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An Analysis of the Contribution of Community Wildlife Management Areas on Livelihood in Tanzania

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1. Introduction

Community conservation strategies are eminently suited to help meet the Millennium Development Goal (MDGs), especially those related to eradicating poverty and ensuring environmental sustainability (Pathak *et al.* 2005). Indeed, they provide a bridge amongst these goals, which is otherwise weakly developed in most country policies and programmes (Kothari *et al.*, 2000). A wide range of motivations can lead to establishment of community conserved areas; these include: Concern for wildlife protection; to secure sustainable access to livelihood resources; to obtain sustainable benefits from ecosystem benefits; to sustain religious, identity or cultural needs, to secure collective or community land tenure, to obtain security from threats, and to obtain financial benefits (*ibid.*). On the other hand, community conserved areas are critical from an ecological and social perspective in many ways e.g. help in conservation of critical ecosystem and threatened species, provide corridors and linkages, offer lessons in integrating customary and statutory laws, help communities in empowering themselves etc (IUCN, 2006).

A close look at various Community Based Conservation (CBC) practices in Africa suggests that while communities are now included in the politics of and policies of conservation, they remain peripheral to defining the ways in which conservation is perceived and nature managed (Kaswamila *et al.*, 2010). That is, although conservation is expanding geographically, devolution and participation remain elusive or passive in nature. In Tanzania, after implementing Community-Based Conservation (CBC) programmes since early 1980s without providing tangible benefits to local communities living adjacent to the protected areas, the government in 2003 adopted a concept of establishing a new category of protected area, the Wildlife Management Areas – areas set aside by village governments to enable local communities to benefit from wildlife resources and at the same time conserve these areas which are crucial as wildlife migratory routes and/or dispersal areas.

This chapter evaluates the impact of the WMA initiative on livelihood and conservation in one of the first five WMAs to attain user rights – consumptive and non-consumptive user rights, the Burunge WMA. Specifically, it seeks to (i) Assess the WMAs financial impacts to

local communities (ii) Assess the contribution of the WMA on conservation of wildlife corridors and (iii) assess issues and problems which threaten the sustainability of the WMA

2. The study area

Minjingu, Vilima Vitatu and Mwada villages adjacent to Tarangire National Park in north eastern Tanzania forms part of ten villages forming the Burunge WMA which cover about 280 km²; officially gazetted on 22nd July 2006. The main ethnic groups in the three villages are the pastoral Maasai and the agro-pastoral Mbugwe. Burunge WMA is of considerable value as it occupies the land and migration corridors between Tarangire National Park, Lake Manyara National Park, and the adjacent Manyara Ranch now known as the Tanzania Lands Conservation Trust (TLCT) under AWF management. The WMA hosts Lake Burunge, an important area for water birds such as greater and lesser flamingo and a range of ducks and shorebirds, and also hosts a large buffalo population that moves in and out of the Tarangire (Madulu *et al.*, 2007). The study area is in a semi-arid with average annual precipitation of 750 mm/annum (Kaswamila, 2006). The rainfall pattern is bimodal, with short rains between May and June and long rains between November and January. The months of June through October are normally dry months.

Agriculture and livestock keeping are the main land uses in the study area and is practised by 94% of the population. Other activities include fishing, tourism related businesses (souvenirs, mat weavings) and other small businesses. Crops grown in the area are mainly sorghum, maize, cotton, simsim and groundnuts. Cotton used to be the main cash crop in the past (1970s), but has declined mainly due to its price fall in the world market (BDC, 2004). Other reasons for its decline are untimely payments after crop sale (selling on credit), poor extension services and high costs of agricultural inputs (*ibid.*). The crop production level is low mainly due to climatic limitations (semi-arid) conditions. The village particularly Minjingu and Vilima Vitatu have rich wildlife and tourist attractions such as Lake Burunge and several historical sites: *Nsanga ya Iwe and mwawe wa Nnda*, *Mawe ya nyani* (rock outcrops used by baboons), *mbuyu wa Tembo* and green stones (BDC, 2004).

3. Community-based conservation in Africa

The most important step needed to help Community Conservation Areas (CCAs) delivers their potential for conservation and livelihood security is difficult: and requires a shift in thought paradigms (Kothari, 2006). Professionals and practioners in the “formal” world of wildlife conservation need to expand their minds to respect the world’s oldest conservationists, indigenous people and local communities (*ibid.*). We need to recognise that CCAs are often not just “projects” that communities take up, but are very much a way of life, with grounding in history and tradition, even if many may actually be quite recent (*ibid.*). And we also need to convince and lobby governments to provide this respect and recognition (*ibid.*). Most of the planet’s biological diversity is located in the tropical countries, primarily on indigenous territories (Kothari *et al.*, 2000). Although the indigenous people inhabiting these lands and their traditional rights are being ignored, the fact is that “biodiversity” is well known by them and they have the customs and statutory rights to use and conserve it, as well as to protect their traditional rights.

Policy and legislative changes in a number of eastern and southern African countries together with the dedicated efforts of certain non-governmental organisations and community-based organisations have seen the rise of Community Conservation Areas (CCAs) in the region over the last few decades (Holden *et al.*, 2006; Kaswamila, 2006, Kaswamila *et al.*, 2007). The devolution of rights to local communities has in a growing number of instances empowered them to manage the land and natural resources, including wildlife furthering regional and global conservation objectives whilst delivering opportunities for sustainable socio-economic development at local level (Holden *et al.*, 2006). Impediments to this remain and include a lack of capacity and resources, conservative mindsets within certain conservation and government agencies, political instability, complex community dynamics, and insecure tenure regimes that continue to undermine the rights of local communities (*ibid*). However, as the success stories increase and lessons learned, the benefits that CCAs have to offer are being more broadly realised and accepted by all (*ibid*).

In South Africa for example, in the era of apartheid years, the majority of people were effectively prevented from enjoying the benefits of formal conservation areas, often bearing the costs associated with removal and exclusion from parks (Holden *et al.*, 2006). However, with the advent of democracy in 1994, in order to achieve the dual goals of biodiversity conservation and social justice, institutional restructuring was undertaken (particularly at the level of national park agency), and innovative legislative introduced. CCAs in southern Africa have been initiated as a sustainable economic revenue generating opportunity for the community (*ibid.*). Furthermore, they are often key corridors that link state protected areas, increasing the ecological and economic viability of both (*ibid.*).

In Namibia, efforts of a number of far-sighted conservationists and NGOs, with the support of the Ministry of environment and tourism, have resulted in the establishment of a number of successful community conservancies (NASCO, 2004). There are now 44 registered communal area conservancies covering more than 10,500,000 ha (*ibid*). Total income to these conservancies in 2005 was N \$ 20.1 million (appr. US \$ 3.1 million) (Holden *et al.*, 2006). Clear legal rights are given to community institutions, avoiding regional government structures and the need for such structures to further devolve authority. Rather than being defined by artificial units, which potentially force together people who would not normally co-operate, communities define themselves, enabling the development of cohesive social management units with incentives for individuals to cooperate (SASUG, 1997). Communities carry on their normal economic activities within a conservancy, and essentially wildlife and tourism become additional forms of land use (*ibid.*). The conservancy policy and legislation is flexible, with communities able to shape their conservancy according to local social and ecological conditions, and to choose their committees in a manner consistent with their own cultural norms (*Ibid*).

In Botswana, despite the absence of strong rights over wildlife, by 2003, 47 communities comprising 44,000 people had formed trusts for the management of wildlife and natural resources (Arntzen *et al.* 2004). The total income to the trusts was more than BP 7.3 million or about US \$1 million (*ibid.*). CCAs in Botswana help to maintain large areas of land under wildlife outside protected areas and according to Arntzen *et al.*, (2003) poaching levels are falling in these areas. However, in a number of areas, communities struggle to establish CCAs, because of lack of resources to do the necessary planning, and lack of support from government agencies. In Zimbabwe in 1989 the first two Communal Areas Management

Programme for Indigenous Resources (CAMPFIRE) were granted appropriate authority to manage their wildlife resources and by 2001 this figure had grown to 37 (Holden *et al.*, 2006). Of these districts, 14 were wildlife producing districts (other districts focused on their natural resources) involving 94 communities with more than 70,000 communal area households benefiting from wildlife income, which amounted to more than US \$ 2 million (Taylor, 2006). The establishment of these CCAs has ensured more effective local management of natural and wildlife resources, whilst providing tangible benefits to communities (*ibid.*). Of 12 primary wildlife districts studied in 1999, three districts had wild land in excess of 90% of the district area, six had 50-70% wild land, and only three had less than 35% (*ibid.*). However, in recent years, habitat available for wildlife is diminishing in some areas because of population pressure and increased demand for agricultural land (*ibid.*).

Unfortunately, the devolution of full rights to the community level has not taken place and the decentralization process has stopped at the level of the district council (Jones, 2003). A significant proportion of wildlife income is retained at a district government level, thereby reducing financial incentive for such activities (*ibid.*). This is reflected in the outcome that the most successful CCAs are those where the district council has devolved authority over wildlife to the local level, providing the control over income and management decision-making (*ibid.*).

4. Methodology

Several methods and techniques were used in the data collection. These included household questionnaire surveys; Knowledge, Attitude and Perception (KAP) analysis; discussion with village, district, and WMA officials; and physical site visits. The details of each aspect are described as follows:

4.1 Selection criteria of the study area

The three villages, viz: Minjingu, Vilima Vitatu, and Mwada were picked based on the several criteria such as coverage of ethnic diversity, richness in wildlife (game), presence of business investors, and potentiality of human-wildlife conflicts.

4.2 Household questionnaire surveys

Face-to-face semi-structured questionnaires comprising open and closed questions were administered to 89 households randomly sampled from the village register books. The sampling exercise was followed by training of field research assistants recruited from each village and pre-testing of the questionnaires. Only members of households aged above 18 years were picked. This age was thought by the author to be appropriate given the nature of the study in that they could provide relevant information regarding the WMA.

4.3 Physical site visits

Site visits were undertaken in WMA villages to assess the implemented socio-economic projects, access to natural resources within the WMA areas, environmental degradation, human encroachment etc. Where necessary, photographs were taken to substantiate the observations made.

4.4 Data analyses

Most of the collected data were of qualitative nature and necessitated use of qualitative data analysis. In addition SPSS software was used in the analysis particularly data from household questionnaires. As for KAP data, the data were completely qualitative in nature and this necessitated the use of qualitative data analysis – intellectual interpretation which was later supported with collected data from WMA stakeholders.

5. Results and discussion

5.1 Socio - economic profile of the respondents

The socio-economic characteristics of the population sample for the surveyed villages are presented in Table 1 below. Males formed more than two-third of the respondents and about 87% of the subjects were between 18 and 54 years of age. As for education, more than 90% had primary school education. This scenario indicates that illiteracy level is high.

Village	N	Gender (%)		Age category (%)			Education (%)		
		M	F	18-34	35-54	>54	NF	PR	SS
Minjingu	31	70	30	20	57	23	6	87	7
Vilima Vitatu	29	63	37	31	52	17	7	86	7
Mwada	29	72	28	21	79	0	4	86	10
Total	89	205	95	72	188	40	17	259	24
Average	29.7	68.3	31.7	24	62.7	13.3	5.7	86.3	8

Source: Field data, 2007 N=sample size M=male F=female NF=non-formal PR=primary education SS=secondary education

Table 1. Socio-economic characteristics of the study villages

5.2 Status of WMA economic ventures and its contribution to people’s livelihood

In this study several ventures such as tented camps, photographic safaris, hunting enterprises, lodges etc. were identified (See Table 2). What can be deduced from these results is that all investments are owned by investors from outside the villages forming the WMA.

Village	Name of economic venture	Owner (native or non-native)
Mwada	Kibo safari (Oridoy tented lodge), Northern hunting enterprises,	Non-native
Minjingu	Tarangire River camp, Maramboi tented lodge, Paradise campsite, Roika lodge	Non-native
Vilima Vitatu	Kibo photographic safaris, Northern hunting enterprises (Shein), Maramboi tented lodge	Non-native

Table 2. Economic ventures within the WMA

According to field data, between 2007 and 2010, a total of TZS 137,700,704 (US \$ 137,700) (See Table 3) were realised from different sources mainly photographic safari, hunting (domestic and tourist), fishing, levy, lodges, and fines. Overall, income over years shows an increasing trend, the highest of about 32% recorded between 2008 and 2009. The increase between 2009 and 2010 was 4%. Overall average income increase between 2007 and 2010 was 28%. Considering the overall income realised, the 11 villages forming the WMA (revenue divided equally among villages), the average village population of 3,000 people and average family size of 5 people; individuals and households realised TZS 4,173 (US \$ 4.1) and TZS 20, 865 (US \$ 20.9) per annum respectively. By all standards this contribution is insignificant if local communities are to use the income as an incentive to conserve.

Source of income (TZS)	2007	2008	2009	2010
Lake Burunge Tented Lodge	0	2,260,000	2,680,000	3,220,000
Maramboi Lodge	0	2,260,000	2,680,000	3,220,000
Uni Afrique Lodge	0	1,080,000	1,670,000	2,080,000
Others (non lodge)	91,374	0	3,600,000	5,400,000
Tourist hunting	13,389,555	13,389,555	14,,500,000	13,389,555
Fishing	315,000	6,000,000	7,600,000	6,000,000
Domestic hunting	0	1,200,000	1,800,000	2,600,000
Land rent	5,00,000	0	0	0
Photographic safari	21,675,665	0	0	0
Fines	0	100,000	200,000	300,000
TOTAL	40, 471,594	26,289,555	34,730,000	36,209,555

Table 3. WMA realized income between 2007 and 2010

A study by Magiri (2011) in Ikoma-Natta (IKONA) WMA, revealed a significant income contribution of the initiative. Between 2007 and 2010, the WMA realized TZS 207,502,407 (US \$ 207,500). The five villages forming the WMA each received TZS 41 million (US \$ 41,000). Taking into account the average family size of 4 people and the village population of 2,500 people, individuals and households were able to realize TZS 16,400 (US \$ 16.4) and 65,600 (US \$ 65.6) respectively. This income was four times more than that which was realized by Burunge WMA.

Despite the low income contribution by Burunge WMA, the potential for increased revenue is potentially high. This can be achieved through improving contracts between investors and WMA; capacity building in enterprise management, book keeping, resource inventory and monitoring, village game scout training, and improvement of tourism facilities. Currently the AWF is constructing tourist centre (See Fig. 1).



Fig. 1. Burunge Tourist Centre under costruction. Photo by Gerson Mollel, 2011

5.3 Local people’s perception on benefits

Local communities were asked as to whether they are aware of the use of revenues paid to the WMA by investors and its uses in socio-economic development at village level. Results indicate that the funds were mainly used for provision of social services (construction of classrooms, dispensary and village government offices), payment for allowances to WMA staff during meetings and seminars, bursary to students, and in supplementing to village government revenues (See Table 4). On the other hand, different organizations and/or individuals made several indirect contributions. For example, AWF provided a motorbike, 16 pieces of desktop computers, constructed an office and installed electricity in the office. The organization also trained WMA officials, village councilors and VGS on different management aspects. However, due Babati District Council interference on WMA’s management a motor-bike and computers were sent to the district headquarters for use by district officials.

Type of project	Investor’s name	Take-off year
Construction of 3 classrooms (Nkaiti Secondary School) and desalinization of water – Minjingu village	Roika	2005
Construction of village government house at Vilima Vitatu (Mdori) village	Kibo safaris	2006/07
Capacity building (training of WMA officials, councilors and VGS) – on enterprise management, security and resources management	AWF	2007
Provision of 1 motorbike and 16 pieces of computers to Vilima Vitatu	USAID	2007
Education sponsorship for 2 students (secondary education)	Northern Hunting	2007

VGS= Village Game Scouts

Table 4. Social development projects initiated by investors within the WMA

Community-based conservation (CBC) benefit sharing schemes in the Tanzania shows mixed results. For example, between 1992 and 2003, Serengeti National Park (SNP) generated US \$ 31 million from tourism but only 1.6% was allocated to adjacent villages for socio-economic development projects (Kideghesho & Mokiti, 2003). Instead, a substantial amount was allocated to law enforcement (*ibid.*). Emerton & Mfunda (1999) in their studies in Western Serengeti; found that an individual household got an average of US \$ 2.5 per year from benefit sharing received indirectly through implementation of development projects. A study by Kaswamila (2003) in 10 villages adjacent to Kilimanjaro National Park, on the impact of Support for Community Initiated Project (SCIP), revealed that between 1994 and 2001 about US \$ 213, 000 was spent on socio-economic development projects in four districts (Moshi Rural, Rombo, Hai & Monduli). However, several weaknesses were observed: 70% of the projects were not priority projects to local communities; there were imbalances in fund allocation; and there was nepotism in disbursement of funds and lack of criteria in allocating funds to villages (*ibid.*). Where decision-making has been devolved to local people, however, for example through eco-tourism, it has been shown to deliver tangible benefits relative to “top-down” projects (e.g. hunting concessions).

In Sinya (Monduli District), located within the Greater Amboseli Ecosystem (Tanzania part), agreement between the village and a local eco-tourism company has led to increase of tourism income generated from bed-night fees. The income increased rapidly during the five years from 1999-2003, from US \$ 5,000 to \$ 19,000 (*ibid.*). The income has been used for conventional social service infrastructure priorities, notably construction of the primary school dormitory and maintenance of water supply machinery (*ibid.*). Nonetheless, while some revenue has clearly been invested in socially valuable community projects, much of the revenue has not been used well (*ibid.*).

In Engare Sero (Ngorongoro District), the village hosts two campsites belonging to one tour foreign operator and a modest tented lodge belonging to another operator. But unlike in Sinya or Ololosokwan, neither of these developments had a contractual agreement between the tourist company and the village (Nelson, 2004). A company granted title by the village purchased land for the lodge outright, and the land for the two campsites was apparently settled and developed without any local authorization (*ibid.*). The owner of the two campsites pays nothing to the village while the tented camp pays a US \$ 5 bed-night fee, considerably less than most villages in the region earn. As a result the village has little stake in income produced by increasing number of tourists (*ibid.*). Estimates of earnings is estimated at US \$ 2,500 annually from payments made by lodge, only 5 to10% of that earned through tourism by Sinya or Ololosokwan (*ibid.*).

The preceding discussion has shown that where local people obtain tangible benefits, these act as an incentive to conservation initiatives and vice versa. Also, community-partnership projects are better placed to trickle down benefits to local people. What is important is to devolve power to lower levels (local people). What the people need is to be equipped with enterprise management skills and clear and transparent contractual agreements. In the case of Burunge WMA the possible strategies to achieve a win-win situation could include capacity building to WMA staff (in enterprise management, contract negotiations and wildlife management); transparency in the use of realised funds; share of revenues among villages to consider status of human wildlife conflicts and richness of wildlife; and ensuring that investors are accountable to the WMA council and village leadership and not the district council as it now.

Village	Company	Employees	Male	Female
Minjingu	Maramboi lodge	8	8	0
	Tarangire River	6	6	0
	Campsite			
	Northern	10	10	0
	hunting			
Vilima Vitatu	Paradise	3	2	1
	campsite			
	Kibo safaris	4	4	0
	Kibo safaris	1	1	0
	Northern	3	3	0
	hunting			
	Maramboi lodge	4	4	0
Total		39	38	1

Table 5. Employment status of local communities within the Burunge WMA

5.4 Employment by investment companies

Study results indicate that a total of 39 people were employed (permanent and casual) by seven investment companies as cooks and security guards in Minjingu and Vilima Vitatu (See Table 5). Of these employees, 97% were males with an average monthly wage of TZS. 90,000. Out of the total employees 50% come from villages forming Burunge WMA. The gains from employment in one way or another plays a role in poverty alleviation at household level. In addition, the presence of the WMA has made it possible to recruit some local communities in different ways. For example, the WMA in 2008 recruited an office attendant on permanent basis and is currently paying WMA officials and VGS allowances. VGS allowances are valued at TZS 50,000 (US \$ 50) per month.

5.5 General impacts of WMA on livelihood

Local communities were asked to mention both positive and negative impacts of Burunge WMA. Perceived positive included employment, transport assistance to needy people, contribution towards overall village income, conservation, reduced poaching, bursary to students and provision of social services. However, in Minjingu most respondents could not see any positive impact. The non-appreciation of the contribution of WMA in Minjingu could probably be explained by the fact that the village has already submitted her intention to withdrawal from the WMA since 2007.

When asked to mention WMA negative impacts they identified loss of land, poor relationship with WMA staff, resource use restrictions and failure to pay salaries in time. Other negative impacts were increased land use conflicts, trypanosomiasis infection to livestock (Tsetse fly), crop and livestock depredation by wild animals, and deforestation for firewood, charcoal (See Fig. 3), timber for house construction and for medicinal purposes. All these can be described as costs associated with WMA establishment.



Fig. 3. Charcoal furnace within WMA. Photo by Author, 2007

5.6 Constraints associated with establishment of WMA

The identified costs can be categorized into four main groups i.e. human-wildlife conflicts, land-use conflicts, denial of use of forest, non-forest products, environmental degradation and land scarcity. Human-wildlife Conflicts (HWCs) is a significant and growing conservation problem around the world, the direct and indirect costs of wildlife (i.e. damage to crops, livestock, human lives) provide incentives for rural people to kill wildlife and reduce the quantity and quality of wildlife habitats (Nyhus *et al.*, 2005; Thirgood, 2005). Similar situation was observed in the study area. During PRA session youths in Vilima Vitatu HWC identified crop raids, diseases transmission from wildlife to livestock as constraint to local communities and that if not checked antagonism between conservationists and local communities will escalate.

Land-use conflicts was also aired as a cost particularly between nomadic Barabaig and farmers during pasture stress periods (dry season); investors and livestock keepers for grazing land; livestock keepers and farmers over cattle paths-normally in crop land - tense during wet season; and between conservationists (e.g. Tarangire National Park) and local communities over boundaries. Local communities have been complaining for a long time now that Tarangire National Park has taken part of their land particularly the gemstone rich Sarame Mountain. A win-win situation can only be achieved if these conflicts are addressed.

Denial to harvest forest and non-forest products from the WMA was also seen as a cost. The village by-laws prohibit local communities to enter into the conserved area without permission from the village government. This has made local communities unable to freely access forest (poles, timber, charcoal etc.) and non-forest (grass, honey, wildlife etc.) as they used to do before the area attained the WMA status. Denial of local communities to harvest forest products has accelerated deforestation in areas outside the WMA. This is due to the fact that firewood is the only source of domestic energy and the only place to fell trees are those outside the WMA. In addressing the problem of resource access within the WMA, the village governments should set aside special days to allow local communities to harvest dead trees and/or medicinal plants under the supervision of VGS. A long-term solution is to advocate the establishment of community forests in each village or households to have forest lots around their farms which could save the multi-purpose role of provision of firewood/timber and also act as farm boundaries. During the field study deforestation through clearing of land for construction of investors sites (residential, business premises, infrastructure development, and firewood - as source of domestic energy) were evident.

In addition, the establishment of WMA led to loss of agricultural and/or grazing land. However, the losses of land were on unequal proportion. For example, among the eleven villages forming the WMA, Vilima Vitatu, Sangaiwe and Mwada lost 65%, 27% and 19% of their total land respectively. The livelihood implication for this loss is the decline in both cash income and in crop production.

5.7 Importance of WMA relative to other institutions in people's livelihood

In focusing what the WMA means to the local people a Venn diagram as a PRA tool was used to rank various institutions against their role(s) in contributing to people's livelihood.

Results from Vilima Vitatu village which involved three groups of people (youths, adults, elders) indicate that WMA as an institution was lowly ranked relative to other institutions (See Tables). The WMA was rated fourth by elders, 6th by youths and could not be mentioned (had no role) by adults. This suggests that the role of the WMA in improving people’s standard of living is still unclear. The institutions with impacts in order of importance were schools, churches and mosques. The possible reasons for ranking high these institutions could be the quality of services provided by these institutions which trickle down to individuals or households.

Elders	Adults	Youths
1. Primary school 2. Dispensary 3. Church/mosque 4. Burunge WMA-two students sponsored in 2007 (form 1 to 6), school construction and teaching aids/equipment 5. NGOs (Land Management Program (savings and credit services); Farm Africa (savings and credits/improved livestock credit); Participatory Agriculture Development Project (PADEP) - agriculture development and savings and credits e.g. Village Cooperative Banks (VICOBA), SACCOS and livestock production/keeping 6. Mweka camp (security and environmental education)	1. Primary school 2. Dispensary 3. Church/mosque 4. Mweka camp	1. Primary school 2. Church/mosque 3. Water sources 4. Dispensary 5. Burunge WMA 6. Mweka camp 7. Hunting block

Source: Field data (2008)

Table 5. Perceived Institutional ranking in Vilima Vitatu

Different reasons were given as to why for example school, dispensary and churches and/or mosques ranked high. This ranking shows how they perceive education as a very important tool in combating poverty indirectly. For the dispensary, it is for its crucial role in saving people’s lives while churches and/or mosques are crucial in reducing or avoiding sinful behaviours.

5.8 Suggestions to make WMA effective and sustainable

Local communities and WMA leaders were further probed on mechanisms required to be in place to make Burunge WMA effective and sustainable. The most important suggestions given include improved relationship among investors, local communities and WMA staff, the need to involve local communities in major decisions affecting their livelihood, improvement of business contracts, need for investors to follow village rules and regulation, awareness education and empowerment of local communities in running Burunge WMA (See Table 7).

Suggestions	Minjingu (n=31)	Vilima Vitatu (n=29)	Mwada (n=29)
Follow rules and regulations	40	0	0
Gender discrimination in employment	7	0	0
Improve cooperation	48	14	5
Increase salaries	5	0	0
Involve locals in decision making	0	34	10
Improved contracts	0	38	40
WMA management under village government	0	9	10
Employ youths and locals	0	5	5
Awareness education	0	0	10
Improve VGS allowances	0	0	10
New land use plan	0	0	10

Table 7. Suggestions to make BurungeWMA sustainable

Generic suggestions to enable Burunge WMA to become sustainable include improvement of relationship among WMA main stakeholders at village level, i.e. local communities, investors, and WMA staff; involvement local communities in major issues affecting their day to day life; WMA management to be under village management committees; and slack contract agreements. Furthermore, they suggested that efforts should be made to ensure that income trickle down to household and/or individual level. One local community said: *“I don’t have children and therefore I don’t benefit from the WMA and therefore I don’t have an incentive to conserve”*. What can be deduced from this statement is that, it is only when households or individuals benefit that local communities are likely to conserve. Others could be increased employment of local communities by WMA investors particularly for jobs which don’t demand high skills. A provision need to be in place in Memorandum of Understandings (MoUs) or contracts specifying this requirement.

As for contract, the investor among others is required to promote the WMA, to ensure that 60% of the employees come from villages forming the WMA, and to provide social services to villages forming the WMA. In addition, EIA is mandatory before take-off of any development project, investor has to address soil and water conservation and/or conserve the areas ecology and payment of deposit a certain amount of money (in dollars) as a collateral depending on the amount of money invested. However, the collateral value is not indicated. Other requirements are: contract duration of three years and termination of contract requires 3 months notice. Most of these requirements have not been fulfilled by the investors. Another technical weakness is on signing of the agreement. The District Game Officer has been signing contracts on behalf of the WMA. It is suggested that signatories should come from the WMA management and should be written in a user-friendly language (Kiswahili) instead of English which requires a certain level of education. About 94% of the populations in the study area have informal and primary school education.

When one of the investor was asked to comment on the contract he had this to say:

"The duration of the contract (of 3 years) is too short as it exposes the investor in risk particularly in a situation where the WMA decides to terminate the contract. Again a three month notice for terminating an agreement is too short".

As a way forward to make the WMA sustainable, the WMA leaders pleaded for the government and other actors to assist in training WMA management in contracts and contract management and for the government to devolve power to the WMA in running their day to day activities. "we could not have lost our computers and a motor-bike had we been free from interference from above" lamented one of the WMA staff who preferred anonymity. The other area requiring immediate attention is paramilitary training to Village Game Scouts (VGS) and availability of patrol gears particularly guns, motor-bikes and/or bicycles. The number of trained VGS is currently nine. This number is very low compared to the WMA coverage of 280 km² implying a VGS-Area ratio of 1: 31 km² which is extremely very low. Due to lack of reliable transport, they bank on transport provided by Tarangire National Park and/or hired bicycles.

6. Conclusion and recommendations

After almost five years of operation (2006-2011) the WMA has shown a great potential towards improving local peoples livelihood, ecological conservation, and biodiversity conservation in the study area. However, despite the observed successes, the initiative still has numerous challenges such as lack of transparency in revenue uses, slack contracts, non-empowerment of local communities in decision-making, and absence of regulations and implementation strategies to operationalise the new 2009 wildlife Act.

The study recommends:

- The need for having in place WMA regulations and implementation strategy
- Devolving power to local communities to address issues and problems of WMAs
- The need for waging awareness education on the importance of the WMA for both conservation and development
- Initial capital investment to WMAs to assist in resources inventory and in human resources capacity development. This can be done by the District Councils, Tanzania National Parks (TANAPA), Ngorongoro Conservation Area Authority (NCAA), NGOs (local and international) and CBOs
- Strengthening the WMA national umbrella organisation to oversee and promote WMA activities in the country
- Review of the 2002 WMA guidelines to be in line with the new wildlife Act of 2009
- Reduce unnecessary and bureaucratic procedures in establishing WMAs. This can be achieved through streamlining the procedures of establishing WMAs by simplifying the steps (e.g. preparation of land use plans, General management Plans and Strategic Plans). The District Councils should set land use planning among their top budgetary priorities.

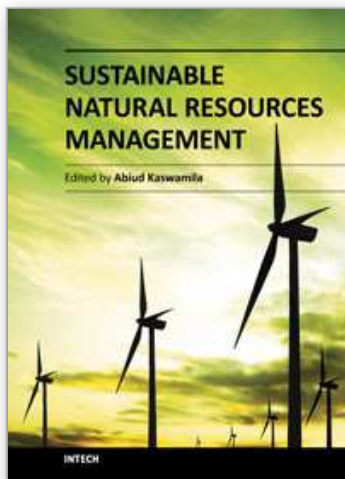
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Natural resources conservation is one of the dilemmas currently facing mankind in both developed and the developing world. The topic is of particular importance for the latter, where the majority depend on terrestrial ecosystems for livelihood; more than one billion people live in abject poverty earning less than a dollar per day; more than 3.7 billion suffer from micronutrient deficiency and more than 800 million suffer from chronic hunger. Population increase, resource use conflicts, technological advancements, climate change, political doldrums, and unsustainable use and harvesting of resources have all put more pressure on natural resources leading to land degradation and poverty. To achieve a win-win situation, we need to change our mindset by thinking outside the box through advocating integrated and holistic approaches in managing our natural resources. This book presents a variety of sustainable strategies and/or approaches including use of GIS and Remote Sensing technologies, decision support system models, involvement of stakeholders in major decisions regarding use of natural resources, community level initiatives, and use of surveillance and monitoring mechanisms.

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