

## **ACTION PLAN FOR THE DYNAMIC CONSERVATION OF THE URU SHIMBWE-JUU AS A GLOBALLY IMPORTANT AGRICULTURAL HERITAGE SYSTEM (GIAHS) AREA**

### **Project background**

The Globally Important Agricultural Heritage Systems initiative was launched by the Food and Agriculture Organization (FAO) in 2002 with the aim of establishing the basis for the global recognition, conservation and adaptive management of outstanding traditional agricultural systems and their associated landscapes, biodiversity, knowledge systems and cultures. The initiative aims to “protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements” [cf. CBD: Article10(c)], specifically within agricultural systems. In many of these systems, the prosperity of nature and the poverty of people unfortunately coexist. Therefore, the initiative does not intend to freeze systems in time, but rather calls for their “dynamic conservation”, emphasizing a balance between conservation, adaptation and socio-economic development. It aims to empower smallholder farmers/pastoralists, traditional communities and indigenous peoples to maintain their traditional agricultural systems and to create an economic stake in the conservation of (agricultural) biodiversity so that nature and people can prosper together.

Within this context, the Federal Republic of Germany through the Federal Ministry of Food, agriculture and Consumer Protection (BMELV) and the German Technical Cooperation (GTZ) approved the current effort to establish sites in Kenya and Tanzania and to support the food security and reduce poverty of the local communities in GIAHS areas.

In Tanzania, the Kihamba (Chagga homegarden) Agroforestry System was identified as one of the country’s best examples of a resilient system of upland farming deserving support in line with the GIAHS objectives. Its dynamic conservation through targeted measures on the ground, combined with the right policy support would ensure food security and livelihood sustenance, as well as sustainable management of its environment and the continuity of its living agricultural heritage.

### **Development of the Action Plan**

Since the project inception the following milestones have been achieved in Tanzania:

1. Potential sites in Mbinga district (Songea Region), Same and Moshi Rural districts (Kilimanjaro region) were evaluated in March 2010, using the GIAHS site selection criteria (FAO).
2. Main characteristics, threats and opportunities for each of these sites were identified and analyzed by the national project team through community consultations and field-visits before they were presented to the Project Facilitating Committee (PFC) for further deliberations, ranking and eventual agreement of the Project Site.

3. The Kihamba forestry system in Shimbwe juu village (Moshi Rural District) was decided upon;
4. A team comprising of members from the National Project Facilitating Committee carried out a “Free Prior Informed Consent” procedure in the community. The community gave its consent by acclamation;
5. The visit was also used to further discuss the threats and opportunities presented by the site and priority interventions.
6. On this basis, a draft Community Action Plan was developed by the project team.



**Photo's:** **Left:** A typical “Kihamba” with shading fruit trees, bananas, coffee and annual crops such a taro. **Right:** Meeting with village community to give prior informed consent for the project’s implementation in Shimbwe Juu.

## **Why is the Kihamba agro-forestry system a National/International heritage?**

Agroforestry refers to land-use systems in which woody perennials (trees, shrubs, etc) are grown in association with crops, pastures and/or livestock in a spatial arrangement, a rotation or both, and in which there are both ecological and economical interactions between the tree and non-tree component of the system. Thus, it simulates a natural system but with the components (trees, crops and animals) consisting of species carefully selected for their useful products and/or services. Agroforestry is a very old practice that has grown out of necessity as primitive farmers tilled the land to grow crops out of forested areas and tamed wild animals. The principles of agroforestry have been in use for centuries, most commonly in tropical and subtropical regions.

Many agroforestry systems worldwide conform to the criteria laid out by the GIAHS Initiative of FAO, and particular examples conform to the standards of the World Heritage Convention (as *Cultural Landscapes*). The specific common values of agroforestry systems include their importance for the conservation and sustainable use of trees, cultivars, animal breeds, the landscapes which co-evolved with their cultural practices, which e.g. provide critical habitats for wild biodiversity, deep reservoirs of local/indigenous knowledge on crop husbandry and livestock rearing, as well as on ecological functioning. Moreover, they show remarkable resilience and capacity to adapt to climatic and other environmental fluctuations. The Kihamba (Chagga home garden) system, as practiced traditionally by the Chagga, provides an outstanding example of upland agroforestry system in East Africa and continues to have relevance for the sustainable management of its landscape.

### **The Kihamba (Chagga home gardens) agroforestry system: a brief history of challenges and survival**

The kihamba (Chagga home garden) agroforestry system occupy mainly the climatically most favorable southern and eastern foot slopes of Mount Kilimanjaro covering an estimated area of 120,000 ha. They are located mainly at an altitude between 1000 and 1,800 metres above sea level forming a concentric pattern of half -circle around the mountain. The climate of this area is humid tropical montane forest. This ancient land use system is believed to have evolved around the 12th century. It is said to have started with irrigated banana intercropped with other annuals (beans, cabbage, cow pea, chill (pepper), eggplant, maize, onion, potato, taro, tomato and yam) and widely spaced shade trees. Coffee was introduced by the missionaries during the German colonial period early 1880s. It was first introduced at Kilema Mission where even today five of the first six plants still exist. After the First World War coffee demand increased and consequently production. The British colonial government encouraged the farmers to increase production

Coffee was thus incorporated in the kihamba where it proved to be compatible and being an important cash crop, it strengthened the role of kihamba to the Chagga livelihood system. The Kihamba or (Chagga home garden) is central to the identity and culture of the Chagga tribe. It is the central locus of social and ceremonial life. People are born, come of age, marry and are buried on their Kihamba.

The Chagga home garden (Uru Shimbwe Juu site) has been selected for its uniqueness, integrity, high agro-biodiversity and the ecological significance of Mount Kilimanjaro, which has immense geological and cultural value. Its community on the other hand has demonstrated a strong resilience to threats to their systems, which ensure its sustainable functioning and resilience under its environmental conditions. The Chagga home garden is characterized by the unique feature of multilayered vegetation structure similar to a tropical montane forest. A typical Chagga home garden is composed of four vegetation layers. The uppermost layer is formed by sparsely spaced trees which provide shade, medicine, fodder, fruits, firewood and timber for some species. Under this layer more than 15 varieties of bananas are grown. Under the bananas there are coffee shrubs and under these, vegetables of variable species including climbers are grown. This multilayer system maximizes the use of limited land.



**Photo:** The multilayer system maximizes production in 3 dimensions, as well as in time. Coffee, introduced in early colonial times, fit right into the kihamba ecology. This allowed the farmers to adapt their kihamba system to a more cash oriented economy. The project will identify and introduce other kihamba-compatible cash crops, including vanilla, to improve household income.

The home gardens are irrigated by traditional canals tapping water from perennial streams/rivers originating from the montane forest, as well as by trapping run-off in furrows. The canals convey the water to the nduwas. The nduwas are small ponds dug out for the aim of concentrating water (to get enough volume) to be used the following day to irrigate homegardens (vihamba) which are on schedule. The canals, nduwas and furrows were run/regulated by canal/nduwa/furrow elders from subclans. The outlet of the nduwa is a hole on the bottom of it on the adjacent side which is blocked by earth and big stone overnight to concentrate water, and opened in the morning to release water for irrigation as required. The normal procedure for regulating water supplies was for the person whose turn it was to use the water, to do so from dawn until noon. He then had to turn back the water so that other people could use it.



**Photo's:** **Left:** Water is tapped from a river 8 km upstream from the village boundary in the what is currently Kilimanjaro National Park. This engineering feat in rugged terrain was done by the villagers more than 200 years ago. **Center:** The Nduwa's are small ponds where water is collected for irrigation in the dry season. Rehabilitating the 7 Nduwa's in the village will improve irrigation and allow the introduction of small scale aquaculture. **Right:** The water is shared between sub-clans. Here the stream separates the water for the Temba and the Kira sub-clans.

The main crops include banana, coffee, yams, maize, potatoes, beans, and fruit crops. Coffee is the major cash crop. Livestock are kept mainly indoor and they include dairy cattle, goats, sheep, pig, and poultry. These are fed with fodder or crop residues from the kihamba and in turn they provide manure which is returned to the kihamba, thus enhancing the nutrients cycle.

The Chagga home gardens are said to maintain a high biodiversity with over 500 species including 400 not cultivated plants. The home gardens enable the farmer to sustain production with a minimum of external inputs.

From a livelihoods and economic perspective, especially considering the nature of the landscape and the population it support, kihamba system is an effective and sustainable way of exploiting natural resources under such agro ecological environment.

The traditional upland agrosystems are thriving to maintain their unique identity through maintenance of their socio cultural institutions. Today however, these traditional systems are under pressure, threatened by several factors including; population increase, labour shortage, climatic change and market of produce. In the selected site, through observations and discussion the following threats have been noted;

1. Low productivity of kihamba arising from low yields of coffee and associated crops. In addition, unreliable market of coffee is a disincentive to economy of kihamba.
2. Inadequate water for irrigation during the dry season. Climate changes over the past 2 to 3 decades have resulted to low and erratic rainfall. This has also consequently resulted to decreased streams and river volumes for irrigation.
3. Fragmentation of kihamba beyond economic size (less than 0.5 acre)
4. Labour shortage due to outward migration of Youths. This is caused partly by youths attending schools but mainly due to decline in income of the kihamba as a result of low productivity and decline in coffee price resulting to disincentive.
5. Low overall income (lack of alternative sources). This arise from low productivity of the kihamba (ref. no 1 above)
6. Low awareness among some policy makers on the potential and viability of upland farming system to give appropriate support. Some policy makers do not know the roles and potential of the kihamba system on people's livelihood, national economy as well as environmental benefits to support it effectively
7. Soil erosion on steep sloping areas under annual cropping. The home gardens (vihamba) occupy the foot slopes of Mount Kilimanjaro. The general slope is steep and the landscape is safe under the permanent crops. The change from coffee to annual crops contributes to soil erosion and land degradation
8. Degradation of traditional knowledge, culture and skills associated with kihamba as well as Chagga tribe. Since youths get less time to work in the vihamba (due to schooling and outward migration), they do not a good exposure to traditional life including knowledge. This lead to degradation of trsditional knowledge with time.

Nevertheless, kihamba has proved to be still resilient and continues to sustain livelihoods and valuable natural and cultural heritage. These areas continue to sustain valuable ecosystem services, including natural and cultural heritage of great relevance to sustainable development. It is the objective of the current action plan to safeguard the historic, inherently sustainable, agroforestry system of the kihamba (Chagga home gardens), through a combination of local and policy measures, for the benefit of its custodians and Tanzania as a country.



**Photo's:** Prioritizing issues with the community: 1: addressing declining coffee productivity and diversifying cash crops 2: rehabilitating the traditional irrigation system; 3. improving pest and disease management 4. address soil erosion and fertility issues (not considered urgent).

### **The project site**

The Uru-Shimbwe Juu village is located on the foot slope of Mount Kilimanjaro. It covers a surface area of 615 hectares. The village is bordering the forest reserve of KINAPA on the North. On the East, the boundary is Mware River which separates the village with Uru East (Materuni village). On the West, the village is bordered by Rau river and on the South by Shimbwe chini village. The inhabitants are Chagga tribe with a population of approx. 2569 people, of which 1251 are male and 1318 are female.

The area is characterized by a humid montane forest climate with bimodal rains. Although the village lands do not represent each and every habitat found throughout the Mountain system, there is a significant biological diversity typical of the humid montane forest ecosystem. Annual

rainfall range between 1200 – 3000 mm. The main rain season is from March to May, while the short rains are centered on the month of October/November. The driest period is from July to October.

The kihamba (home garden) is characterized by the unique feature of multilayered vegetation structure similar to a tropical montane forest. A typical Chagga home garden is composed of four vegetation layers. The uppermost layer is formed by sparsely spaced trees which provide shade, medicine, fodder, fruits, firewood and timber for some species. Under this layer more than 15 varieties of bananas are grown. Under the bananas there are coffee shrubs and under these, vegetables are grown.

Livestock keeping consist mainly of a few goats, sheep, chicken, pigs and cross breeds diary cattle. They are mainly kept indoor. Apart from providing livestock products and income, livestock is an important component of the agroforestry system whereas manure from livestock is applied to the farms to improve soil fertility. Its ecosystem has a high biodiversity with over 500 species including 400 not cultivated plants. Genetic resources include indigenous tree species and banana varieties, introduced tree sp, coffee, yams, beans, indoor livestock (cattle, goats, chickens and pig)

The community displayed a strong sense and cultural custodianship towards conservation of the agricultural land.

The home gardens are irrigated by traditional canals tapping water from perennial streams/rivers originating from the montane forest, as well as by trapping run-off in furrows. The canals convey the water to the ndiwas. The ndiwas are small ponds dug out for the aim of concentrating water (to get enough volume) to be used the following day to irrigate homegardens (vihamba) which are on schedule. TThe outlet of the ndiwa is a hole on the bottom of it on the adjacent side which is blocked by earth and big stone overnight to concentrate water, and opened in the morning to release water for irrigation as required. The normal procedure for regulating water supplies was for the person whose turn it was to use the water, to do so from dawn until noon. He then had to turn back the water so that other people could use it.

The Shimbwe juu area was chosen after a structured comparison of different agroforestry systems and different and locations (ranking e.g. different aspects of natural and cultural heritage, the sustainability of the communities management practices and the integrity of the site), as a highly representative area of traditional upland agroforestry system in Tanzania. It is not only an area deserving of protection for its heritage values, but it is also an example of the benefits generated by the kihamba (Chagga home gardens) and its contemporary relevance for the sustainable development of upland agriculture in Tanzania. Additionally, the Shimbwe juu site (for Kihamba) further stands out because of the ecological significance of Mount Kilimanjaro on which it stands.

### **Objective and approach of the action plan**

In order to secure the continuity of the sustainable cultural management of the area, as well as the heritage and environmental benefits it provides, a number of challenges are to be met and addressed. The project will aim to assist the community in preserving their natural resource base, land

and crop management practices and knowledge system while adapting their system to contemporary challenges. Adaptive measures contained in the plan are designed to reinforce the underlying socio-cultural and ecological processes of this historically evolved system. A critical part of this approach is to improve the food security and well being of the community. This is not only desirable per se, but poverty is also one of the factors driving the adoption of unsustainable practices.

Apart from site-specific measures, the project also deploys a number of policy measures aimed at the recognition and protection of the area, and the heritage practices and resources it represents, through available national policy/legal measures, as well as broader awareness raising among policy and other stakeholders of the values of Tanzania's heritage agricultural systems. Overall, the project aims to turn the considerable benefits of kihamba agroforestry system as a sustainable form of livelihoods, incl. its compatibility with the landscape and its significant cultural heritage, into an advantage for the community of Shimbwe juu and the Republic of Tanzania.

To this end, this action plan contains the following measures:

- Improved management of coffee (replanting, integrated pest management) and banana (re-introducing indigenous varieties)
- Improvement of traditional irrigation water supply system (reinforcing water ponds/ndivas by lining, provision of water control gates, lining some parts of the distribution furrows)
- Development of a long term management plan for the area through community agreements building on traditional management institutions
- Introduction of alternative cash crop to augment income eg. vanilla, water cress
- Create awareness to policy makers and public, the role of the kihamba agroforestry system through publication and policy workshops
- Restoration of appropriate traditional values, knowledge systems associated with kihamba and establishing a mechanism for their transmission for application in their day-to-day lives
- Documentation of natural, cultural and combined heritage values
- Development of activities and programs to address environmental degradation (soil erosion on annual croplands)
- Transmission of indigenous knowledge systems
- Development of marketing strategies
- Explore possibilities of harnessing the following potentials that the site has
  - i) Tourism
  - ii) Aquaculture (fish farming) in ndivas upon rehabilitation

## **Site specific challenges and interventions**

An analysis carried out with the community in the development stages of this Action Plan revealed a number of factors to which the project will need to respond. This section summarizes the findings of the analysis. The interventions by this action plan are referenced to the activities presented in Table 1 of the current document.

Challenge 1: Improving productivity and conservation of natural resources at the landscape level of the project area, in order to improve food security and long-term sustainability

In the context of developments in the Kilimanjaro uplands, the traditional kihamba system is under threat. The productivity of the kihamba system has declined due to decline in coffee production, unstable price, reduced water flow for irrigation, and decline in soil fertility. The decline in coffee production is caused by aging of the coffee trees, pest and disease resurgence and indirectly by fluctuation of coffee price. Most of the coffee stands are over 100 years old. They have thick stumps due to continuous cutting back. Although they can still produce, their potential is reduced by the age factor. In practice coffee trees have to be replaced when they reach the age of 50 years. Pests (such as stem borer) and diseases (leaf rust and coffee berry disease) have been reported to be one of the drawbacks; at the same time pesticides are expensive that they are not affordable by the majority of farmers. High yielding and resistant coffee varieties (to leaf rust and coffee berry diseases) have been developed and are being disseminated. It is however debated that the varieties require more light and no intercropping (associated crops). More information is being sought to clear the doubts. The problem of coffee is exuberated further by fluctuation of coffee price making the enterprise less reliable.

Historical evidence shows that the use of water for irrigation has co-evolved with kihamba. In the area/village, two canals have been constructed to extract water for irrigation from Mware River and Rau River which are several kilometres away. These canals have turned somewhat into permanent streams. To facilitate water distribution, small dams/ponds (ndivas) have been dug to concentrate water during the night for use in the next day. A schedule is used to control water use whereby each farmer or group of farmers have specific day to access water for irrigation. The head of the dam/ndiwa is in charge of the schedule. Clearing of the canals and ndiwa is done by the whole community. In a week there is one day whereby all community members are obliged to participate in collective work such as clearing the canal, digging up or clearing a road, construction works etc.

According to farmers over the past decade, water flows in these canals have decreased substantially especially during the dry season. Further, the short rains have become quite unreliable. This is possibly among the effects of climate change. Apart from reduced water flow during the dry season, the other problem related to water is canal losses and collapse of ponds walls due to water piping or burrowing animals. The mission witnessed that most of the ponds have collapsed walls on the outlet side.

Soil erosion is a potential threat in the area due to the sloping topography/landscape. It is not a big problem in the kihamba due to the permanent cover of banana, coffee and undergrowth crops. It is however a threat in plots used for annual crops (Maize, Irish potatoes and Beans)

Intervention:

The Action Plan address the above through: assessment of the current natural resources and their dynamic use patterns and the development of a long-term land-use plan (an update of the existing land-use plan), in which natural resource uses are harmonized, based on principles of the traditional management of the kihamba agroforestry system (Activity 1.1 and 1.2). The long-term management plan will include a number of improved uses/management practices of land and crop which will include the introduction and promotion of high value crops and aquaculture to increase household income, and the restoration of degraded farmlands by appropriate soil and water conservation measures. Training for such improved management of land and crop under Output 2. Additionally, the Action Plan will also address the improvement of coffee production by facilitating establishment of nursery of coffee seedlings, assisting re-introduction of some indigenous banana varieties (Activity 2.2)

Challenge 2: Providing long-term incentives for the continuity of the kihamba system

Land fragmentation under the traditional system of inheritance is a limitation/threat to the sustenance of the kihamba system. The kihamba is passed to childrens through inheritance of normally the male children (the Chagga land tenure does not allow women to inherit land therefore land is entitled to men only). Thus, traditionally the sons would be allocated a piece of kihamba when they marry. and the remaining plot where family house stands is inherited by the last son. This has gone on through years until at present where the average size of kihamba stands at between 0.5 to 1 acre. If further fragmentation will go on, the kihamba system will become unviable/unproductive and ultimately collapse.

During the early eighties the first President (The late Mwl Nyerere) had advised those who were short of land to shift to other areas in the country where there was ample land. To that notice, many had shifted to Arusha (Mount Meru slopes) and Morogoro (Turiani) and that somehow reduced the population pressure. Today, some families allocate the Kihamba land to the last son, whilst the rest would be allocated part of the lowland shamba or alternatively seek work in the town.

Traditionally, the kihamba is managed by the family. There is a division of labour whereas pruning of coffee trees, de-suckering of banana, clearing of water canals, irrigation of the kihamba is done by men while collecting firewood, weeding, feeding cattle, cleaning the shed and milking is done by women. Picking of coffee is done by the whole family, while primary processing (de-pulping, drying) is mainly done by women and children. Men are the supervisors of the kihamba and their roles were passed to the boys by fully involving them in related duties. Since the past two to three decades labour for the management of kihamba has become a problem due to youths attending schools or college (boarding) or fleeing to towns to seek employment and more exiting life. The mission team noted some of the kihamba which were not properly managed, having poor coffee and banana stands. When asked about the reason for the poor condition of their plots, the owners responded that it's

the problem of labour as children are either at collage or have left for town. Low and unstable price of coffee since the past 3 decades is said to have contributed to poor condition of vihamba as most farmers have been discouraged by the low returns relative to the cost of production. However at present the price of coffee has risen up thus motivating farmers to revive their plots.

Intervention:

The projects efforts to improve subsistence food security aims at capitalizing on the cultural and natural heritage associated with their management of the landscape. This will give the community a direct economic stake in the management of their system.

Under Activity 2.1 the Action plan will support the community to improve crop production in the vihamba thereby increasing crop yields and subsequently income which will be an incentive and therefore attract youths to work in the vihamba reducing their migration to towns.

To ensure sustainability of the kihamba the community will be required to agree on the minimum size of the kihamba (eg. 0.5 ha) that can economically provide requirements of an average family (6 members). They will be required to establish guidelines and integrate by-laws in long term land-use plan (Activity 1.3)

Introduction of alternative income generating enterprises compatible with kihamba eg. Vanilla crop, water cress, aquaculture could also provide an incentive by adding value to the system. Under Activity 2.2 and 2.3, the project will provide necessary training to the community on management practices required as well as market information.

In addition to economic incentives, social/customary law incentives will play a role in the implementation/enforcement of the land-use plan. Penalties may be imposed on offenders. Such rules will be developed through activity 1.3.

To create ownership the project will deploy a fully participatory approach, in which community members are key decision makers. By building the project's interventions on the community's traditional institutions and values the plan will encourage community ownership and control over their natural and cultural resources. During the implementation of the action plan additional livelihood development and diversification activities will be identified for follow-up to the project.



**Photo:** Watercress occurs naturally in the irrigation canals, low costs adaptations to the canals can allow farmers to produce it as a cash crop for the tourism market in Moshi and Arusha.

### Challenge 3: Reinvigorating and improving transmission of traditional knowledge, cultural practices and institutions

Traditional Chagga communities were concerned with ensuring household food sufficiency and security, socio security (defence against invasion by other clans or tribes) and transmission of traditional knowledge, cultural practices and institutions to next generation. Their traditional institutions were tuned to socio-economic, security (incl. military) and natural resources management. Many of their cultural institutions, e.g. gender roles and the governance by elders, as well as the ceremonies associated with it, combined aspects of defence, natural resource management, social security and the transmission of traditional knowledge and skills to next generations. The colonial and post independence socio-economic and political realities have introduced a number of changes. Traditional leadership and the age group system are now complemented by state institutions and modern education. Changes in their cultural environment have given way to new aspirations, especially among the younger generations. The Chagga have a deep appreciation of formal education and this competes with the traditional institutions responsible for transmission of traditional knowledge and skills to the young. The introduction of state administrative institutions (e.g. village, ward, district, etc.) has created new social groupings and institutions, which both complement and compete with the traditional social units and

their leadership, based on clans or chiefdoms. These and other factors combined are leading to gaps in transmission of traditional knowledge and skills, as well as of traditional management/governance.

Despite this, some traditional institutions continue to perform critical roles in maintaining and transmitting social norms and values, natural resource management and conservation practices including traditional knowledge. In the area, local authorities and traditional leadership work in consort to address challenges. For the kihamba agroforestry system to perpetuate it is critical to preserve the traditional knowledge and management system that underpins it. This means that the content of the traditional knowledge has to be preserved, and the institutions for its management/governance and the transmission of knowledge have to be strengthened. For this to succeed, traditional institutions may need to be strengthened to address contemporary challenges, and need to work in harmony with state and other modern institutions. Additionally, there is a need to document the traditional knowledge and practices and raise awareness of their significance, in order to safeguard these for next generations.

**Intervention:**

Output 4 provides for a number of activities to address the loss of knowledge and the gaps in its transmission. The action plan will provide for the establishment of a local information centre, which will be the primary hub for documentation of traditional knowledge and education activities, both for community members and visitors. Traditional knowledge will be documented and made available through different media materials (eg. Flyers, video). A model kihamba with culturally significant crop species and varieties will be established along-side the information centre to educate children and visitors about traditional kihamba (Activity 4.5).

Tourism activities developed under this action plan (Activity 5.1 and 5.2, described in detail below) aim to educate tourists about the kihamba agroforestry system and the importance of their traditional management system.

Additionally, the development and the long term land-use plan and the participatory implementation of the action plan will imbue the community with significant responsibilities for its implementation including through their development of by-laws and their enforcement.

**Challenge 4: Mobilizing awareness and formal recognition/protection of the area, and its benefits**

Though traditional agriculture in many African countries is blamed for environmental degradation, the kihamba agroforestry system has existed over centuries and did not change much over the last decades. Despite of these positive attributes many decision makers have poor vision or understanding to protect and promote it. Conversely there is a lack of appreciation of the value of this as a heritage, which continues to contribute to the management of the Kilimanjaro Mountain landscape and the identity of Tanzania as a whole. Formal recognition by the Tanzanian government and the international community of kihamba (Chagga home garden) agroforestry system and the project area in particular (Shimbwe juu), would greatly impact on decision-maker's and the public's perception.

Intervention:

Under the provisions of the World Heritage Convention (UNESCO), the Ministry of Natural resources and Tourism (MNRT) maintains the Tentative National World Heritage List of Tanzania. The plan will gazette the selected area as a candidate for World Heritage recognition and include it in the tentative list. Entry on the Tentative List already provides a degree of protection and recognition at both national and international levels. It is expected that this will provide wider benefits in terms of raising awareness of the value of other heritage agricultural systems and their continued social, economic and environmental relevance (Output 6).

Additionally, the plan will explore the viability of including agricultural heritage issues explicitly in the Tanzanian Heritage Act and laws for the protection of heritage (Output 6).

Finally, decision-makers will be targeted by communication materials (flyers, publications and the project web-site) and national workshop/trainings will be held to raise awareness and understanding of agricultural heritage issues (see communication plan)



**Photo's:** The combined natural and cultural patrimony of the Chagga Kihamba system represents a valuable heritage of Tanzania: Mt. Kilimanjaro (Left), A traditional Chagga house (Center) Ancient Chagga defense tunnels (Right).

## **Monitoring**

The project defines the indicators for progress in its logical framework. During Activity 1.1 all baseline information on the indicators will be collected by the project team. At the project's conclusion, progress/impacts of the action plan will be measured by collecting information and data on the same indicators.

## **Implementation arrangements**

Consistent with the decisions made by the project's inception workshop, the implementation arrangements are as follows:

- FAO's field-based technical officer provides for technical and operation oversight of the plan's implementation.
- FAO's Representation to Tanzania will provide operational support, including procurement services and additional technical advice
- The Ministry of Agriculture, Food Security and Cooperatives (MAFC) the project's national co-focal point institution and its designated focal point provide direct technical assistance to the implementation of the action plan within its mandate and field of expertise.
- The project's national focal point institution for the Engaresero project area, MLDF, is responsible for the implementation and national coordination of the plan. Its designated National Project Coordinator is its main liaison and the de-facto manager of the plan's implementation.
- The project's national inter-disciplinary Project Facilitating Committee provides a platform for coordination and the mobilization of additional expertise. Its members have been assigned concrete roles in the implementation of the action plan:
  - 1) The National Environmental Management Council (NEMC) will assist with carrying out Environmental Impact Assessments and advise on other environmental issues, including PES schemes
  - 2) The Ministry of Natural Resources and Tourism (MNRT) will assist with the documentation and conservation of heritage aspect, the establishment of the site's information centre and the national heritage designation and heritage policy aspects of the action plan.
  - 3) Other members of the PFC will advise the community and the project team on issues within their fields of expertise.
  - 4) The communities of Engaresero Village will contribute local knowledge, time and labour, within their means

The Action Plan's implementation will be closely coordinated with the district, ward and village authorities. The action plan's interventions will be integrated into district plans. Specific contributions by the district authorities include:

- Integration of land-use management measures into the district's land-use plan (activity 1.2)
- Recording of community NR use-agreements as official by-laws, as appropriate (activity 1.3)
- Training of community members in sustainable land and crop management practices (activity 2.1)
- Rehabilitation of traditional irrigation system (activity 3.2)
- Promotion of the kihamba as a heritage (activity 4.3)

**Table 1: The Community Action Plan for the Engaresero GIAHS site:**

| Main Outputs and activities  | Activity details   | Objective/ Expected impacts   | Lead agency and partners   | Timeframe 2011 (calendar year)                                | Inputs      | Estimated budget Budget (USD) / Implementation modalities        |
|--|--|---|--|---|-------------|--|
| <b>Output 1:</b> Long-term land-use and management plan developed for the project area, consistent with GIAHS goals and principles                       | <p>The objective is to put in place long term arrangements for the management of the area, the conservation of its heritage characteristics and the improved livelihoods of community members. With the aid of GIS tools, an assessment of current natural resource use patterns and practices will identify opportunities to harmonize natural resource use patterns, management measures for the sustainable management of the landscape and its environmental, economic, social and cultural values, as well as identify opportunities to diversify livelihoods. Through a visioning and planning exercise with the community the existing land-sue plan will be reviewed, updated and adjusted, where necessary. This plan will be complemented by community level management arrangements, including by-laws to manage community members' natural resource uses. The institutional arrangements and by-laws will build on the Chagga's cultural management practices and institutions.</p> <p>The outputs of this action plan provide building blocks for and assistance to the development and implementation of the long-term management plan</p> |   |  |   |             |  |
| 1.1. Assessment of dynamic land-use patterns, resources, values and management arrangements and collection of baseline data for measuring project impact | <p>Collect data on natural resources, including biodiversity, their management and use, and livelihood patterns.</p> <p>Prepare reports and maps</p> <p>Collect data on baseline indicators for impact monitoring</p>  | <p>Improved information on and community awareness of dynamic land-use patterns, landscape values and opportunities for their sustainable management</p> <p>Baseline indicators</p> | <p>Technical lead: GIS Expert consultant</p> <p>Logistics: MAFC</p> <p>Other partners: MLDF MNRT NEMC</p> <p>Community</p> | 4 <sup>th</sup> Quarter 2010 and 1 <sup>st</sup> Quarter 2011 | Experts fee | <p>Contract with GIS expert consultant (FAO)</p> <p>LOA MAFC</p> |

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|   |  | collected for impact monitoring  |  |  |  |  |
| 1.2 Review and Update/adjust the existing land-use plan to become a long term integrated management plan for the area | <p>Conduct participatory holistic land-use planning exercise to identify shortcomings in or complimentary measures to the current land-use plan</p> <p>Update land-use plan</p> <p>Embed updated land-use plan at district level</p> | The site's natural resources are preserved and utilized sustainably and its cultural integrity maintained for future generations | <p>Technical lead: GIS Expert consultant</p> <p>Logistics: MAFC</p> <p>Other partners: MLDF, MNRT, NEMC District and local authorities</p> <p>Community</p>                                | 1 <sup>st</sup> and 2 <sup>nd</sup> Quarter 2011 | <p>Experts fee</p> <p>Subsistence Fuel</p>           | <p>Contract with GIS expert consultant (FAO)</p> <p>LOA MAFC</p> |
| 1.3 Development of community institutional arrangements and by-laws for the implementation of the land-use plan       | <p>Establish community guidelines/rules for NR use (water)</p> <p>Regulate the kihamba tenure by setting a minimum size (say 0.25 ha) for economic production</p> <p>Integrate by-laws in long term land-use plan</p>                | Community able to deter any land use activity that is incongruent to the agreements set out in the action plan                   | <p>Technical lead: Expert in collaboration with the National Land Use Planning Commission, the District Authorities and MAFC</p> <p>Logistics: MAFC</p> <p>Other partners: MLDF, MNRT,</p> | 1 <sup>st</sup> and 2 <sup>nd</sup> quarter 2011 | <p>Experts</p> <p>Subsistence Fuel Lunch and tea</p> | <p>Consultancy (FAO)</p> <p>LOA with MAFC</p>                    |

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|  |  |   | NEMC<br>District<br>Authority (legal<br>expert)<br><br>Community                                 |   |   |               |
| Total budget   |  |   |  |   |   | 30 000        |
| <b>Output 2:</b><br>Improved land<br>management and<br>crop production<br>practices                    | <p>Land especially under annual crop production as seen during the exploratory visit is under high risk of erosion due to the steep slopes of the landscape (slope range of ...to...%). The health status of the soils under perennial crops (coffee, banana and associated crops) is generally good due to constant enrichment by farmyard manure (from livestock) and prunnings from the crops. Poor crop performance is common during the dry season due to low soil moisture and at the same time inadequate water for irrigation due to reduced stream flow resulting from low discharge and water losses in distribution furrows through infiltration and burrowing animals..</p> <p>To address soil erosion problem on farmland, holistic approach of soil and water conservation among other approaches will be promoted in the reinstatement land productivity. To address the problem of low soil moisture during the dry season, small scale irrigation will be promoted through support to improvement of water use efficiency (e.g. by lining where appropriate). There is also need to improve the traditional water storage structures (ndivas) to improve irrigation.</p> <p>Training in sustainable land and crop management practices as well small scale irrigation practices is necessary.</p> |   |  |   |   |               |
| 2.1. Promotion of sustainable crop and land management practices through training of community members | Promote holistic management approach in soil, crop and irrigation (involving the whole catchment) (to be imbedded in activity 1.2)   | Land productivity improved and crop production increased<br><br>Capacity of | Lead:<br>MAFC<br><br>Other partners:<br>MLDF, MNRT,<br>NEMC<br>District and<br>local authorities | 1 <sup>st</sup> and 2 <sup>nd</sup><br>Quarter 2011 | Subsistence allowance<br>Fuel<br>Seeds & manure<br>Tools<br>Transport | LOA with MAFC |

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|   | <p>Promote appropriate pest management measures including Integrated Pest Management</p> <p>Improve soil, crop and irrigation management by field training.</p> | community to manage land and crop productivity improved | Community   |  | <p>Selected Pesticides of coffee</p> <p>Community Labour</p> <p>IPPM training</p>   | Community                             |
| 2.2. Facilitate replacement of the aged coffee trees in farmers plots to improve production   | Train farmers on coffee nursery establishment to facilitate replacement of old coffee trees and revamp production.  | Productivity of kihamamba                               | <p>Lead: MAFC</p> <p>Other partners: MLDF, MNRT,NEMC</p> <p>District and local authorities</p> <p>Community</p> | 2 <sup>nd</sup> and 3 <sup>rd</sup> Quarter 2011 | <p>Subsistence allowance</p> <p>Fuel</p> <p>Seeds &amp; manure</p> <p>New coffee seedlings</p> <p>Tools</p> <p>Transport</p> <p>Community Labour</p>          | <p>LOA with MAFC</p> <p>Community</p> |
| 2.3 Establish a model kihamba (preserving traditional banana, vegetable and coffee varieties) | <p>Identify and acquire important indigenous banana varieties</p> <p>Establish a model kihamba (preserving indigenous banana and coffee varieties)</p>          | Kihamba agrobiodiversity improved                       | <p>Lead: MAFC</p> <p>Other partners: MLDF, MNRT,NEMC</p> <p>District and local authorities</p> <p>Community</p> | 3 <sup>rd</sup> Quarter 2011                     | <p>Subsistence allowance</p> <p>Fuel</p> <p>Seeds &amp; manure</p> <p>Tools</p> <p>Transport</p> <p>Community Labour</p> <p>Plant material</p> <p>Signage</p> | <p>LOA with MAFC</p> <p>Community</p> |

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| <p>2.4 Introduce and promote other new cash crops (water cress and/or vanilla) *</p> <p>* Activity to be implemented after information on potentials and demand established</p> | <p>Determine suitability and market for new crops in place.</p> <p>Acquire planting materials</p> <p>Train farmers on management of new crops</p>  | <p>Alternative livelihood support offered reducing pressure on the natural resources</p> <p>Household income improved</p> | <p>Lead: MAFC</p> <p>Other partners: MLDF, MNRT NEMC, District and local authorities</p> <p>Community</p>       | <p>3<sup>rd</sup> Quarter 2011</p> | <p>Subsistence allowance<br/>Fuel</p> <p>Planting materials (vanilla, water cress)</p> <p>Building materials (water cress)</p> <p>Fridge (watercress)</p> <p>Tools</p> <p>Transport</p> | <p>LOA with MAFC</p>      |
| <p>2.5 aquaculture</p>  | <p>Introduce fish farming in improved ndivas</p>   | <p>Household nutrition and income improved</p>  | <p>Lead: MLDF &amp; MAFC</p> <p>Other partners: MNRT, NEMC, District and local authorities</p> <p>Community</p> | <p>3<sup>rd</sup> Quarter 2011</p> | <p>Allowances<br/>Experts fee<br/>Building materials (local)</p> <p>Fish foundation stock (fingerlings)</p> <p>Fridge/freezer</p> <p>Transport &amp; fuel</p>                           | <p>LOA with MLDF/MAFC</p> |
| <p>Budget</p>   |  |   |   |                                    |   | <p>50,000</p>             |
| <p><b>Output 3</b><br/>Improved water provision for Kihamba</p>   | <p>The development of water resources in the project site is planned to be rehabilitation of selected furrows and ndivas (mainly by lining) to improve water availability for irrigation of the vihamba. Currently there is low efficiency of the water distribution system (furrows and ndivas) consequently resulting in decreased</p> |   |   |                                    |   |                           |

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| 3.1 Assessment of performance of present irrigation infrastructure  | Conduct field survey to assess rehabilitation needs of present irrigation infrastructure, including bills of quantities*   | Rehabilitation need and cost established   | Lead: MAFC<br><br>Other partners: MLDF, MNRT NEMC, local authorities Community                          | 4th Quarter 2010   | Irrigation Consultant/ Engineer<br><br>Subsistence/travel                                 | Contract (FAO)<br><br>LOA with MAFC                                |
| 3.2 Rehabilitation of 7 nduwas, Intake of the furrows and reinforcement of the 2 furrows (Tesheni, Kowere/Ngaruma) to reduce water loss | Rehabilitation of irrigation infrastructure (canal, furrows, nduwas)*<br><br>* MAFC to develop TORs incl. for adjustments to make nduwa's compatible for aquaculture   | Traditional irrigation system improved<br><br>Productivity of vihamba increased<br><br>Irrigation efficiency increased | Lead: MAFC & District (supervision)<br><br>Other partners: MLDF, MNRT NEMC, local authorities Community | 1 <sup>st</sup> , 2 <sup>nd</sup> and 3 <sup>rd</sup> Quarter 2011 | Irrigation Consultant/ Engineer<br><br>Construction work<br><br>Subsistence<br><br>Labour | Contract (FAO)<br><br>Contract (FAO)<br>LOA with MAFC<br>Community |
| Budget  |  |  |   |  |   | 35,000   |
| <b>Output 4:</b><br>Heritage agricultural practices and knowledge systems recorded and promoted   | <p>The heritage resources including the application of indigenous knowledge systems have been declining due to influences from external cultures and adoption of modern technologies. This has led to the erosion of traditional systems that have for long supported the kihamba agroforestry system. Development of a site museum and information centre will, therefore, be used to impart knowledge to its visitors on the importance of the systems and the need to preserve it for current and future generations.</p> <p>The area is rich in agro biodiversity that the community has relied on for its sustainability but the floral base biodiversity is now facing increased threats due to changes in the farming system driven by changing global economy. The importance of biodiversity conservation through traditional institutions shall be given emphasis.</p> |  |   |  |   |  |

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| 4.1. Identify and conserve existing heritage (measures to be included in long term management plan)                                  | Identify key knowledgeable persons and sites  | Chagga kihamba heritage system conserved                                       | Technical lead:<br>MNRT<br><br>Logistics:<br>MAFC<br><br>Other partners:<br>MLDF, NEMC,<br>District and<br>local authorities<br><br>Community | 4th Quarter<br>2010                                 | Fuel<br>Subsistence<br>allowance  | LOA with MAFC<br>(logistics)<br><br>LOA with MNRT<br>(other inputs, if<br>any) |
| 4.2. Document Indigenous Knowledge Systems, local technologies and best practices*<br><br>* FAO<br>(Tech.Officer) to<br>develop TORs | Document and establish a<br>database of Indigenous<br>Knowledge   | Utilization and<br>transfer of<br>Indigenous<br>knowledge<br>systems enhanced  | Technical lead:<br>MNRT<br><br>Logistics:<br>MAFC<br><br>Other partners:<br>MLDF, NEMC,<br>District and<br>local authorities<br><br>Community | 1 <sup>st</sup> Quarter<br>2011                     | TK Expert<br>Legal expert<br><br>Fuel<br>Subsistence<br>allowance   | LOA with MNRT<br>or consultancy<br>(FAO)<br><br>LOA with MAFC<br>(logistics)   |
| 4.3. Disseminate and promote IK systems and technologies   | Flyers, AV documentary<br>( for TBC), newspaper<br>articles and radio<br>programmes produced<br>for publicity | Indigenous<br>Knowledge<br>systems<br>harnessed and<br>utilization<br>enhanced | Technical lead:<br>MNRT<br><br>Logistics:<br>MAFC<br><br>Other partners:<br>MLDF, NEMC,<br>District and                                       | 3 <sup>rd</sup> and 4 <sup>th</sup><br>Quarter 2011 | AV Production<br>costs<br>Materials (dvd's,<br>tapes, memory<br>cards)<br>Media Expert<br>hosting fees<br><br>Publication costs | LOA with MNRT  |

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|   |  |  | local authorities  |  |   |  |
|   |  |  | Community  |  |   |  |
| 4.4 Develop a site museum cum information and documentation centre*<br><br>* MNRT to propose specifications (functions and design criteria) and select a location for the centre (the information centre, arts/crafts will be part of one integrated design). | Build and develop content of museum/information centre   | Knowledge and materials Kihambai agricultural heritage preserved | Technical lead: MNRT<br><br>Logistics: MAFC<br><br>Other partners: MLDF, NEMC, District and local authorities<br><br>Community | 2 <sup>nd</sup> and 3 <sup>rd</sup> Quarter 2011 | Architect/exhibition designer<br>Conservation materials/<br>Construction materials (local) /<br>Construction<br><br>Subsistence allowance<br><br>Community labour | LOA with MNRT (design and development of contents)<br><br>LOA with MAFC<br><br>Community |
| Budget  |  |  |  |  |   | 20,000   |
| <b>Output 5:</b><br>Develop Local Tourism Activities  | <p>The tourism activities to be offered will be community-based targeting the unique kihamba and chagga heritage inherent in the site and target tourists who can pay a premium price for a genuine ethnographic experience. It will promote ecological conservation while respecting Chagga culture. Documented aspects of their agroforestry heritage will be disseminated in the information and displays developed to promote their appreciation.</p> <p>A tourism charter will be developed with the community to ensure that heritage resources are sustainably utilized for tourism purposes without endangering the fragile ecosystem and ensuring that respect for the culture is adhered to. The charter will also address the fair and equitable sharing of revenues from tourism. In line with this, tour guides will be identified from the community and given appropriate training.</p> <p>Authentic Chagga traditional crafts will be collected and displayed in the traditional chagga boma</p> |  |  |  |   |  |

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|  | To ensure that the overall tourism products and activities offered by the site are not over exploited or degraded, a tourism charter shall be developed to harmonize and develop by-laws for all the activities of the different components such as the tourism information centre, cultural bomas and model kihamba |   |   |  |   |   |
| 5.1. Development of a local tourism charter, including a strategy and standards for tourism development and revenue sharing;                                 | Community meetings   | Heritage resources within project site sustainable utilized                       | Lead: MNRT<br>Other partners: MAFC, MLDF NEMC, District /local authorities<br>Community             | 1 <sup>st</sup> Quarter 2011                                       | Expert<br><br>Subsistence allowance   | LOA with MNRT<br><br>LOA with MAFC (logistics)                  |
| 5.2. Promotion of the site for bio-cultural tourism*<br><br>* (the information centre, the cultural boma, arts/crafts will be part of one integrated design) | Walking tours/treks developed (ethno-botany)<br><br>Cultural boma established<br><br>Select tourism stakeholders to visit site for familiarization<br>Fliers produced  | Alternative livelihood support offered reducing pressure on the natural resources | Lead: MNRT<br><br>Other partners: MAFC & MLDF NEMC, District and local authorities<br><br>Community | 1 <sup>st</sup> , 2 <sup>nd</sup> and 3 <sup>rd</sup> Quarter 2011 | Architect/exhibition designer<br>Preservation materials/<br>Construction materials (local) /<br>Signage / Design and production of promotion materials<br><br>Subsistence allowance<br><br>Community labour | LOA with MNRT<br><br>LOA with MAFC (logistics)<br><br>Community |
| 5.3. Train guides on heritage tourism  | Training   | Alternative livelihood support offered reducing pressure on the natural resources | MNRT  | 2 <sup>nd</sup> and 3 <sup>rd</sup> Quarter 2011                   | Training fees   | Direct payment by FAO   |

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| Budget   |   |  |  |   |   | 20,000                                 |
| <b>Output 6:</b><br>Mainstreaming of GIAHS goals and principles into national policy   | The conservation of Globally Important Agricultural Heritage Systems must be nested within government programs and policies once the project cycle ends. Policy makers will, therefore, be made aware of the different policies that are in support of it or need development for its institutionalization. |  |  |   |   |  |
| 6.1. Recognition of Shimbwe juu and Engaresero village under national heritage law   | Establish task force<br><br>Develop statement of outstanding universal importance & state of conservation (workshop & mission)  | Site protected under national heritage and listed in the Tanzania World Heritage Tentative List  | MNRT (lead)<br>UNESCO  | Ongoing<br><br>1 <sup>st</sup> , 2 <sup>nd</sup> and 3 <sup>rd</sup> Quarter 2011 | Travel & subsistence allowance<br><br>Expert fee  | LOA with MNRT<br><br>Consultancy (FAO) |
| 6.2. Mainstreaming of GIAHS into national policy, plans and strategies, including training of policy makers through field visit to project sites | Develop proposal for Tanzanian Heritage Act.<br><br>Produce comprehensive analysis of Tanzanian policies and laws in relation to GIAHS<br><br>Hold national workshop to establish GIAHS within the permanent structure of the Tanzanian   | GIAHS initiative institutionalized<br><br>GIAHS goals adopted under the Tanzanian Heritage Act.<br><br>Institutional responsibility for GIAHS matters beyond project cycle defined<br><br>Policy makers are knowledgeable of | MNRT (lead) ,<br>NEMC<br><br>MLDF, MAFC, MNRT and NEMC (as pertinent to their specific mandates) | Ongoing / 3 <sup>rd</sup> and 4 <sup>th</sup> Quarter 2011 (workshops)            | Legal Expert<br><br>Produce publication on national GIAHS<br><br>Travel & subsistence allowance (workshops) | See AP for Engaresero                  |

|                        |  |   |  |  |  |                |
|------------------------|--|---|--|--|--|----------------|
|                        | Government<br>Organize field visit<br>for Policy makers<br><br>Include provisions<br>for GIAHS in<br>pertinent policies of<br>Tanzania | the GIAHS<br>project/approach<br>and its linkages with<br>Right to Food<br>objectives and<br>principles |  |  |  |                |
| Budget*                |  |   |  |  |  | 10,000         |
| <b>Total budget **</b> |  |   |  |  |  | <b>165,000</b> |

**\*\* Additional items covered by budget action plan for the Engaresero project area (incl. costs workshop – Activity 6.2)**

**\*\* Budget is based on unit costs for October 2010 and may be subject to adjustments. Management costs incl. admin fees have been factored into the current figures.**

**Breakdown budget modality:**

A1: 25.000 Contract / 5.000 LOA (travel/logistics)

A2: 50.000 LOA

A3: 30.000 Contracts / 5.000 LOA

A4: 15.000 LOA MNRT / 5.000 LOA

A5: 10.000 LOA MNRT / 5.000 LOA / 5.000 training

A6: 5.000 LOA MNRT / 5.000 Consultants (WH)

**Summary:**

LOA MAFC: 70.000

LOA MNRT: 30.000

Construction (A3): 30.000

Service (A1): 25.000

Consultants: 5.000

Training: 5.000

