**Plan Vivo Project Idea Note**
**Project Title: WAP MIKOKO UJAMAA**

Mangrove restoration in Temeke (Mtoni (1), Kidete (2)), Kinondoni (Kawe (3), Mkuranga (4 - Shungubweni, Boza, Kisiju), Kiembe samaki (5)) – Tanzania March 2020

## A The project's aims and objectives

### A1 Aim

The project aims to work with five communities in Temeke (Mtoni (1), Kidete (2)), Kinodoni (kawe (3), Mkuranga (4 -Shungubweni, Boza, Kisiju), Kiembe samaki (5))) in conjunction with Women Against Poverty (WAP), Village Council, Tanzania Forest Reserve (TFS), the respective Municipal council and the Plan Vivo Foundation to establish a comprehensive participatory system of natural resource management in the project area. The project is expected to build capacity to the local community on land tenures, local natural resource management, and livelihood and income diversification and therefore contribute to local, national, and global environmental conservation and addressing the impacts of climate change. AFRICAN MALAIKA will also partner with MIKOKO UJAMAA community org to co-facilitate the development and implementation of the project and will help with the administration costs. The MUCO is a leading women and youth community-based natural resource management organization in southern Tanzania. It has worked with the southern community on land rights and sustainable natural resource management issues for more 8 years.

### A2 Objectives

The project main goal is support long-term conservation of ecological integrity, resilience and biological productivity of the Kidete, Kisiju, Mtoni, Kawe and Kiembe Samaki Mangrove Seascape as an internationally-important biodiversity hotspot supporting the livelihoods of natural resource-dependent communities.

The overall objective of this project, called "Mikoko Ujamaa", is to channel finance to the protection and restoration of mangrove in Tanzania. Tanzania's mainland covers approximately 158,100 ha. A total of 10 million tonnes C (i.e 37.2 million tonnes $CO_2$) which is 2019 million metric tonnes that are stored in mangrove forests of Tanzania. This is a REDD project which stands for Reducing Emissions from Deforestation and Degradation

Other objectives of the project include to:

- Preserve the current quality and extent of the mangrove forests of Temeke and Mkuranga and of the services they provide to local communities.
- Restore degraded areas of mangrove forest in Temeke, Mkuranga, and Kunduchi.
- Raise income from forest resources, including carbon credits, for community benefit.
- Establish alternative sources of timber and firewood in the Mtoni & Kawe and Boza area.
- Establish a pilot project demonstrating sustainable mangrove management that will influence mangrove management nationally in Tanzania.
- Work with the Tanzania Forest Service and other government agencies to determine policy about engaging communities in land management, particularly through the provision of ecosystem services through international carbon markets.

Enhance payments for Ecosystem Services (PES), through expansion of community funds for financing community projects (such as new microflush toilets, WASH Programs, Bee -keeping, butterfly conversation, breadfruit farming, new school buildings, installation of electricity in the school, scholarships for poor children attending high school, repair of wind pumps, agricultural diversification etc.).
Support the management effectiveness of Tanzania inland Marine Park (TIMP).

- Strengthen the Collaborative Fisheries Management Areas (CFMAs).
- Support the management and restoration of the Mangrove Forest Reserve.
- Gain official designation the of Mkuranga -Temeke-Kinonodoni Man & Biosphere (MAB) Reserve.

**B Proposed project area**

B1 Proposed Area

This section will provide an outline of each project area (i.e. community mangrove forest), including its location and environment conditions.

B1.1. Mtoni

The physical environment of Mtoni, in the Temeke district of Tanzania, is located 55 kilometers (34 miles) south of Zanzibar. This 18-square-kilometer (6.9-square-mile) village is sheltered from strong sea waves by the presence of Masasani Peninsula to the east and a fringing coral reef to the south. The reef supports a local subsistence and commercial fishery. The bay area supports considerable biodiversity including over 180 species of fish and impressive bird life, including three species of bee-eater, pelicans, palm vultures and hornbills. It is near a reserve for the black and white Colobus monkey, the tourist resort of kunduchi beach, the National Park (famous for its sykes monkeys) and the Vikundu Forest. Many sites of historical interest are located along the coastline, including a ruin in Kunduchi that was once used as a concentration center for slaves before they were shipped to Far East countries. Kunduchi is bordered by 6.2 square kilometres (2.4 square miles) of mangrove forests, which are heavily used by local people as a fishing ground and source of wood for building and fuel.

The Mtoni mangrove forest is based in the Temeke Municipality Dar es salaam region and covers an area of about 300ha and lies between latitudes 6° 52 and 7° 60 south and longitudes 39° 17 and 39° 18 East southeast of Dar es salaam.

B1.2. Kidete

The Kidete mangrove forest is based in the Kigamboni Municipality Dar es salaam region Tanzania. It covers an area of about 420ha and lies between latitudes 6° 50 and 7° 00 south and longitudes 39° 00 and 39° 30 East. It is situated southeast of Dar es salaam and is about 2 miles from the city center.

B1.3. Kawe

The Kawe beach is based in the Kinondoni Municipality Dar es salaam region and covers an area of about 106 ha and lies between latitudes 6° 42 and 6° 44 south and longitudes 39° 00 and 39° 05 south.

B1.4. Shungubweni, Boza, Kisiju

The Shungubweni,Boza,Kisiju mangrove forest is based in the Mkuranga (Pwani)Municipality Dar es salaam region Tanzania. The mangrove areas and forest are bird lover's paradises with birds such as Fish Eagles, Pemba Sunbirds, Roseate Terns, Fischer's Turacos, Brown-Headed Parrots and Pemba Scops Owl , also the sea turtles hawksbill turtle is one of five marine turtles in Tanzania, along with green, loggerhead, olive ridley and leatherback which are list as endangered species. There have also been sSome sightings of Dugong Fish.

B1.5. Kiembe samaki

The Kiembe Samaki mangrove forest is based in the Pwani Municipality Tanzania. The tropical archipelago is a semi-autonomous republic and part of Tanzania. It alone can count with a rich variety of habitats including paradise sandy and rocky coasts, coral rag forest, groundwater forest, mangroves, coral reef and seagrass beds, plus many different animal and plant species, out of which many are indigenous.

B1.6 Project Location – Coordinates

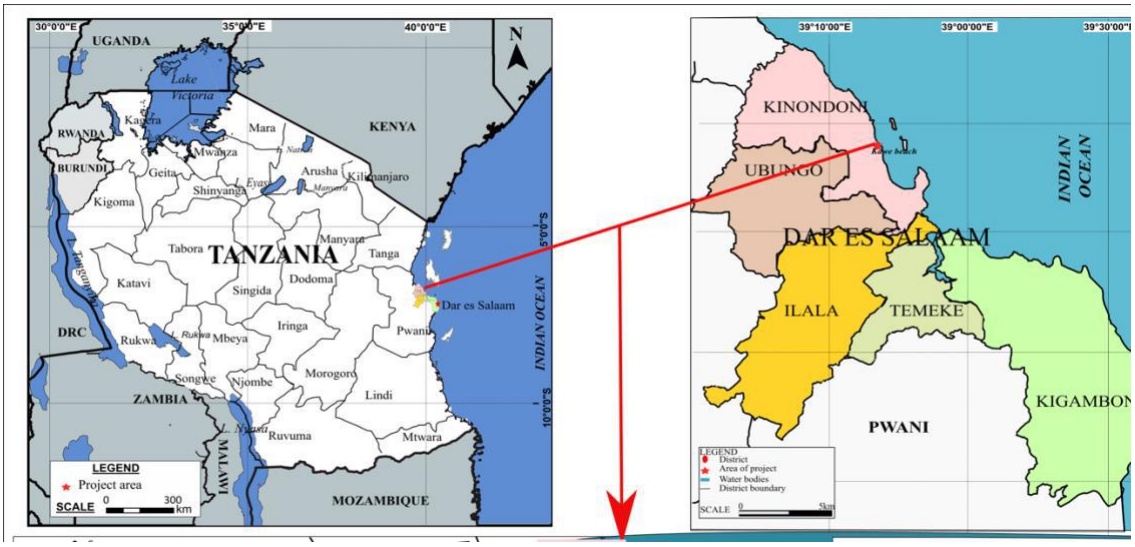
The coordinates of each of the project areas is provided in the table below.

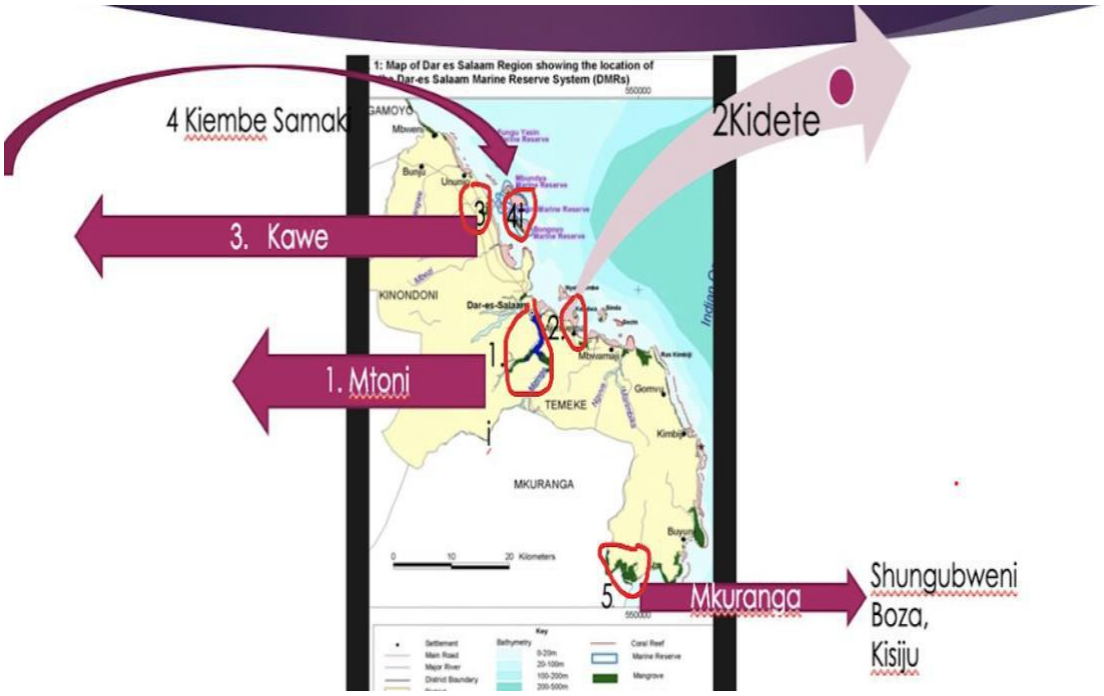
| District | Project area / community forest | Size (ha) | Sub-project area (if community forest is composed of divided areas) | Coordinates |
|---|---|---|---|---|
| Temeke | Mtoni | 378 | | -6.873328, 39.285613 |
| | Kidete | 420 | | -6.851017,39.380220 |
| Kinondoni | Kawe | 106 | | -6.736732, 39.240018 |

| | | | | |
|---|---|---|---|---|
| | Mkuranga | 500 | Shungubweni | -7.193424,39.434957 |
| | | | Boza | **-7.190112, 39.433566** |
| | | | Kisiju | -7.405445,39.340140 |
| | Kiembe samaki | 22 | Zanzibar | -6.204592, 39.203226 |

B1.7. Project Location – Maps

Please see the maps below for approximate locations of the sites within Tanzania. For more-accurate locations, please refer to the coordinates provided in Section B1.6.






B1.8 Dominant Mangrove Species

The Kidete and Mtoni Mangrove forests are dominated by mainly four species of mangroves which are *Avicennia marina*, *Rhizophora mucronata*, *Sonneratia alba,* and *Ceriops tagal*. Unlike Kidete, all nine mangrove species (*Avicennia marina*, *Bruguiera gymorhiza*, *Lumnitzera mucronata*, *Ceriops tagal*, *Rhizophora mucronate*, *Sonneratia alba*, *Xylocarpus granatum*, *Heriteiera littoralis* and *Acrostichum aureum*) are found in Mtoni Mangrove forest. The kawe beach is dominated by *Azadirachta indica* and very few mangrove can be found there. The Shungubweni, Boza and Kisiju beaches are dominated by mangrove forests.

B1.9 Local Drivers of Deforestation

The mangrove forests have been extensively used and degraded – with large areas clear-felled in the 2006, commercial logging involving selective removal operating over many years and still continuing in some stands and continuing forest degradation through poaching, cutting for firewood and gravel making. This has resulted in shortages of building poles and firewood, decreased fishery resources and increased coastal erosion. Some area specific impacts include:

- In the Kidete mangrove forest, there has been gravel-making activities for many years
- The Mtoni Mangrove forest is indirectly impacted by sewage discharge in the harbour area and suffers extensive cutting of trees for charcoal production and urbanization.

- Kawe beach erosion and upstream land use activities are the main drivers of deforestation here. Also, the area is used as animal pasture for pastoralists.

The exploitation has resulted in the human-impacted forest with numerous stump and secondary growth forests. The deforested areas experience the death of mangrove trees by eroded sand and show little natural regeneration and therefore experimental restoration efforts are required.

The following are pictures that provide evidence to these impacts:

Figure: An illegal mangrove wood and destruction area in mkuranga Mangrove forests.

Figure: Sand eroded mangrove forest that shows little natural regeneration

Figure: illegal timber and charcoal from mangrove forests

Figure: A kiln being burnt by TFS in Mkuranga

The mangrove forests in Tanzania mainland are categorized as a state reserve by the forest act 2002. Despite the efforts made by the government to address the challenge, the measures are not efficient due to weak law enforcement and institutional framework, poor management and land use prioritization, poverty, and extreme dependence on natural capital.

B2 Climatic Condition

The climate of the Kidete forest falls with the climate of Dar es Salaam area that is characterized by humid tropical with average day and night temperatures of 28 to 31°C and 19 to 25°C, respectively, warmest from October to February. The annual precipitation is ca. 1100 mm with 2 rainy seasons from March to May and October to November. The system is drained by 2 tidal creeks that open directly into the Indian Ocean. There are no major freshwater inputs except for surface drainage during the wet seasons. The mouth of the creeks and the zone adjacent to the mouth are covered by seagrass beds.

B3. Description of Socio Economic Context
B3.1 Average Income and main types of income in the area.

Wages in Tanzania is expected to be 380000.00 TZS/month (≈164 USD/month) by the end of this quarter, according to Trading Economics global macro models and analysts' expectations.

In the long-term, the Tanzania Monthly Average Wages in Private Sector is projected to trend around 400000.00 TZS/month (≈173 USD/month) in 2020, according to our econometric models. Tanzania is a low-income economy that is largely dependent on agriculture for employment, accounting for about half of the employed workforce. The largest types of income are found in the education and Police force.

B3.2 Socio-economic Environment

Temeke village has a resident population of ~78,648 people and is supplied with clean, potable water and electricity. The village is predominantly Muslim, as are most surrounding villages, although there are also Christians and animists living harmoniously in the area. The main ethnic group is the Swahili, with the makonde of Bantu origin being the second commonest. The area has a long history of peaceful integration and of welcoming visitors; it was unaffected by the political strife in Tanzania in 2008. Most people in the area have traditionally survived from artisanal fisheries and small-scale agriculture and these are still the dominant activities. The relatively-good infrastructure, including the proximity of the main Mombasa – Dar-es-Salaam road, mains electricity in Temeke and good provision of potable water. The productive climate has helped most people to avoid extreme poverty (people do not suffer from starvation in the area). However, many families live outside the formal economy or on poor wages and the area has some of the lowest educational attainments in Tanzania. 25% of households receive remittances from kin outside of the area, and around one third of people are recent immigrants, many from Italy, who have come mostly to exploit the reef-based fisheries.

B3.3 Summary of relevant local and national governance structure.

Dar es salaam (Mkukikimto (Mkuranga-kidete-kisiju-mtoni)) has Lush mangrove forests, terrestrial forests, seagrass beds, corals and fisheries that line the meandering channels of south of the commercial capital Dar es Salaam on the east coast of Tanzania. The system comprises 2 tidal creeks which open into the Indian Ocean and which receive no fresh water inputs except during the rainy season. Community access to these resources is governed by local village governance structures; from the Forest Act (2002) for forestry and the fisheries Act (1980) for marine associated resources. The Law permits community exploitation of natural resources through development of localized participatory forest management. An approved Participatory Forest Management already exists for the Southern part of Tanzania. Tanzania has a favourable policy framework that supports community-based forest management which is known as Participatory Forest Management (PFM). Under this framework, communities are able to set aside areas as Village Land Forest Reserves (VLFRs) managed by the Village Council and Village Natural Resource Committee, thereby clarifying local tenure over forest resources on village lands.

Outside of the National Mangrove Forests Management Plan (1991), which was largely unimplemented, there have been no specific policies and legislation on coastal mangroves in Tanzania. The National Mangrove Management Plan developed in 1991 was never implemented due to a lack of funding, inadequate technical resources, and the absence of an enabling institutional framework.

The Forest Act (2002) further expands the scope for women's involvement in decision making by requiring that local-level resource management institutions, such as village land forest management committees, pursue gender balance in their composition. The above review indicates that Tanzania's legal framework provides an architecture that is generally supportive of forest governance principles along basic dimensions such as community participation, gender equality, financial incentives/mechanisms, conflict resolution, and cross-agency coordination and collaboration. The forest sector instruments (i.e., the Forest Act and Forest Policy) make explicit mention of and have requirements for each of these themes, including clarity in the definition of both women's and men's rights to forests and trees, and the need for gender balance in local-level forest management institutions and structures.

## C Identification of Target Groups & Communities

### C1.1 Community

The target communities are the people living adjacent to the Temeke areas at Temeke, Kinodoni, and Mkuranga villages. The people of Dar es salaam and South Pwani primarily belong to four ethnic groups — the Zaramo, Ndengereko, Matumbi and Makonde. Most people live in poor and simple houses thatched by grass or coconut leaves, poles, and mud walls on earth floors (Institute of Resource Assessment, 2005; Torell & amp; Mmochi, 2006).
Based on the 2006 national census, the two villages have resident population of ~768, 451 and ~9000 respectively. These people are predominantly artisanal fishermen relying on fish caught in the mangrove/sea grass/coral reef system of the village. There are also small-scale agricultural activities including coconut and banana farming and animal husbandry, of mostly cows, sheep and goats. Local organisations involved will include the local Community Forest Association (which will be the legal entity with the right to harvest forest goods) and the Temeke Mangrove Management committee (a new committee building on the WAP community committee). External groups supporting this project include Tanzania Marine and Fisheries Research Institute.

### C1.2 Gender equality

Notwithstanding, coastal cultural norms and traditions, which often can lead to gender inequality, the project will apply national policies and legal provisions for respecting women's rights to participate in fisheries and mangrove resource management. It will also ensure fair

access to natural resources and project benefits and will encourage partners to do likewise. It will be acknowledged, however, that socio-cultural change can take generations to achieve. This consideration will help guide the project's approach such that it will be sensitive to the local culture, gender, ethnicity, religious and ethnic traditions and cultures. Analysis of gender, age and social status hierarchy will be an integral part of the project's efforts to understand the Mikoko Ujamaa seascape peoples.

## D. Land Tenure & Carbon Rights

### D1 Land tenure

All mangroves in Tanzania are gazetted as government reserve forests. However, under the provisions of the Forest Act 2002, Tanzania Community Forest Group (CFAs) are encouraged to develop management plans for local forests and to benefit from the goods and services they supply. WAP in the Temeke area exists and is managing the mangroves. This project will use the existing legal structure to develop operational plans for Temeke mangroves. This will allow community user rights for all areas designated for protection or restoration under this project.

### D2 Types of Forest Right regimes in Tanzania

Under Forest Act, 2002, local communities are empowered under the law to declare their areas as forest reserves, which could be village, group or private forest reserves. The act is aimed at encouraging and facilitating the active participation of the citizens in the sustainable planning, management, use and conservation of forest resources and ensuring ecosystem stability through conservation of forest biodiversity, water catchments and soil fertility. To do this, the law creates a scheme of rights and responsibilities to use and manage resources.

The Tanzania Forest Act divides forest in four types:

- The first type is **national forest reserve** which consists of; forest reserves and nature forest reserves.
- The second type is the **local authority** which consist of; local authority forest reserves, and forests on general land.
- The third type consists of **village forests** which consist of village land forest reserves, community forest reserves created out of village forests and forests which are not reserved and are on village land (in this scenario, the management is vested in the village council).
- The fourth type is **private forests** which are; forests on village land held by one or more individuals under a customary right of occupancy and forests on general or village land of which the rights of occupancy, or a lease, has been granted to a person, or persons, or partnership, or a corporate body, or a Non-governmental Organization, for the purpose of managing the forest which is required to be carried out in accordance with the Act.

The project will be on the third type- village community land. WAP's innovative approach ensures sound land management that reduces deforestation and is based on community land and ownership rights.

The Forest Policy (1998) promotes two types of Participatory Forest Management or PFM:
(i) Joint Forest Management (JFM), and
(ii) Community Based Forest Management (CBFM)

CBFM, of relevance here, allows communities to gain ownership and management responsibilities for an area of forest within their jurisdiction. This is 'declared' a Village Land Forest Reserve by village and district governments in Temeke, Mkuranga and Kinondoni.

PFM in Tanzania is not at an advanced or completed state. Adoption is accelerating and improving forest quality but forest CBEs are still scarce in the Ministry of Natural Resources and Tourism (FBD-MNRT). Temeke, Kinondoni and Mkuranga (Pwani) Municipal Council is committed to provide sustainable quality social economic services to its population through good governance and effective use of resources at all levels. WAP will partner with local District Councils and Tanzania Forest Service from each municipality and partner with Institute of Marine Services of Tanzania and Wetlands. WAP will be the legal entity with the right to harvest forest goods Tanzania Forest Conservation Group.

D2 Carbon rights
D2.1. Payment for Ecosystem Services (PES)

One of the strategies in which the voluntary carbon market operates is investment in sustainable natural resources management projects including afforestation and reduced deforestation in different ways. Payments for Ecosystem Services (PES) is a bottom-up and voluntary approach in sustainable natural resources management in which communities are compensated for their livelihood activities that are likely to degrade or manage natural resources. Under Plan Vivo, communities are paid in respect of tonne of CO2 emission that will be mitigated or sequestered by the project.

D2.3. Community Carbon Rights

Under Forest Act, 2002, local communities are encouraged to, and take an active role in, facilitating the active participatory sustainable planning, management, use and conservation of forest resources and ensuring ecosystem stability through conservation of forest biodiversity, water catchments and soil fertility.

In REDD projects, the local communities have rights over the carbon as they have clear rights over the land/natural resources/forests, as per various laws of Tanzania. The forests were not counted in Tanzania's FREL and therefore wouldn't currently be considered in their NDC's, however could be in a future system where projects are nested.

Furthermore, Tanzania's new Village Land Act vests significant control over common property resources in village institutions for management, in accordance with community by-laws (Wily, 1998). WAP have full rights to resources in mangrove forests through Tanzania Forest Services.

D2.4. The Roles of stakeholders in Forest Management

The Tanzania Forest Act 2000 has also declared different sustainable forest management plans to be adopted by different stakeholders such as for village lands and private forests. The law also provides a framework for joint forest management agreements between private and public parties.

D2.5 Land Tenure of the Project Area

Under the local government (District) Authorities Act, 1982 the land is owned by Temeke Municipal Council. The council has jurisdiction on that area and is in charge of managing village and/or local government natural resources including forest reserves. The Temeke Council granted unlimited years to WAP - Mikoko Ujamaa to conserve mangrove and use carbon rights and benefits to allow communities to gain ownership and management responsibilities for an area of forest within their jurisdiction. Tanzania Forest Service - Temeke granted a permit under Ministry of Forest and Bee Department - Tanzania Forest Service. The village Community Head and committee signed a MOU with WAP and will collaborate with WAP - Mikoko Ujamaa Community Organization concerning efforts for mangrove reforestation.

They are also involved in overall management of marine parks/reserves. Beach Management Unit too will be granted permit to work on patrol and other assigned reforestation work. The Act is relevant to conservation of coastal forests, which are within the jurisdiction of local authorities.

WAP has rights and has been given a permit to work on this local land tenure over forest resources on village land, which is " Village Land Forest Reserve (VLFR)". It is managed by the Village Council and Village Natural Resources committee and community Forest Association on the District level and they report to Tanzania Forest Service which is the national level.

Tanzania has a favourable policy framework that supports community-based forest management which is known as Participatory Forest Management (PFM). Under this framework, communities are able to set aside areas as Village Land Forest Reserves (VLFRs) managed by the Village Council

and Village Natural Resource Committee, thereby clarifying local tenure over forest resources on village lands.

## Part E: Project Interventions & Activities

E1. Prevention of Ecosystem conversion or degradation (includes REDD)

Mangroves throughout Tanzania and at Temeke, Mkuranga and Kinondoni have been degraded and removed. The project aims to work with communities in three activity areas, Kidete, Mtoni and Kawe Dar es salaam Tanzania in conjunction with Women Against Poverty (WAP), Village Council, Tanzania Forest Reserve (TFS) to establish a comprehensive participatory system of natural mangrove forest management in the **1426ha** of project areas (Mtoni &Mzinga – 378.4ha, kidete/Ras Ndege - 420ha , Shungubweni/Boza/kisiju - 500 ha, Kawe -106 ha and Kiembe Samaki -22 ha). This will protect current forest against further degradation, leading to forest recovery and naturally enhanced carbon capture (in woody biomass and in sediment). It will also expand reforestation efforts, aiming initially to replant 1 ha yr-1. This modest target reflects the difficulty of replanting the degraded areas at the site. Although the main clear-felled areas were cut in the 2011, there has been almost no regeneration since due to threshold effects resulting from large scale clearance; enhanced wave action and erosion at low shore sites and enhanced salinisation at high shore sites have meant seedlings cannot establish.

The project reduces carbon dioxide emissions through avoiding deforestation and degradation in the project area and its surroundings. Success is achieved through a series of interventions geared at enabling the WAP community to better protect their forest from outside encroachment and conversion. These include:

- Enforcing the approved village land use plan and associated village by-laws;
- Halting encroachment and land use changes by outsiders;
- Improving forest conservation and management activities; and
- Addressing the primary driver of deforestation, slash and burn agriculture.

The dominant mangrove species in the project areas are *Avicennia marina*, *Rhizophora mucronata*, *Sonneratia alba,* and *Ceriops tagal.* The project will also involve managing *Azadirachta indica* and mangrove plantation in mtoni -(378 ha), kidete /Ras dege (420 ha),Kawe / Mbezi beach (106 ha), Shunghubweni/Boza/Kisiju (500 ha), and Kiembe Samaki (22 ha).

The projected initial average mangrove carbon stocks is **311.0 tC/ha,** equivalent to **1140.3 $tCO_2$/ha.** The estimated annual net carbon benefit is **14,286.1** tonnes of $CO_2yr^{-1}$mainly from mangrove forest and *Azadirachta indica* avoided deforestation and degradation.

We have demonstrated that replanting is possible at these sites and can lead to positive ecosystem changes, but it requires trees to be grown in nurseries and transplanted after 6 months growth, which is labour and capital intensive.

We also propose to establish a Casuarina plantation of 3000 trees on community land close to Mtoni, Kawe, Kinondoni and Shungubweni villages, for timber production on a five-year rotation. This will build on skills already present in the village. It will help to prevent carbon leakage, by giving a source of firewood and timber for local people to replace the material currently taken from the mangroves. It will also provide income to the community fund by selling poles (which increase in value as they age), giving a highly reliable financial return on the project within the first five years, which will complement the less secure return on the carbon sequestered and help ensure project sustainability. In addition to harvesting, commercial poles brush will be used as a source of firewood. The project will not be seeking accreditation for this Casuarina plantation.

The project activities are summarised as follows:

| Activity Area | Name of Project Area | Dominant plant species | Area (ha) | Project Activities |
|---|---|---|---|---|
| Activity Area 1 | Kidete | Mostly dominated by four mangroves species namely Avicennia marina, Rhizophora mucronata, Sonneratia alba, and Ceriops tagal | 420 ha | Avoided deforestation and degradation |
| Activity Area 2 | Mtongani | Almost all species of mangroves But dominated by four mangroves species namely *Avicennia marina*, *Rhizophora mucronata*, *Sonneratia alba,* and *Ceriops tagal* | 378h a | Avoided deforestation and degradation and mangrove plantation |
| Activity Area 3 | Kawe | Dominated by Azadirachta indica) very few Avicennia marina and Rhizophora mucronate | 106 ha | Avoided deforestation and degradation and mangrove plantation |
| Activity Area 4 | shungubwen | | 500 ha | Avoided deforestation and degradation and mangrove plantation |
| Activity Area 5 | Kiembe samaki | | 22 ha | Avoided deforestation and degradation and mangrove plantation |

**Part F: Identification of any Non eligible Activities**

F1. Butterfly conservation

At the Kidete kigamboni mangrove site, the project will boost incomes of participating farmers, of which more than half are women, through the sale of butterfly pupae to overseas markets. This will provide an incentive to conserve butterflies, which rely on natural forests near Kidete communities as a source of plants and genetic diversity for the butterfly farms.

Participants will receive about 65% of the income from these sales.

F2. Beekeeping

Beekeeping is a long-established economic activity in Tanzania that contributes to the national economy. Beekeeping produces food and medicines, and makes a significant contribution to biodiversity. It also encourages agricultural production through pollination. Moreover, more than 50% of Tanzania is covered by forests suitable for beekeeping. Mkuranga Farm will be a place for the community to come together not far from the mangrove forest and be able to farm fruit trees instead of cutting down mangroves for rice fields.

A beekeeping project will support both mangrove forests and surrounding villages communities. The benefits that it will provide include:

- It will help encourage the protection of the mangroves because the mangroves will act as a source of pollen for the bees and, furthermore, the beehives can be hung in the mangrove forests.
- The WAP village community at the same time will gain direct benefits from, or income from the sale of, honeybee products e.g. honey, wax, pollen, vernon, skin cream for albino individuals and various other products.
- Pollination of the surrounding environment, as far as 5km from the location of the beehives.

This project will take off at Mzinga river and Mkuranga Farm. Our interest is to organize community members, mostly females who are usually wives and home makers in the villages of Kidete, Kizinga and Mzinga villages in the Dar es Salaam coastal areas in close proximity with Mangrove forests. The selected community members will be trained on beekeeping practice, benefits, products and sales by instructors and students from the College of Agricultural Sciences and Fisheries Technology (CoAF) in the Department of Crop Science and Beekeeping Technology (CSBT), University of Dar es Salaam (UDSM). Apart from the UDSM, Department of Environment in Municipals under which the mangrove forests belong has offered to collaborate with University of Dar es Salaam and a non-governmental organization (NGO) called Women Against Poverty (WAP) to foster the beekeeping project idea. Additionally, Tanzania Forest Services (TFS), which is an entity in the Ministry of Natural Resources and Tourism has shown interest in collaborating with the whole team for the benefit of the communities, environment and the Nation in general. Training has already taken place for the WAP community on August 2019 at the University of Dar es salaam.

F3 Breadfruit Farming

Breadfruit trees provide food security and contribute to diversified regenerative agriculture and agroforestry, improved soil conditions and watersheds, and valuable environmental benefits including reduction of $CO_2$. They also give shelter and food to important plant pollinators and seed dispersers such as honeybees, birds, and fruit bats.

F4 Temeke Tree Nurseries & Garden

In the Temeke Distirict of Tanzania, near the village of Mtoni, seedlings are grown in a nursery and distributed to the people that need it most, with women-lead households or families hosting orphans getting priority. Local schools also get seedlings (often fruit trees) to plant on their school premises. The project furthermore provides training in sustainable agricultural practices including permaculture so that the trees can also boost agriculture yield and food production. These families now enjoy with larger and diversified incomes, better food and can even pay for medicine.

F5 Gender quality through lending schemes

The Project will integrate gender analysis planning, implementation and budgeting into its programme. It will strive to give equal or equitable opportunities to women and men in the distribution of its direct benefits such as training and cash-earning opportunities that arise (e.g. Cash-for-Work, VICOBA credit and savings). [VICOBA accounts were opened 05.10.2020] Village lending banks. VICOBA lending scheme has already proved to be one of the better tools for community emancipation socially and economically in Tanzania. This is evident in the people benefiting from the scheme. There are a lot best performing cases but only few are explained here to represent others.

F6 Various activities to positively impact on livelihoods and food security

Food insecurity in coastal communities is a key problem and is due to a number of factors. The severity of a particular cause varies from one household to another, depending on the nature of that family's involvement in the fishery, their involvement in other business enterprises, and their level of dependence on fish, the state of their income and savings, their ability to shift to other income sources, among other factors. In Kidete-kisiju-kawe-kiembe samaki seascape, other important factors that affect the food security situation include factors that limit availability of food (fish), such as competition from city traders, factors that reduce peoples access to fish and other food, for example, poverty and household cultural factors (e.g. limiting access of food/cash and income to some household members particularly women) and infrastructural problem (poor roads, bridges and facilities especially the Delta villages).There are poor trade policies and fishery management failures, which have led to bad fishing practices/methods. They limit the

continued participation of fisher communities in fish production activities. They also limit local communities' access to fish and other useful foods, by either causing or contributing to a decline in the supply, or lowering local people's ability to purchase them and/ or alternatives. The project will impact on food security by addressing the following:

a. Fishery management interventions
    - The seascape approach will avoid the differences in regulating fisheries and promoting conservation and livelihood developments between the four districts with due consideration of its biodiversity values and economic importance;
    - It is addressing access rights through CFMA approach to avoid open access;
    - It improves enforcement capabilities through greater patrols and surveillance systems by community members as well as fisheries managers;
    - It increases research to accurately determine biomass for important commercial fish species;
    - It will help review the GMPs for Marine Parks and Mangrove forest reserves to incorporate new regulations in line with the present realities; and
    - It will increase scope for community participation in a co-management framework.

b. Explore opportunities to raise fish supplies
    - There is a deliberate interest to intensify the development of mariculture in the country. WWF through livelihood will allow individual women groups to invest in mariculture to increase fish production;
    - Reduce post-harvest losses by promoting value addition and better preservation technique.

c. Refocus sustainable fish marketing strategies and practice
    - Promote the current CFMA closure for 3-4 months for food security and sustainability;
    - Aim for moderate volume, high value (e.g. big size of Octopus) added fisheries export product (add value through smoking, marinating, packaging the products);
    - Increased direct negotiation between fishermen and factory owners (thereby minimising role of factory agents in dictating prices);
    - Increased access to fish price information by fishermen (to reduce the price margin between landing price and export retail price);
    - Diversification of exportable product range.

**Part G Long term Sustainability Drivers**

G1 Eco tourism

Wap ecotourism initiatives are at three locations, thereby contributing to local income generation and development. According to history and data the earliest known sea turtle fossils are about

150 million years old. Sea creatures such as nudibranch, leaf fish, frog fish, crocodile fish, sea horse, mantis shrimp, octopus, are very common to spot. This makes Tanzania -coast line a great place for macro photography. Here is where the Mtoni boardwalk will be built.

G2 Beekeeping

As described previously (see Part F2), beekeeping will provide benefits to the community and it is dependent upon the conservation of the Mangrove forests for pollen.

## Part H Applicant Organization & Proposed Governance Structure

The application is submitted by the WAP 'Tanzania climate change team', a collaboration between University of Dar es salaam, Tanzania Marine and Fisheries Research Institute (TMFRI) and the Temeke-mkuranga community (as represented by the temekei/Udsmcommittee). The team has worked together in the area for eight years.

H1 Coordinating organisation: WAP

The primary project coordinator is WAP. Women Against Poverty is a Government NGO registered in 2012. As an umbrella body, WAP represents many mangrove user groups in the pilot area, including farmers, fishers, mangrove cutters, and small-scale traders among others.

H1.1 Long Term Objectives of the organization

The reason for the establishment of WAP was after seeing young girls in primary and secondary school fail to continue with their studies due to poverty of the family and death of their parents, which put them at risk economically, socially and psychologically; losing hope of building better future.

The following represents WAP's Poverty Eradication & People's Empowerment Objectives:

i. To promote the development of local communities, with special attention to girls' and women's welfare and education.
ii. To provide the means to the development of private and group entrepreneurship and local production among women, in order to achieve better economic, social and cultural conditions for low income women.
iii. To provide opportunities for women to make positive contributions education, gender equity and social welfare.
iv. To support widows and young women affected by HIV/AIDS by providing education, food staff and medication.

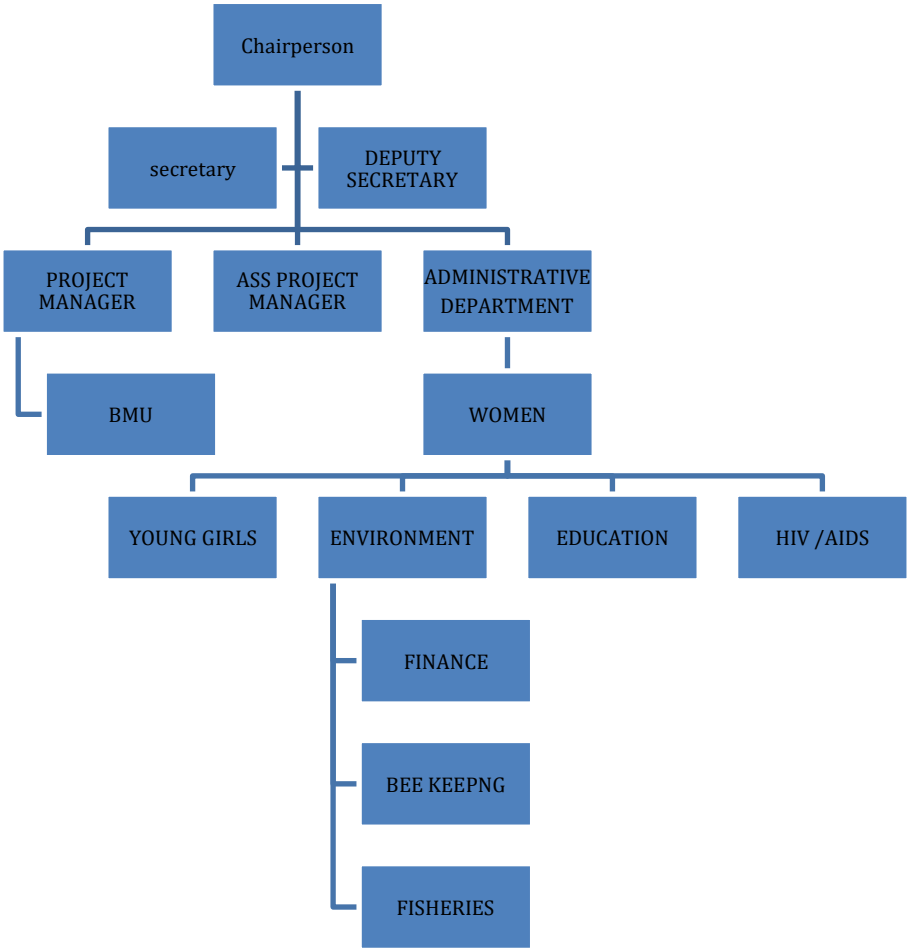
H1.2 Brief History and achievement

Women against poverty (WAP) is a non-government organization (charity organization) in Tanzania, which became operational in 2012 and was established by Ms Mary Gemela & Cresensia Shirima. It was established to improve socio–economic conditions of girls and women who live in vulnerable conditions.

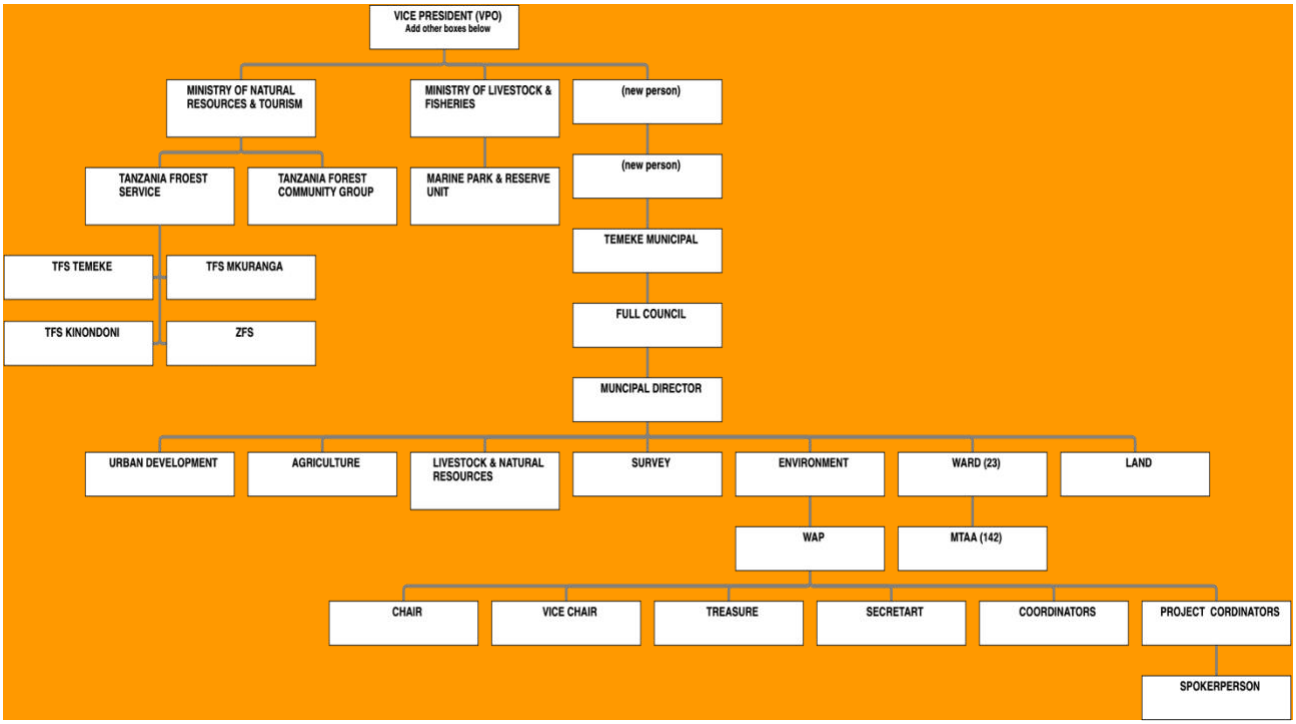
Since its establishment in 2012, WAP has drawn its support from very few individuals but has manage to serve many girls and women in various ways. The organization is becoming more effective and showing increasing potential in its growth, being able to target more girls and women who desperately need support.

H1.3 Structure of WAP

The Chart below represents the structure of the coordinating body WAP.



Since WAP is a governmental body, the diagram below shows the district and national governance that the project sits under.




The WAP project coordination team structure can be broken down as follows:

**Project team leader**

A team leader (and project administrator) living in Temeke will be appointed (on a three day a week, three-year contract) once initial approval for accreditation is achieved. This person will undertake the co-ordination and organizational tasks as specified by Plan Vivo but with help available from the support team.

**Support team**

The project will be supported by the organizations and individuals listed above. The current Earthwatch project ‘Udsm and Roots & shoots’ is committed to continued work at the site for the next four years at least. This will allow the use of Earthwatch volunteers and scientists as advisors and workers (for example during the establishment of nurseries and during tree planting). We will aim to expand the current community involvement in nursery establishment and planting, for example by including regular planting days for local school children. TMFRI /TFS has a long-term interest and expertise in mangrove management in Tanzania and as a government institute will ensure the project complies with all legal requirements whilst recognizing that it is independent of government and that benefits flow to the local community – TMFRI/TFR is already involved in a number of similar community-based projects across the country. The project team has very considerable scientific expertise with a world-leading expert on carbon cycling in forests and a track record of successful mangrove restoration and research on carbon cycling in mangroves at the site.

H2 Supporting organisations

WAP will coordinate with additional oversight from the key people involved in initiating and supporting the project, including:

| Organisation | Description of organisation | How it will support the project |
|---|---|---|
| **Earthwatch International** | Is an NGO based in the USA but with staff in three other countries. It has more than thirty years of experience in supporting conservation and development work using volunteers. | Research on climate change |
| **TMFRI** | The national research organization charged with responsibilities of researching and advising the Tanzanian government on wise use of mangrove environment. It has a small research station in Temeke and staff who live permanently in the village. | Completing the Mangrove Management Plan, Environmental Law and Policy, and investment plan. |
| **Mtoni Womens Mangrove Walkboard Group** | Is a functioning and registered local community branch of WAP and manages income from the mangrove walk board project at Kidete | This group would be responsible for projects in that area, thus acting as the project spokesperson to the main Project coordinator. |
| **Tanzania Forest Conservatory Group** (TFCG) | A homegrown NGO with over 20 years of experience developing and implementing forest related projects with local communities in Tanzania. Today, TFCG is operating 10 community development and conservation projects in 70 villages, improving the livelihoods of over 60,000 men, women, and children. | TFCG purpose is to eradicate extreme poverty and through this model we are able to deliver 7X the local average wage, reduce food loss, empower vulnerable populations and combat deforestation. |

Personnel working permanently at the site on the project operation and implementation will be appointed provided accreditation is achieved. There is a team of six TMFRI/TFR assistants at Temeke who are very experienced in mangrove restoration and who will be available to provide part time assistance.

### H3 Community involvement in governance

In all of our communities, the profits generated from sustainable timber sales in local forests are put into a fund managed by the village council for local development projects. We provide one-on-one coaching and support to local leaders in managing these communal development funds. For example, we help to guide them as they develop annual work plans and budgets to ensure that these are clearly aligned with the long-term vision and goals set by each community in their village development plan.

These work plans and budgets are then presented for approval by the wider community during village general assembly meetings. Whenever possible, we attend quarterly village general assembly meetings to help ensure that annual reports, work plans and budgets are clearly presented and that the concerns of all local stakeholders are equally considered in decision making. We place a strong emphasis on incorporating the needs of marginalised groups, such as youth, women and residents from sub-villages.

As a result, forest revenues have been used in a variety of ways that have broad-based benefits for entire communities, and that are relevant to the particular needs of the village where they have been implemented.

### H4 WAP Legal Status

Women Against Poverty (WAP) is a Government NGO registered in 2012. As an umbrella body, WAP represents many mangrove user groups in the pilot area, including farmers, fishers, mangrove cutters, and small-scale traders among others.

Some key information includes:

- Registered in Tazania with number: 00007462
- TIN: 124-609-089
- Office at Majimatitu C area, Temeke Dar es salaam

For further information, please refer to “Appendix 1 Proof of Registration and Permits”.

**Part I COMMUNITY-LED DESIGN PLAN**

I1 How the project has, and will, engage with the communities

Community engagement took place during the full proposal development (July-September 2018), in which consultative meetings were undertaken with 113 individuals from the following groups: local communities, marine researchers and scientists, government agencies like NEMC, MoLFD, Ministry of Natural Resources and Tourism, District Authorities of Mafia and other interested or affected stakeholders like private business, religious leaders and other NGOs. Their views and inputs were integrated into this proposal. During implementation, there will be various workshops that will draw participants from community level to district and national level. Community participation will be ensured through representatives from village liaison committees

Regular village general assembly meetings are an important governance tool in Tanzanian communities. Village councils are required by law to hold these meetings on a quarterly basis, and they should be attended by at least two thirds of voting-aged adults. This is important for democratic decision making that actively considers the needs of all local stakeholders.

I2 Benefits to engagement of communities

There will be several significant benefits to the population resulting from the successful implementation of a community-led project design. Some of them are described below:

a) Through CFMAs and the access rights over their fisheries resources, the communities will be empowered through their participation in planning and decision-making power to manage their natural resources and other aspects of their development process
b) Through decentralized resource management (co-management) that embrace community-led initiatives and devolve decision-making process to the latter and uphold social benefits, ownership and economic benefit-sharing amongst local communities. Co-management will be enhanced MIMP, CFMAs and the mangrove reserves
c) Communities will gain income at individual, group and community level through savings and credits groups as a result of improved resource management and community development ACT.
d) The fisheries habitats on which they depend for much of their cash and protein sources will be better managed to achieve more ecosystem services e.g. growth of tourism sector;
e) Individuals will have access to information and contacts that can be used for accessing finance and equipment for their fisheries, non-fisheries and mangrove related enterprises;
f) Individuals will benefit from enhanced market and communication systems, through mobile apps, which will allow access information for better fish product sales decisions and established business networks; and
a) Some more groups will be formed (livelihood and conservation), thus providing opportunities for taking advantage of scale to other community members.

b) The lessons learnt by communities, the district teams, scientists and other partners will contribute to a growing set of knowledge and skills on integrated biodiversity conservation and management. This will lead to investments in new programmes of this kind and adjustments and improvements in other projects currently underway

It is important to stress that most of the benefits will not arise in the short term and all involved need to acknowledge that this will be a relatively moderate process.

I3 Engagement of district authorities

The project also plans to engage, and help influence, the District Authorities within the project area. The four districts are at different stages in capacity for planning and implementation of environmental activities. They all need to improve skill and knowledge base in management and conservation. The project therefore aims to contribute to district staff' acquisition of knowledge and skills in fisheries and mangrove management to be applied locally. The benefits of this will be:

c) Improved career prospects of fisheries and mangrove forest reserve staff;
d) Provide transferable skills beyond the fisheries or coastal management benefits, as many of the skills e.g. in resource assessment and planning methods, will be applicable in other situations and in other 'sectors' within the districts;
e) Districts will understand issues concerning trade-offs arising from policy decisions between conservation and the economic benefits derived from resource use; and
f) The presence of a programme such as this in the three districts will give confidence to potential investors in eco-tourism, and may discourage those hoping to invest in unsustainable resource exploitation.

I4 Community-led design plan submitted Mikoko Ujamaa consultation plan

The community have been consulted an involved in the project creation from early stages. A table is provided below that describes the community-engagement activities that have taken place and the date that they took place.

| DATE | ACTIVITY | DESCRIPTION | PARTICIPANTS |
|---|---|---|---|
| September 27th 2019 | Introduction to socio-economics of area. Mikoko UJAMAA (MU) office<br><br>Mikoko UJAMAA project, introduction, document review and Q&A | | |

| | | | |
|---|---|---|---|
| | A guided tour of village of Kidete &kisiju & kawe | | |
| June 8th 2020 | Meeting with MU Committee and TFS 27ember<br><br>Guided tour of KIDETE village | | |
| June 10th 2020 | Meeting with MU Committee and TFS members<br><br>Guided tour of MTONI village | | |
| May 7th 2020 | Pilot scientific work including demonstrations of feasibility of re-planting degraded areas such as those used in activity area 3 and calculations of above and belowground carbon balance and flows | | |
| May 7th 2020 | Establishment of permanent forest plots to allow monitoring of growth and carbon sequestration | | |
| May 7th 2020 | Survey of baseline socio-economic situation in the project areas to inform community planning about benefit sharing and to allow monitoring of improvements | | |
| April 20th 2020 | Establishment of Mikoko Ujamaa Community Organisat | | |

| | | | |
|---|---|---|---|
| | ion (MUCO) and recruitment of project coordinator | | |
| August 5th 2020 | Meeting with Dr KISANGA Plenary meeting, preliminary findings and wrap up for bee keeping in mangrove forests | | Dr Kisanga<br>Rama-wap spokeperson<br>Mr Albert Chacha - Chairman -WAP |
| August 5th 2020 | Meeting with Dr KISANGA Plenary meeting, preliminary findings and wrap up for fish pond in mangrove forest/village forest | | |
| October 10th 2020 | Establishment of Casuarina woodlot | | |
| May 7th 2020 | Official approval by Tanzania Forest Service of mangrove management plan | | Mr kweka<br>Mr francis<br>Mr chacha<br>Mr Ntule |
| July 20th 2020 | Community benefit consultation process, led by MUCO, run to establish initial priorities for expenditure for kidete village | | |
| July 27th 2020 | Community benefit consultation process, led by MUCO, run to establish initial priorities for expenditure for Kawe village | | |
| July 31st 2020 | Community benefit consultation process, led by MUCO, run to establish initial priorities for expenditure for mkuranga village | | Rama<br>Tandiwe<br>Pamela<br>Mary<br>Somo |

| | | | |
|---|---|---|---|
| August 5th 2020 | Community benefit consultation process, led by MUCO, run to establish initial priorities for expenditure for Temeke village | | |
| July 31st 2020 | Community benefit consultation process, led by MUCO, run to establish initial priorities for expenditure for Kiembe samaki vill age | | |
| July 21st 2020 | Forest Association (TCFG) / Forest User Agreement Cons titution of TFS | | |
| October 10th 2020 | Memorandum of Understanding WAP MKURANGA User Groups | | |
| August 2020 | Memorandum of Understanding WAP KIDETE User Groups | | |
| September 10th 2020 | Memorandum of Understanding WAP KIEMBE SIMAKI User Groups | | |
| October 20th 2020 | Memorandum of Understanding WAP TEMEKE User Groups | | |
| November 4th 2020 | Memorandum of Understanding WAP KINONDONI User Groups | | |

| | | | |
|---|---|---|---|
| July 21st 2020 | Letter confirming Forest User Agreement for WAP CFA is underway | | |
| October 28th 2020 | Mangrove training | Virtual with MAP | Domnic Roadhouse |
| July 9th 2020 | Community and Schools MoU between MTONI school and MUCO | | |
| August 10th 2020 | MoU between KIDETE school and MUCO 2020 | | |
| July 10th 2020 | Interviews with TEMEKE residents – summary transcripts | | |
| August 9th 2020 | Interviews with KIDETE residents – summary transcripts | | |
| July 7th 2020 | Interviews with MKURANGA residents – summary transcripts | | TFS Charles |
| July 12th 2020 | Interviews with KAWE residents – summary transcripts | | DC Kinondoni |
| | Interviews with MBEZI residents – summary transcripts | | |
| July 29th 2020 | Interviews with KIEMBE SAMAKI residents – summary transcripts | | |
| July 24th 2020 | Mkuranga sites The community members are trained to patrol and report any land use change and / or poaching activities which contribute to tackling illegal land | | |

| | | | |
|---|---|---|---|
| | intrusion and resulting land conversion at both local and district level | | |
| October 20th 2020 | Breadfruit Initiative signed MoU with Agricyle Global | | |
| August 20th 2019 | Bee keeping Training at UDSM | | |
| October 20th 2020 | VICOBA training at UDSM | | |
| October 28th 2020 | FAO- Junior Farmers Field School and Master Trainers Farmers School | | |

WAP has also been engaged with the communities in the past year to complete activities specific to starting this project. These activities have provided invaluable experiences in mangrove protection/conservation for those involved. There are therefore also plans to complete more of these activities in the near future:

| | Title | Start Time | End Time | Location | Description | Participants |
|---|---|---|---|---|---|---|
| 1 | Beach clean up | 04/01/2020 | 05/01/2020 | Kawe beach | This is the coastal protection that will involve beach cleanup by removing plastics and all unwanted material around Kawe beach. | WAP and volunteers |
| 2 | Beach clean up | 01/02/2020 | 02/02/2020 | Kidete | This is the coastal protection that will involve the cleanup beach by removing plastics and all unwanted material around Kidete area | WAP and students |
| 3 | Beach clean up | 07/03/2020 | 08/03/2020 | Mtoni | This is the coastal protection that will involve the cleanup beach by removing plastics and all unwanted material around Mtoni mangrove area | WAP and students |

| | | | | | | |
|---|---|---|---|---|---|---|
| 4 | Mangrove remoting | 06/04/2020 | 12/04/2020 | Kidete | Mangrove remoting will involve management of grown magrove and available mangrove to ensure that they are safe and sound | WAP |
| 5 | Plant nursering | 13/04/2020 | 13/04/2020 | Mtoni | This will involve bed preparation and growth of new different plant species for the aim of plant them in the given area | |
| 6 | AFFORESTATION (on mangrove area and other places) | 25/05/2020 | 31/05/2020 | | This will involve planting different plants species in a given area | WAP |
| 7 | Beach cleanup | 02/05/2020 | 03/05/2020 | Kawe | This is the coastal protection that will involve beach cleanup by removing plastics and all unwanted material around Kawe beach | WAP and students |
| 8 | Beach cleanup | 06/06/2020 | 07/06/2020 | Kidete | This is the coastal protection that will involve beach cleanup by removing plastics and all unwanted material around Kidete area | WAP and volunteers |
| 9 | Beach cleanup | 04/07/2020 | 05/07/2020 | Mtoni | This is the coastal protection that will involve beach cleanup by removing plastics and all unwanted material around Mtoni area | WAP and students |
| 10 | Mangrove remoting | 10/08/2020 | 15/08/2020 | Kidete | Mangrove remoting will involve management of grown magrove and available | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | mangrove to insure that their safe and sound | |
| 12 | Plant nursering | 21/09/2020 | 21/09/2020 | Mtoni | This will involve bed preparation and growth of new different plant species for the aim of plant them in the given area | WAP |
| 13 | Afforestation (on mangrove area and other places) | 12/10/2020 | 17/10/2020 | | This will involve planting tree in a given area | |
| 14 | Beach cleanup | 10/10/2020 | 11/10/2020 | Kawe baech | This is the coastal protection that will involve beach cleanup by removing plastics and all unwanted material around Kawe beach | WAP and students |
| 15 | Beach cleanup | 07/11/2020 | 08/11/2020 | Kidete | This is the coastal protection that will involve beach cleanup by removing plastics and all unwanted material around Kidete area | WAP and students |
| 16 | Beach cleanup | 05/12/2020 | 06/12/2020 | Mtoni | This is the coastal protection that will involve beach cleanup by removing plastics and all unwanted material around Mtoni beach | WAP and volunteers |

**J ADDITIONAL ANALYSIS**

This project builds on the expertise of the project team but activities are new and do not replicate existing work. Although the legal structure is now available in Tanzania for community based natural resources management (CBNRM) this is not taking place in any mangrove

forests. In the absence of this project there is very little likelihood of similar work being initiated. There is no local history of community mangrove management in the region of Dar es salaam and pwani and no experience of using the relevant legal instruments.

The area was designated a Ramsar site in October 2004 and by 2006 the government developed an action plan in order to improve the monitoring and management of the Ramsar Sites in the country. The measures include mangrove conservation and restoration initiatives. However, despite this, effective mangrove conservation has not been obersved. This is because the key message on mangrove conservation was never inclusive and no participation from all stakeholders, in particular communities as well as the importance to promote sustainable use of mangroves, which never happened at all levels. Since then, some concrete *recommendations* on legal tools have also been highlighted such as the development of mangrove management plans, investment plan and new strategies as well as the inclusion of benefit sharing in the law with all stakeholder and local communities, which will be in enforced and published in the PDD.

Although the main clear-felled areas were cut in 2011, there has been almost no regeneration since due to threshold effects resulting from large scale clearance; enhanced wave action and erosion at low shore sites and enhanced salinisation at high shore sites have meant seedlings cannot establish.

## L IDENTIFICATION OF STARTUP FUNDING

Below is a list of funding opportunities that the project is looking into.

| DATE (TIMEFRAME) | ORGANIZATION | FUNDING |
|---|---|---|
| May2020 | KAMAL STEEL | Kamal Steel have pledged Costs of planting Casuarina and up keep of Temke nursery garden. |
| June 2020 | AFRICAN MALAIKA<br>PLOT<br>MKURANGA<br>POBOX 123<br>DAR ES SALAAM | African Malaika will fund the PIN and help with other logistics in Tanzania. |
| June 2019 | ROTARY CLUB<br>DISTRICT 9211 | Rotary clubs of 9211 Tanzania will help with the PDD and other small projects like Breadfruit tree planting and honey production from bee hives at the mangrove forests. |

| | | |
|---|---|---|
| TBD | ROTARY CLUB 7090 KENMORE/LANCASTER | Rotary clubs of 7090 pledged to fund costs of project validation |
| TBD | AVIVA | Aviva is helping to fund mangrove carbon cycling research. They have agreed to supply funding for TBD after approval of PIN. Whilst these initial secured contributions represent part of Aviva's current support for the mangrove conservation and research activities at Temeke, and are thus not contingent on secured carbon offsets in the future, Aviva do intend to be one of the organisations buying such offsets |

**REFERENCES**


Torell, Elin and Aviti Mmochi 2006, Mkuranga Governance Baseline, Coastal Resources Center, University of Rhode Island. pp. 18

Kristensen, E., Mangion, P., Tang, M. *et al.* Microbial carbon oxidation rates and pathways in sediments of two Tanzanian mangrove forests.(Mtoni ) *Biogeochemistry* 103, 143–158 (2011)

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

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

Anderson, J., Baker, M., & Bede, J. (2015). Reducing Emissions From Deforestation and Forest
Degradation in the Yaeda Valley, Northern Tanzania. Tanzania: Carbon Tanzania.

Kristensen, E., Flindt, M. R., Ulomi, S., Borges, A. V., Abril, G., & Bouillon, S. (2008).

Emission of CO2 and CH4 to the Atmosphere by Sediments and Open Waters in Two Tanzania Mangrove Forests. Marine Ecology Progress Series , 53-2008.

Lupembe, I. B. (2014). Carbon Stocks in Tanzania Ecosystems of Rufiji River Delta, Rufiji District Tanzania . A Dissertations Submitted in Partial Fulfilment of the Requirement for the Degree of Master of Science in Ecosystem Science and Management of Sokoine University of Agriculture .

Mbelle, A. V. (2013). Ileje District Baseline Report 2013-Revised:Integrating Poverty-Environment-Gender Objectives in District Plans for Accelerating Economic and Environmental Sustainability. Dar es Salaam: Department of Economics,University of Dar es Salaam.

Njana, M. A., Eid, T., Bollandsas, O. M., & Zahabu, E. (2016). Biomass Estimation and Carbon
Storage in Mangrove Forest Tanzania . Allometric Tree Biomass and Volume Models in Tanzania , p. 47.

Bukenya, D., J. Komwihangiro, et al. (2004). Integrating Water, Hygiene, and Sanitation into Community IMCI Interventions: Lessons from the African Medical and Research Foundation (AMREF) in Tanzania. Researching Communities for Child Health: Advancing Health Outcomes through Multisectoral Approaches, Washington DC. Department for International Development (2003).

Understanding Fisheries, Livelihoods, and Constraints to their Development, Kenya and Tanzania: Review of Marine Fisheries in Tanzania. Dar es Salaam, Department for International Development. Francis, J., G. Wagner, et al. (2002).

"Development and Protection of the Coastal and Marine Environment in Sub-Saharan Africa" - Tanzania National Report, Phase 1: Integrated Problem Analysis. Dar es Salaam, Global Environment Facility. Institute of Resource Assessment (2005).

Songo Songo Gas Development and Power Generation Project - Wayleave Village Electrification Scheme: Socioeconomic Baseline Data. Dar es Salaam, Institute of Resource Assessment, University of Dar es Salaam. Mkuranga District Council (2002).

Integrated Coastal Management Action Plan. Mkuranga, The Mkuranga District Council. Olsen, S. B. (2003).

Crafting Coastal Governance in a Changing World. Narragansett, The Coastal Resources Center. United Republic of Tanzania (1997).
Coast Region Socio Economic Profile. Dar es Salaam. United Republic of Tanzania (2005).
Population and Housing Census: Population Projections. Dar es Salaam, Central Census Office, National Bureau of Statistics, President's Office, Planning and Privatization. United Republic of Tanzania (2005).

Poverty and Human Development Report. Dar es Salaam, Research and Analysis Working Group of the Government of Tanzania's Poverty Monitoring System.
*"2002 Population and Housing Census: General Report: Urban West: West"*. Archived from *the original* on 18 March 2004.

CMZ. The status of Zanzibar CoastalResources; Toward the Development of Integrated Coastal Management Strategies and Action Plan. Departmentof Environment, MACEMP. 2009.

Balasubramanian T, Khan SA.Mangroves of India. EnvironmentalInformation System Centre. State of the Art Report. Envis Publication Series 2; 2002.

Mohammed S, Betlem J. Analysis of the Coastal Erosion Field Survey and Comparison of the Coastline of Zanzibar. The Commission for Lands and Environment. Zanzibar Environmental Study Series number 19; 1996

Wily, L. 1998. The legal and political in modern common property management: re-making communal property in sub-Saharan Africa with special reference to forest commons in Tanzania. Paper presented at the Conference of the International Association for the Study of Common Property, Vancouver, Canada, June 1998.