

## EXPLORATION OF A FUTURE SCENE FOR COMMUNITY BASED TOURISM IN THE SOUTHERN PART OF SERENGETI ECOSYSTEM: A CASE STUDY OF MWIBA WILDLIFE RANCH, MEATU, TANZANIA

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### Abstract

*Community Based Tourism (CBT) is one of the fast growing segments in Tourism industry, and the most acceptable tool for sustainable development especially in the developing world. Through CBT, local communities earn revenues that directly improve their livelihoods and managing sustainably the biodiversity. Furthermore, it improves the level of transparency, governance and technology transfer among themselves. This study aims to explore the role and the potentiality of community based sustainable tourism scene of Mwiba wildlife Ranch, which is located on the Southern part of the Serengeti ecosystem. The study took Mwiba wildlife ranch as the case study due to the fact that it is the first ever wildlife ranch in Tanzania and it is operated through public-private partnership whereby the land is solely owned by Makao village. The study results show that the ranch contributes significantly in improvement of socio-economic development for the Makao village communities and Tanzania in general through the payments of several fees, provision of full time and part time employments and in the conservation of both endangered and threatened wildlife species. Finally the study identified some conservation and management challenges such as livestock encroachment, boundary dispute and lack of transparency and accountability in terms of the uses of tourism benefits that accrued from the ranch.*

**Keywords:** Mwiba Wildlife Ranch; Makao Open Area; Friedkin Conservation Fund Limited; Mwiba Holdings Limited; Environmental education; Community-Based Tourism and Community involvement.

### Introduction

Mwiba wildlife Ranch original known as Makao Open Area covering 190km<sup>2</sup> serve as an important link and buffer zone for wildlife from Serengeti National Park, Ngorongoro Conservation Area, Maswa game reserve and Makao wildlife management area. The area has been blessed with high abundance of wildlife making it epicenter for fast growing ecotourism industry in the Southern part of Serengeti ecosystem. Improving community livelihood as well as wildlife management are among of salient fruitful results of ecotourism ventures undertakings on this area.

Tanzania is among of the largest countries in Africa and it is biggest in size compare to its counterpart East African member's states. The country lies between Latitude of 1° and 11° South and Longitudes 30° and 40° East with a total landmass of 945,000km<sup>2</sup>. It is worldwide renowned as iconic tourism destination, due to its natural and spectacular landscapes and

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scenery, abundant of wildlife resources, water bodies and beaches, a well diversity of cultures and numerous archeological sites [1-3].

Furthermore, Tanzania is worldwide well known with well diverse, rapid growing and potential natural tourism destinations. About 38 percent of the entire landmass is dedicated for natural protected areas comprising 16 national parks, 29 game reserves, 40 game controlled areas as well as Ngorongoro Conservation Area and marine parks [4-5]. Despite of being rich in wildlife, the national wildlife policy identify challenges that limit the sustainable management of wildlife sector in Tanzania. Anthropogenic activities coupled with rapid encroachment on protected areas pose major threat on the viability of biological resources as well as undermine capabilities of developing sustainable tourism industry [2, 6- 8]. Specifically, human population growth entices people to invade nearby wildlife protected areas and engage in deleterious and unsustainable activities such as bush burning, wildlife poaching, clearing of forest for settlement, subsistence farming and cattle feeding [6].

On 2013, the Tanzanian government issued subsidiary wildlife legislation for the establishment of wildlife ranches, farms, breeding sites, orphanage centers, sanctuaries and zoos [9]. The establishment gives more opportunities for the communities to utilize wildlife sustainably, enhance the conservation of wildlife and all natural resources as well as using wildlife resources to eradicate poverty as stipulated in the Tanzania wildlife Policy [10].

The establishment of Mwiba Wildlife Ranch was in accordance with the above regulations. The ranch has extended the extra support by securing critical areas for wildlife such as migratory corridors, dispersal areas as well foraging grounds. Currently wildlife species are moving freely across between all the four protected areas hence plays a vital role of wildlife movements within the Serengeti ecosystem. Therefore Mwiba wildlife Ranch serves as a refuge area for animals especially during the dry season due to its potential water sources. For the case of Makao village, the holistic approach which involve the proper management of village land for dual objectives of serving wildlife habitat while benefiting the local communities is one of the wish list of establishing Mwiba Wildlife Ranch.

Most of the wildlife species are found outside of the core protected areas [8, 10]. All protected areas are unfenced and therefore most of its wildlife species spent most of their times outside the protected areas. The study conducted by Western and Gichohi [11] showed that more than 70 percent of wildlife in East Africa spends more time outside the protected areas. Furthermore, most of the home range and ecological necessities of some wildlife species extended beyond the boundaries of core protected areas. This situation requires that the wilder share the resources and interact with local communities on their land. Therefore, to secure and to protect vital dispersal, foraging, breeding and wildlife corridors on village land, engaging local communities appear to be paramount. This makes the importance of Mwiba Wildlife Ranch with respect to wildlife management outside the core wildlife areas.

Tourism sector is contemplated as a social and economic activity, a system and an enterprise that connect many sectors from local, national and international level [12-13]. In both developed and developing countries, tourism is the potential source of employment for proficient, semi skillful and unskillful personnel, therefore playing a potential role in improving the local livelihood of the communities living within and adjacent tourist destination [14-15].

Economically, tourism and travel sector share about 12.7 percent of the Tanzania gross domestic product (GDP) of the country [16]. Report of the Bank of Tanzania (BOT) assert that tourism sector become the leading economic sector that contribute about 1 billion that supersede agriculture and gold sector. During the year ending January, 2015, tourism industry gained \$2.5 billion up from \$1.89 billion in the year ending January, 2014 and overtaking gold sector in leading foreign exchange earner [16].

Despite of having good reputation on performance of tourism, Tanzania is experiencing challenges that limit the sustainable management of wildlife sector in Tanzania. Anthropogenic activities coupled with rapid encroachment on protected areas pose major threat on the viability

of biological resources as well as undermine capabilities of developing sustainable tourism industry [6-7]. Specifically, increase on human population entices people to invade nearby wildlife area and engage in deleterious and unsustainable activities such as bush burning, wildlife poaching, clearing of forest for settlement, subsistence farming and livestock feeding [17].

The last National population census of 2012 showed Tanzania to have a population of about 44.29 million [18-19]. However, with a human population growth rate of 3 percent, the current human population is estimated to be about 50million counting about 0.67 percent of the entire global human population [18, 20]. There is a close relationship between human and the nature. Moreover, the environment is been affected by the human population structure such as age, sex, motility and their resources utilization style [6]. Several studies have been undertaken regarding the relationships between human population growth and development. Furthermore, as the human population grow, there is a high demand for natural resources consumptions whereby in most of developing countries have created challenges towards sustainable management of protected areas [7, 21-22].

Moreover, motivating and encouraging the sustainable management of protected areas network is gaining interest among the international, national and local organizations and all are joining hands together to attain this goal. Likewise Tanzania through the Tanzania Tourism Development Programme [23] recognizes the importance of involving different stakeholders in Community-based Tourism development that will enhance poverty alleviation.

Community Based Tourism is the form of tourism that is growing rapidly in Tanzania [1, 15, 17]. It accords with major contributions on the improvements of socio economic condition of the marginalized rural communities [14, 24]. It involves integration of rural communities possessing land with richness potentials of natural and cultural features which are pristine tourism attractions. Benefits accrued from tourism investment in village land contribute to both poverty alleviation and natural resources conservation [25-26].

One of the strategies for creating a sustainable protected areas management is through involving local communities who lives nearby protected areas in planning, management and benefit sharing. The national wildlife policy [10] also insist strengthening collaboration between the government, private sectors in providing tangible benefits accrued from wildlife sector to the local communities so that will help to motivate them in managing wildlife as they are the one who bear an opportunity cost in managing these wildlife.

Furthermore, the wildlife policy of Tanzania recognized the contribution of wildlife tourism sector in poverty reduction strategies due to its potentiality in improving rural livelihoods. Furthermore, Community Based Tourism is well stipulated in the Tanzania Tourism Development Programme as one of the core driver towards poverty reduction in Tanzania [23]. In order to attain this goal, the bottom-up Community – Based Tourism (CBT) model have been positively recommended by several authors [15, 17, 27-31]. In Community-Based Tourism private sectors collaborates with the local communities who own the land to undertake tourism business and at the end they both share the revenues [1]. Through the joint venture between the local communities and tourism investors, Community-Based Tourism operates in a win to win scenario with the aim of balancing between economic profits and environmental management [1, 15, 27].

Despite of the fact that Tanzania is well blessed with potential wildlife protected areas [32, 33], very little study has been undertaken regarding wildlife ranches, its contribution towards sustainable community based tourism and improvement of livelihood of local communities in Tanzania. Moreover, within Serengeti ecosystems several studies have been conducted regarding wildlife conservation and tourism development but none related to Wildlife Ranch [2, 7, 32, 34].

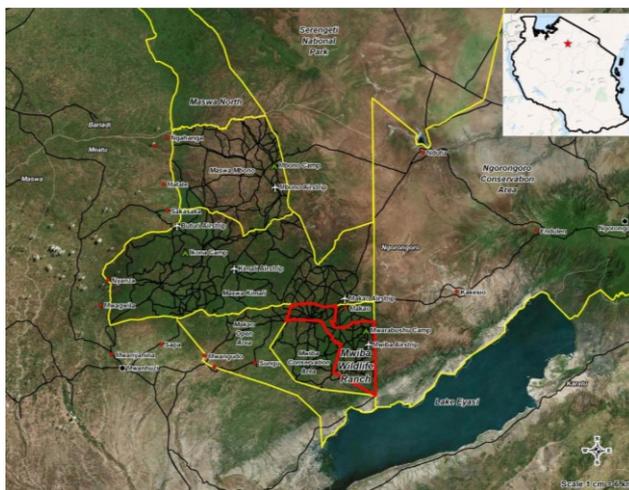
Mwiba Wildlife Ranch being the pioneer among the ranches established in Tanzania makes it imperative to be studies so that study findings can contribute on improving effective

ranch management strategies. Therefore, this study seek to explores the Mwiba Wildlife Ranch, its potential in development of community-Based Tourism, benefits to the local communities, conservation and management challenges and its future sustainability.

## Methodology

### *Study Area*

This study is based on the research that was undertaken in Mwiba Wildlife Ranch formally known as Makao Open Area which is situated in north-western Tanzania between  $03^{\circ} 22'S$  to  $03^{\circ} 35'S$  and  $34^{\circ}41'E$  to  $34^{\circ} 53'E$  (Fig. 1). It is located within Makao village land, Meatu District, Simiyu region. The village lies within a potential network of wildlife protected areas of Serengeti National Park to the north, bordered by Ngorongoro Conservation Area Authority to the east, Maswa game reserve to the north and Makao Wildlife Management Area to the south-west. The village was registered in 1974 following the villagization program of the 1970's that was initiated by the first president of Tanzania, the late Mwalimu Julius Kambarage Nyerere. The village is ethnically diverse due to high immigration of people from different parts of Tanzania seeking its fertile land for cultivation and availability of pasture for livestock. The current results reveal that there are about eleven major ethnic groups of Sukuma, Maasai, Nyisanzu, Iramba, Hadzbe, Datoga, Taturu, Nyamwezi, Iraqw, Chaga and Kikuyu [34]. The area lies within the 600-700 mm annual precipitation zone having heavy rains during March-May and is also considered as semi –arid. Moreover, the majority of the area is consisted of bushland vegetation, along with patches of open wooded grassland and woodland. Furthermore, the area is enhanced by riverine thickets occurring along the rivers, and the vegetation associated with rocky outcrops.



**Fig. 1.** Location of Mwiba Wildlife Ranch (Source: Mwiba Holdings Limited, 2016)

The area has a formation of biological and physical features all lies along numerous seasonal rivers. The area has four main rivers of Makao, Arugusinyai, Ngululumu and Mongo mawe all draining the area and feeds up Lake Eyasi which lies to the south. The Eyasi escarpment falls 700metres from the plateau down to the Lake and provides unusual habitats and spectacular views. Apart from these seasonal rivers, there are approximately 36 fresh water springs that are scattered throughout Makao Open Area which are very important source of water especially during the dry season. The availability of permanent water springs in the area has enabled the establishment of residential wildlife populations within the area. The flowing of these streams also motivates the movements of wildlife from one protected area to another. For

example Arugusinyai River motivated the movements of wildlife from Ngorongoro Conservation Area to Mwiba Wildlife Ranch.

Mwiba Wildlife Ranch is a result of the most successfully Ngitili-based conservation efforts as the results of Hifadhi Ardhi Shinyanga (HASHI) project. The project was implemented between 1986 up to 2004 by the Tanzania government under the Ministry of Natural Resources and Tourism with the aim of involving Sukuma people through traditional practices of natural resource conservation [35, 36]. Ngitili is a Sukuma word meaning “enclosure”. It is a natural resources management system that uses traditional knowledge. Originally, the system was used to provide fodder for young, old or sick animals that were not able to follow others to the grazing land. Eventually the system motivated regeneration of vegetation while encouraging the local community to plant trees hence improving environmental management initiatives as well as improving socio-economic welfare of the local communities.

In 2008, Mwiba Holdings Limited entered into an agreement of leasing Makao Open Area with Makao village and Meatu district council. The area is managed by what is called public-private partnership including Meatu district council, Makao village and Mwiba Holdings Limited (MHL) as an investor. The investor has an obligation of undertaking wildlife protection activities in collaboration with wildlife department and all tourism development activities within the area. However all the area management activities are done in accordance with the Tanzania Wildlife Conservation Act (1974), Wildlife Policy (1998), Village Land Act of 2002, Land Use Planning Legislation, Environmental Management Act, Bee Keeping Policy, Agricultural and Livestock Policy, National Land Policy, National Tourism Policy, Mineral Policy, Poverty Reduction Strategy, National Environmental Policy, Tanzania Development Vision and Rural Development Vision.

In 2015, an agreement was made between the Ministry of Natural Resources and Tourism and Mwiba Holdings Limited on Game Ranching license being the first ever Tanzania wildlife ranch and called Mwiba Wildlife ranch. The license was granted under condition as stipulated in wildlife regulation 7(3) (b) of the Wildlife Conservation (Establishment of wildlife ranching, farms, Breeding Sites, Orphanage Centers, Sanctuaries and Zoos), Regulations, 2013GN No. 379 published on 04/10/2013 [9]. The agreement was made with special condition of conducting only Non-consumptive wildlife activities and that there shall be no fencing of the wildlife ranch area due to its close proximity with other core wildlife protected areas.

Mwiba wildlife ranch being the first wildlife ranch in Tanzania covers an area of about 19,647 hectares of land with a variety of potential biological attributes, vegetation types, land form, attributing of natural and physical features as well as major cultural, historical and archeological sites. Furthermore, the presence of this wildlife ranch brings potential role of protecting wildlife species that are found outside the core wildlife protected areas together with enhancing the collaboration and connectivity of natural resources with community developments especially in remote areas adjacent wildlife protected areas.

## Results and Discussion

### *Potential wildlife species within the area*

Mwiba Wildlife Ranch is a home of a wide range of ungulate species that includes African elephant, Zebra, Warthog, Giraffe, and Klipspringer, bush duiker, impala, bushbuck, dikdik, hartebeest, waterbuck and African buffalo. Also it supports carnivores that include lion, leopard, wild dog, cheater and spotted hyena. Due to water availability, new plant growth and having numerous water springs throughout the year, the area is also part of a transition zone and a seasonal movement of wildlife from the nearby protected areas. The most notable is the wildebeest, zebra and gazelle migration through the Serengeti ecosystem, which is considered one of the outstanding wildlife spectacles of the world. Moreover, the large herds move in

response to water and availability of fresh grazing and are usually found between December and May. Once the rains fall in the Serengeti in May the herds move back into the National Park and across into Kenya (Fig. 2).



Fig. 2. Potential Wildlife species within Makao Open Area (Source: Mwiba Holdings Limited, 2016)

**Threatened and Endangered species within Mwiba Wildlife Ranch**

The presence of Mwiba Wildlife Ranch brings a potential role in protecting several threatened wildlife species. African Wild Dog *Lyacon pictus* which are regularly observed within the area are classified as endangered. African elephant *Loxodonta Africana*, Cheetah *Acinonyx jubatus* and Lion *Panthera leo* commonly occur within the ranch (Fig. 3 and Table 1).



Fig. 3. A pack of African Hunting Dogs within Mwiba Wildlife Ranch (Source: Mwiba Holdings Limited, 2016)

Table 1. Threatened and Endangered species

Species	Total number actually counted in 2009	Population estimate in 2009	Total number actually counted in 2010
Buffalo	371	1168	944
Impala	195	613	514
Warthog	37	108	59
Girraffe	46	144	55
Zebra	173	546	262
Dikidik	1		14
Klipspringer	1		
Hartebeest	14		12
Olive Baboon troops	9		7
African elephant			70
Eland			10
Waterbuck			18
Grant’s gazelle			2
Roan antelope			19

Source: Tanzania Wildlife Research Institute; Aerial game census report 2009 and 2010

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During 2011, Tanzania Wildlife Research institute and Wildlife Conservation Society set a camera trap survey within Mwiba Wildlife Ranch. The area also included a 1.0km buffer zone. The results are presented in table 2.

**Table 2.** The wildlife species threatened within Mwiba Wildlife Ranch

ID	Species	Total number captured	Number trapped per trap night	Relative abundance index
1	Wildebeest	109	0.1273	12.7336
2	Dik Dik	88	0.1028	10.2804
3	African Buffalo	56	0.0654	6.5421
4	Zebra	51	0.0596	5.9579
5	Impala	50	0.0584	5.8411
6	Warthog	43	0.0502	5.0234
7	Giraffe	34	0.0397	3.9720
8	Olive Baboon	33	0.0386	3.8551
9	Crested Porcupine	23	0.0269	2.6869
10	Cape hare	19	0.0222	2.2196
11	Spotted Hyena	17	0.0199	1.9860
12	Defassa Waterbuck	16	0.0187	1.8692
13	Elephant	16	0.0187	1.8692
14	Large Spotted Genet	11	0.0129	1.2850
15	Roan Antelope	9	0.0105	1.0514
16	Valvet Monkey	9	0.0105	1.0514
17	Leopard	7	0.0082	0.8178
18	White tailed mongoose	7	0.0082	0.8178
19	Black Backed Jackal	5	0.0058	0.5841
20	Greater kudu	5	0.0058	0.5841
21	Grey duiker	5	0.0058	0.5841
22	Aardark	4	0.0047	0.4673
23	Aardwolf	4	0.0047	0.4673
24	Bat eared fox	4	0.0047	0.4673
25	African civet	1	0.0012	0.1168
26	Banded mongoose	1	0.0012	0.1168
27	Caracal	1	0.0012	0.1168
28	Common Genet	1	0.0012	0.1168
29	Lesser galago	1	0.0012	0.1168
30	Serval cat	1	0.0012	0.1168
31	Slender mongoose	1	0.0012	0.1168
32	Spring hare	1	0.0012	0.1168
33	Steinbuck	1	0.0012	0.1168
34	Striped Hyena	1	0.0012	0.1168
35	Wild dog	1	0.0012	0.1168

**Source:** Tanzania Wildlife Research Institute; Wildlife Conservation Society; Camera trap survey report, 2011

### *Avifauna*

Mwiba Wildlife Ranch has a high abundance and composition of various bird species and being a potential site for birding. To date 205 bird species have been reordered within the ranch. It is estimated that approximately 400 different bird species make use of the area. However these species is likely to be similar to the bird species found in western part of Maswa Game reserve and Serengeti National Park. Furthermore, the permanent availability of water springs and high diversity of habitat makes a wide range of array of species whereby it includes the vulnerable Grey-crested helmet shrike, karamoja Apalis, the near threatened fishers lovebird.

### *Socio-economics of the surrounding communities*

The Makao Village lies to the north-east of Mwiba Wildlife Ranch. According to [34] the village population was estimated at 1,400, and in 2012 the village had a total of 2850 people. It is estimated 37% of village households keep cattle and every household, practises agriculture. Mwiba Wildlife Ranch pays a land lease to the Makao Village and has also

established a trust fund to support various activities. It is anticipated that in future the ranch will also bring more benefits to members of communities in Mwangudo, Iramba Ndogo and Mbushi village areas.

Members of the Hadzabe, Datoga (Mang'ati) and Sukuma tribes make use of the land surrounding Mwiba Wildlife Ranch for subsistence activities. The Hadzabe are hunter gatherers, and are highly skilled, selective, and opportunistic foragers. They adjust their diet according to season and circumstance. Hadzabe men usually forage individually, and during the course of day usually feed themselves while foraging, and also bring home some honey, fruit, or wild game when available. Women forage in larger parties, and usually bring home berries, baobab fruit and tubers, depending on availability. Men and women also forage co-operatively for honey and fruit, and at least one adult man will usually accompany a group of foraging women. During the wet season, their diet is composed mostly of honey, some fruit, tubers, and occasional meat. The contribution of meat to the diet increases in the dry season, when game becomes concentrated around sources of water. During this time, men who often hunt in pairs spend entire nights lying in wait by waterholes hoping to shoot animals, which approach for a night-time drink, with bows and arrows treated with poison. Although hunting is illegal in many areas that they forage, Tanzanian authorities recognize the Hadzabe as a special case and do not enforce regulations with them, just as the Hadzabe are the only people in Tanzania not taxed locally or by the national government.

The Datoga (Tatoga), known as the Mang'ati in Swahili, keep goats, sheep, donkeys and a few chickens, but cattle are by far the most important domestic animal. They were formerly nomadic, depending largely on milk products for their diet, and moving whenever the needs of their cattle dictated. Now however, many farm a plot of maize and sometimes beans and millet.

#### ***Sustainable Development of tourist's infrastructures and other facilities***

For ensuring efficient ranch management and wildlife protection, Mwiba Head quarter is built within the ranch. Mwiba Wildlife Ranch has a well designed and constructed road network that are carefully planned not to disturb the nature of the area together with not causing soil erosion. Within the headquarter compounds there are several facilities of a senior staff office, houses, ordinary staff dormitory, ranger house, helicopter hanger with a store, visitors house, casual laborers house, bore hole, water tanks, fuel tank and three wind generation towers. Two permanent compounds have been built for rangers as a ranger posts in two strategic places.

In ensuring that the tourists come and stay comfortably, a semi-permanent tented lodge has been environmentally constructed using rock, concrete, wood and natural materials. The tented lodge has ten rooms that are also designed to host about 20 guests. Moreover, all weather airstrip has been environmentally designed and constructed that is suitable for high commercial air crafts.

#### ***Non-Consumptive tourism development within the ranch***

Mwiba Wildlife Ranch is well developed in the sector of non-consumptive tourism. Being the home to many varieties of wildlife species, the area has become well known for day and night game drives and bush walks. There is also cultural village visits, rock art tours, bow making with Datoga and Hadzabe people, and a day trip to Ndutu plain and sundowners.

Mwiba Wildlife Ranch focuses on high end, low environmental impact, and eco-friendly non-consumptive tourism. The ranch is an idea place for photographic walking, game viewing from blind, driving safaris and night drives using candle watt spot lights. It is set among massive boulders and overlooks a rocky gorge on the Arubusinyai River. The lodge is elegant with ten luxurious suites that are the ideal place to relax and enjoy. Moreover, tourism activities are nourished with well-trained tour guides as well as having exceptional cultural tourism experience from Hadzabe, Datoga and Sukuma tribe.

#### ***Tourist arrivals in Mwiba Wildlife lodge***

The number of foreign tourists visiting Mwiba Lodge (Fig. 4) for 2014 and 2015 is shown in the table 3.

**Table 3.** Mwiba Lodge bed and nights report for 2014 and 2015 (Foreign visitors only)

Year	Number of visitors		Bed nights
	Adults	Kids	
2014	174	2	1,046
2015	444	50	1,548

Source: Mwiba Lodge, 2016



**Fig. 4.** Mwiba Tented Camp within Makao Open Area (Source: Legendary Expeditions, 2016)

***Community involvement and benefits from Mwiba Wildlife Ranch***

The ranch is been managed in a public-private partnership whereby three stakeholders are been involved, namely Makao village communities, Meatu district council and Mwiba Holdings Limited as an investor. Through this partnership it helps to achieve the vision of Mwiba Wildlife Ranch of establishing and maintaining a self-financed ranch that provides sustainable benefits to the local communities and ensures the conservation of natural and cultural resources. Community involving in tourism industry is one of the key segments of sustainable tourism as well as biodiversity conservation. Friedkin Conservation Fund Limited (FCF) is an NGO that works for Mwiba Holdings Limited on engaging the local communities that lives adjacent Mwiba Wildlife Ranch in the conservation of their natural heritage and empowering them to alleviate some of the conditions in their lives that contribute to poverty. All three stakeholders are involved in managing the wildlife resources together acquiring the benefits from non- consumptive wildlife utilization from the ranch. The Makao village and Meatu district council receive benefits in different forms from the land lease, community based development projects and directly donations from the investor. Within the village there are several community development projects that have been implemented as a result of the initiation of Mwiba Wildlife Ranch; these are as follows, Makao village community center.

The Mwiba Makao Community Center is a joint venture development project with the village, structurally and financially by Mwiba Holdings Limited, which lead to an overall improvement in the way of life for many people living in Makao village. Mwiba Makao Community Center – is a great addition to the community that offering a place for the residents of Makao village to come together and benefit from the center’s three primary functions: to facilitate early childhood development, healthcare/HIV awareness and environmental education.

Because Makao remains an agricultural and pastoral village, adults are out doing physical labor for the majority of the day. This gives the younger residents no choice but to either entertain them or begin physical labor at a young age. But through a play group/nursery

held several times a week at the Community Center, these children have a place to go where they can develop skills and be exposed to many learning tools such as books, paints, puzzles and music.

Furthermore, Makao village police station is another project that has been developed within the village to strengthen law enforcement and security within the village. This is also due to the fact that the village is situated 80km away from Mwanhuzi Township where there is a district central police station. The village police office is well equipped with transport that was also donated by the investor together with police officers accommodation.

Lastly, it is crucial that the entire community understands the importance of their environments wildlife and pristine ecosystems. Because the villagers are situated in a location, which is completely surrounded by conservation areas, they benefit hugely from the learning to live in congruence with wildlife, how they can benefit financially from that wildlife, and how they can help to continue to preserve the gift they have been given. Mwiba Holdings Limited through the community department provides a film screening of an environmental or wildlife oriented movie regularly. Mwiba Scouts will return to Makao to give presentations and “nature talks” to their community with the hopes to protect the wildlife. Adults and Children have the opportunity to come on field trips to see Mwiba Wildlife Ranch tourism developments, the wildlife and learn how protecting the area provides many opportunities for them in the future.

In table 4 you can see the number of the villagers working in the Ranch.

**Table 4.** Employments of the people from Makao village working with Mwiba Wildlife Ranch

Sections	Employed Staffs from Makao village	Total number of staffs employed
Rangers	21	28
Lodge	29	61
Head quarter	18	29
<b>TOTAL</b>	<b>68</b>	<b>118</b>

NB; Also a total of thirteen (13) staffs from Makao village have been employed by Mwiba Holdings Limited and are working in other areas where the company is invested. This makes a total of 81 villagers who are getting directly benefit from this investment. (Source: Mwiba Holdings Limited annual report, 2016).

***Environmental education and awareness rising program***

One of the approaches to achieve sustainable natural resources management of Mwiba Wildlife Ranch is through implementing community conservation education and environmental management programs to all local communities surrounding the area.

The project has been implementing in Makao village and other villages adjacent to the ranch and other nearby wildlife protected areas of Maswa Game Reserve and Makao Wildlife Management area. Environmental film screenings, village general meetings, and conducting classroom teaching sessions in primary and secondary schools as well as seminars/training to some of the village officials or members of the Community Based Organization are the methods used during implementation of this program. Furthermore, the project aims to address the current challenges regarding sustainable natural resources utilization and environmental management in general as well as designing the possible solution of overcoming these challenges such as designing income generating activities and motivating the community to engage on environmental friendly economic activities.

Moreover, the project involves conducting of study tours especially to students and district officials go to the ranch to see the wild animals and learn how the investor is fully committed to manage the natural resources as well as to learn how the local communities are benefiting from the investment of their land.

Mwiba Holdings Limited through Friedkin Conservation Fund believes that through raising conservation awareness in primary and secondary schools students this will ensure that the younger generations are fostered in environmentally friendly economic activities. They have developed teaching curriculums that focus on Conservation Agriculture (CA),

Agroforestry, sustainable livestock practices, community-based wildlife management and fire management. In Makao primary school (Fig. 5), teaching sessions have been organized by ranch staffs and school teachers whereby they provide two hours per week and they teach two classrooms at once. The students are very motivated with this program and the level of understanding seems to be higher compared to adults due to the fact that the lesson is theory and practical through power point presentation. The level of understanding has been tested through prompt quizzes and probing questions.



Fig. 5. Providing environmental education and awareness raising to the community in Makao village  
(Source: Friedkin Conservation Fund, 2016)

### ***Cultural tourism Development program***

Makao village is ethnically diverse due to immigration. Currently there are about eleven major ethnic groups of Masai, Sukuma, Nyisanzu, Iramba, Hazdabe, Mang'ati (Datoga), Taturu, Nyamwezi, Iraqw, Chaga and Kikuyu.

Therefore in making sure that Makao village community benefit from the investment, the local communities have been involved in cultural tourism program. The program has mobilized two Maasai boma, two Datoga tribe boma, two cultural groups of Hadzabe people and one Sukuma tribe boma whereby when the tourist come to Mwiba ranch they used to visit these bomas and see the traditional dance as well as learning in-depth the way of living of these people in the village. Through this visits the particular group members receives money through the group visits fees and purchasing individual cultural ornaments.

### ***Wildlife protection activities within Mwiba Wildlife Ranch***

Anti-poaching patrols within Mwiba Wildlife Ranch is been implemented by the conservation non-governmental organization known as Friedkin Conservation Fund (FCF). One of the missions of this organization is to proactively assist the Tanzania Wildlife Division by providing anti-poaching teams that consist of highly motivated and professional trained rangers (Fig. 6).

There are three anti-poaching teams (Rapid Action Teams) with a total of 35 rangers who undertake day to day activities of anti-poaching and all wildlife law enforcement activities. The rangers are well trained, equipped and deployed full time in the field working under the guidance of one helicopter. Moreover, these rangers use equipment of the latest technology which facilitates them to be very successfully in their work. Anti-poaching teams work in partnership with the armed authorized government game officers and village game scouts who do arrest and prosecute poachers found within the area.

They have been very successful in confiscating several poachers related tools such as thousands of wires, cable snares, rifles, automatic weapon, poison arrows, bush meats, elephants ivory and removing thousands heads of livestock from the area. Due to these successfully efforts, the area is now becoming a safe potential place for many wildlife and plant species.



Fig. 6. FCF Wildlife ranger together with FCF officials (Source: Friedkin Conservation Fund Limited, 2016)

**Conservation Challenges and its Future of Mwiba Wildlife Ranch**

*Livestock encroachment within Mwiba wildlife ranch (Predominantly in the dry season)*

Livestock industry in Tanzania contributes about 7.4 percent to the national GDP and is one of the most sectors in improving food security and enhancing rural livelihood [37]. Therefore despite of the fact that on conservation side of view, livestock threaten wildlife population, on the other socio-economic view, livestock sector is vital especially to the rural communities. The designation of communal land for wildlife or tourism activities like Wildlife Management areas (WMA) can't compete with other land uses like agriculture and livestock because these areas are not well managed and marketed so that they can attract more tourists [2].

Despite of the fact that for many years there has been co-existence between livestock and wildlife, Livestock encroachment within wildlife protected area especially during the drought periods has become among the major threats to wildlife in Tanzania. This is due to the fact that, livestock and wildlife do share the same feeding habit therefore competing each other as they both requires unfarmed land that has good pastures [38-39].

According to the aerial census that also included a 1 km buffer zone around Mwiba wildlife ranch, estimated that the total ungulate biomass, wild as well as livestock counted, exceed the expected carrying capacity by 600-1800kg/km<sup>2</sup> [40]. In this survey it was revealed that, cattle alone account for approximately 71.8 percent of the estimated total ungulate biomass. Furthermore, the results showed that, the area has a number of cattle of 27.8 cattle/square kilometer which has negative impacts on water and grazing land with a high degree of trampling around the area [40].



Fig. 7. Encounter of livestock and elephants (Source: Friedkin Conservation Fund Limited, 2017)

Cattle encroachment is really threatening wildlife population especially during the drought period within the ranch [Batro, N, unpublished field observation, 2014-2016]. The

direct observation made between January- April, 2016 and between June-October, 2016 within the same area found that during January-April the area has significant wildlife population while between June and October 2016 the area has low or no wildlife species due to intensive livestock grazing within the area. Also it has been found that some livestock herdsmen are involved in wildlife poaching for meat and directing ivory poacher where they saw elephants within the area.

Furthermore, high number of livestock within Makao village automatically results into heavy utilization of the natural resources and later has a great negative impact in the area through affecting vegetation, soils and wildlife population. There has been a rapid increase of cattle in the village which has resulted into shortage of pasture and water especially during the dry season. Furthermore, recently there is high rate of immigration of people with cattle from other villages which also has resulted into shortage of land, hence forcing them to bring cattle into the area for watering and grazing even during the night period.

The situation within the Ranch is similar with the study done by several conservation biologists and other researchers who argued that the encroachment of livestock within protected areas threaten wildlife population [32, 41-43].

#### ***Human population growth***

In 2002 Makao village population was estimated at 1,400 people [34] and in 2012 the village had a total of 2850 people. Songorwa [7] pointed out that human population specifically to the areas surrounding wildlife protected areas like Maswa game reserve is the driving factor and suggesting wildlife manager to focus more on how they can dealing with mitigating rapid human population growth. High population growth creates more pressure on encroachment in wildlife area searching for woods, food and water and grazing their cattle. Rapid increase of people within the village has also resulted into blockage of wildlife migratory routes through settlement and agriculture. The situation is very evident on the south west of the village from the area along Makao River. The area has been affected by disruption of natural resources, ecological processes, changing of vegetation and reducing the number of wildlife as most of them can't move from Maswa game reserve to Mwiba Wildlife Ranch. Furthermore, due rapid human population growth has resulted into an increase rate of subsistence and commercial wildlife poaching in the area.

#### ***Wild fire***

Despite of the fact that controllable fire is a potential tool in the management of wildlife protected areas as it modify and shaping the wildlife ecosystem, uncontrollable fire is a threat to ecosystem. Wildfire is one of the major threats of Mwiba Wildlife Ranch especially during the dry season. There are several sources of wild fire and among of them are local honey gatherers, poachers, during preparation of farms and as revenge from pastoralist. Due to shortage of water and pastures during the dry season, pastoralists enter illegally inside the area and when evicted by game scouts, they retaliated by burning the grasses inside the area. Moreover, Mwiba being located on semi-arid belt of the north-west of Tanzania characterized by long term drought season increase its vulnerability towards wildfire due to presence massive dry fuel load. Through its Fire Management Plan, the management has adopted the use of prescribed fires for management purposes as well as educating the local communities on the effect of wildfires and its prevention.

#### ***Boundary dispute and poor ranch-community relationship***

In most cases conservation is not accepted by all community due to their personal interests. Likewise in Makao village not all the community are accepting setting aside of Mwiba Wildlife Ranch specific for wildlife management. In northern and southern boundary of the area is facing a big threat of encroachment due to the fact that some of the communities bringing cattle into the area use the area for agriculture, degrading the land and clearing vegetation.

#### ***Lack of transparency, integrity and accountability of some of the village officials***

Lack of transparency, integrity and accountability is the major factor that hinders development in most of the developing world. This has resulted into poor tourism benefit sharing mechanisms among the communities. Community don't see the tangible value of the

reserve hence leads into poor community relations because they feel that only the village officials are benefiting from the land.

## Conclusions

Exploring Mwiba Wildlife Ranch and its potentiality in both wildlife conservation and community based tourism development is far importance for the Serengeti ecosystem tourism development strategies.

The study has identified Mwiba Wildlife Ranch as a potential future tourist's destination within the southern part of Serengeti ecosystem. Study results showed that the ranch is continuing contributing significantly in the reducing some of the conditions that contribute to poverty together with the protection of both threatened and endangered wildlife species.

The ranch is well developed in terms of environmentally built infrastructures that support both wildlife protection and tourism development. In making sure that tourists come and stay comfortably with unforgettable experience, the semi-permanent tented lodge has been built. Furthermore, one of the approaches used for achieving sustainable natural resources management within the ranch is through implementation of environmental education and awareness rising programs. Environmental films, village general meetings and classroom teaching sessions are one of the approaches used to deliver environmental education.

Finally, not all people within the community are willing to see Mwiba wildlife ranch is running smoothly due to their personal interests. Boundary disputes, livestock encroachment, lack of transparency, integrity and accountability of some of the village officials, rapid human population growth within the village are management and conservation challenges of the ranch. Rapid human population growth within Makao village creates pressure that lead into over exploitation of natural resources.

## Recommendations

FCF and other stakeholders to integrate Population, Health and Environment (PHE) projects that will link conservation and reproductive Health in the area. In order to win the objective of slowing down the rate of fertility, there is an urgent need to empower women academically, culturally economically and publicly. Mwiba Holdings Limited should continue with the program of organizing domestic tourism week for all villages nearby the Ranch. All the community based development projects should be initiated through down top approach.

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