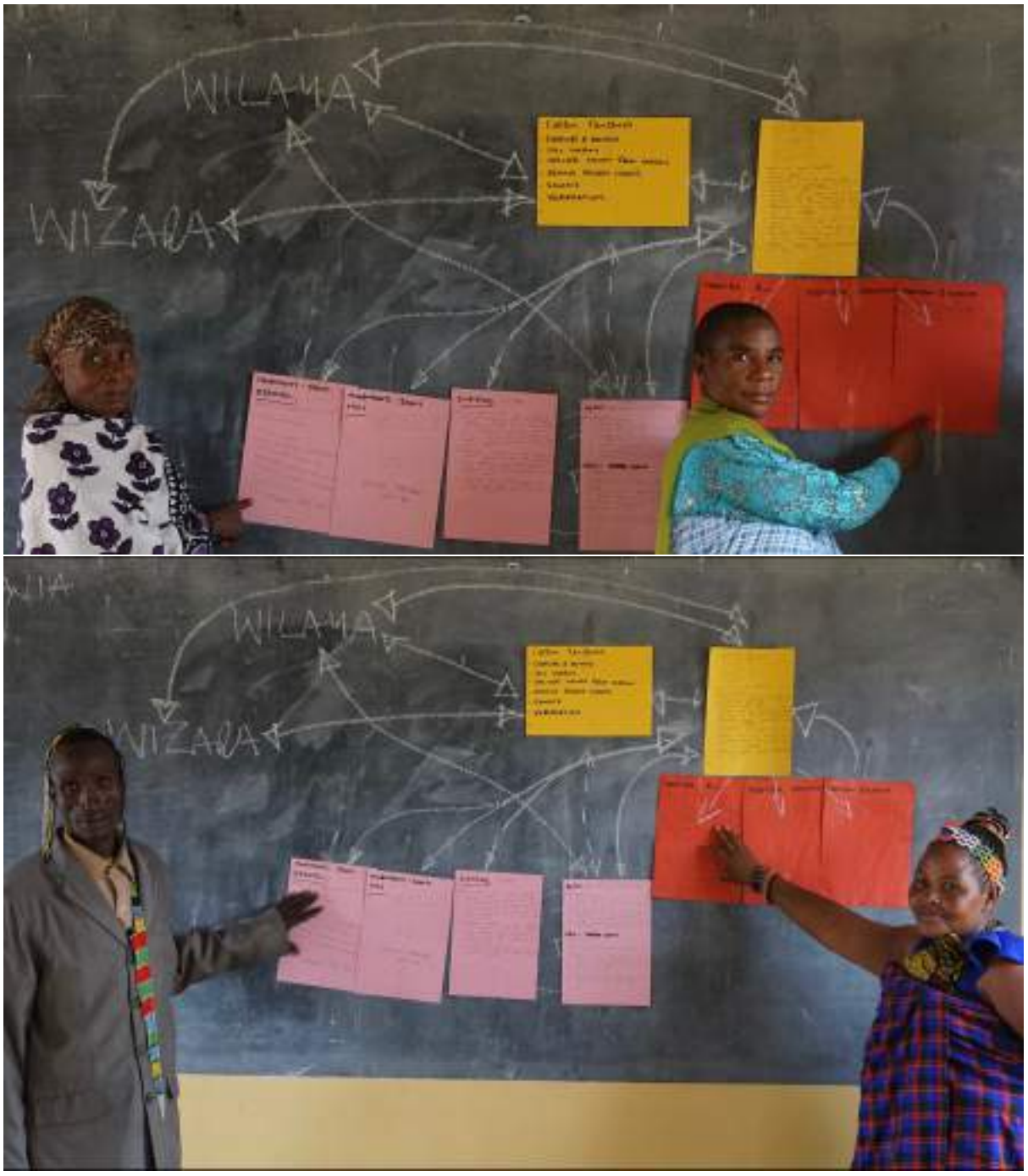
Charles R.M.
For: REGISTRAR OF NON-GOVERNMENTAL ORGANIZATIONS

Annex 7. Evidence of community participation

Yaeda Project Manager discusses project expansion with the Yaeda Chini Village Government, VLUP can be seen on the wall

Hadza in Domanga village discussing the project with Carbon Tanzania over a map of their land

Endesh village government after a consultative and FPIC project meeting with Carbon Tanzania and UCRT staff



Community leadership participating in creating the project management structures and discussing roles and responsibilities

Annex 8. Images of the Yaeda-Eyasi area and the project area

Forests in the Yaeda Valley

Camera trap images of Wild Dog and Greater Kudu in the project area

Random small agriculture in woodland

Planned agriculture area abutting the now protected forest area