Conservation letter

Towards sustainable Wildlife Management Areas in Tanzania

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Abstract

Within the last few years, Tanzania has witnessed mushrooming growth of "wildlife management areas" (WMAs). These are broadly meant to halt (or reduce) loss of wildlife populations, and ensure that local people benefit from their conservation. However, human pressure is rapidly increasing and causing management problems in the WMAs. Some human land-use activities also limit wildlife dispersal, potentially destabilizing wildlife population dynamics. In addition, poor resource use diversification and lack of creativity constrain sustainable use of natural resources in the WMAs; consequently, their contribution to sustainable livelihoods is seriously undermined. A key question is how WMAs can be a sustainable and competitive land-use option that meets their predetermined objectives? Without doubt, a road map to sustainable WMAs should responsibly engage the government, non-governmental organizations, and community-based organizations in a joint effort towards realization of simple and flexible WMAs establishment process, quality wildlife habitat, and reduced human pressure on the wildlife resources, as well as successful and sustainable wildlife-based enterprises.

Keywords: wildlife management areas, human pressure, resource utilization, Tanzania, sustainable management.

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Introduction

Sustainable conservation of wildlife resources has been one of the core objectives of wildlife managers and biologists in many countries in Africa. For centuries, wildlife has been utilized not only for subsistence but also for commercial purposes. However, as human population expands, wildlife resources are increasingly subjected to severe pressure, which threatens their existence and sustainability [1-3]. Apart from consumptive utilization, other anthropogenic activities such as agriculture have indirectly influenced the survival of wildlife species through manipulation of their habitats [4]. Since most local communities have a historical interaction with wildlife in rural areas, efforts to ensure sustainability have been focusing on involving local people in conservation. Many governments have adopted a participatory approach to conservation as a result of pervasive loss of wildlife species and the challenges of a "fences and fines" approach [5-7]. Countries in the southern part of Africa such as Namibia, Botswana, Zambia, and South Africa have had a good experience in community-based conservation [8-10]. In the rest of Africa, for example in East Africa, participatory conservation has been confronting some challenges. This has led to a considerable concern over community-based conservation initiatives in this wildlife-rich part of Africa [11-14].

In its wildlife policy objective of promoting sustainability in utilization of wildlife resources, the government of Tanzania has introduced the concept of Wildlife Management Areas (WMAs). These are areas of community land in which local people have usage rights over the wildlife resources. Conservation of natural resources in WMAs is therefore a shared responsibility and local communities must significantly benefit from it [15, 16]. WMAs started as one of the tools in a new approach to managing wildlife resources in the early 1990s. According to United Republic of Tanzania (URT) [16], wildlife ownership will be decentralized to local government, and to the rural communities that are recognized as important stakeholders in the wildlife conservation. The logic behind WMAs is that when local communities develop a sense of resource ownership and realize the tangible benefits that can accrue from wildlife conservation, they will develop a positive attitude towards conservation issues [17, 18]. This paper seeks to present some factors that need to be given attention in the current escalating interest in Wildlife Management Areas (WMAs) in Tanzania in particular and indeed in other parts of Africa.

Background on Wildlife Management Areas in Tanzania

The history of wildlife conservation in Tanzania goes back to 1891 when colonial laws controlled the use and management of wildlife resources [16]. Due to this top-down approach to conservation, integration of wildlife conservation into rural development was not a priority. As a result, in the 1970s and 1980s, Tanzania saw a pervasive decline of its wildlife. Factors involved in this decline included poverty, flourishing markets for wildlife products, increased human population and demand for bushmeat, and lack of trained personnel and financial resources to do conservation work, as well as local people's negative attitude towards conservation [19]. Therefore, much of the wildlife (especially outside protected areas) became increasingly scarce [20]. In response to this rapid loss of wildlife, the government, through the National Parks Authority and Wildlife Division, began to emphasize collaboration with local communities as part of a protected areas management strategy. By 1995, the Wildlife Sector Review Task Force [WSRTF] had suggested the creation of village-based WMAs in order to lay the basis for sustainable management and utilization of wildlife resources at the grass-roots level [19].

Three years after the WSRTF report came out, the Wildlife Policy of Tanzania (WPT) was put in place. The 1998 WPT reflects the willingness of Tanzania to decentralize wildlife management issues, and accommodates much of people's needs and interests in its conservation plans. Implementation of the policy is evidenced in the current mushrooming of WMA projects in the country. So far, there are about 16 pilot projects in 16 districts encompassing more than 135 villages. It is envisaged that through WMAs, local communities will attach considerable value to wildlife as they do in other forms of land use such as agriculture. This would in turn lead to a reversal of wildlife declines and enhanced movements or dispersal of wildlife species [10, 16].

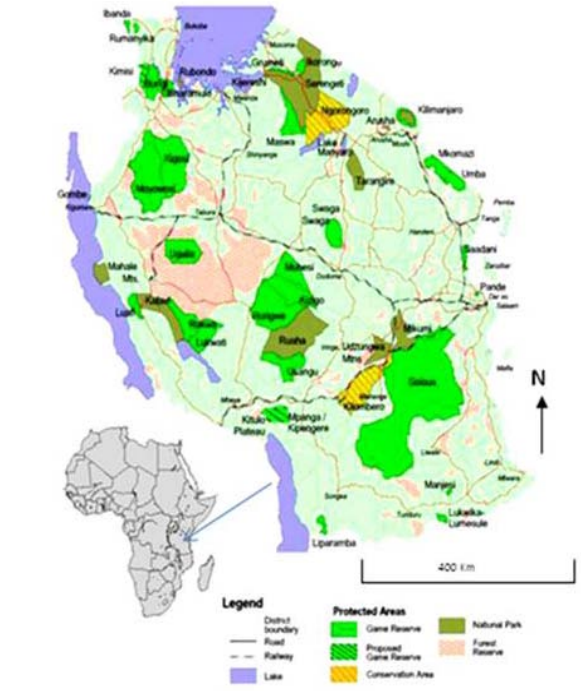

Fig.1. Map of Tanzania showing the distribution of protected areas. An inset map of Africa shows the location of Tanzania. Adapted from [66].

Generally, the process of establishing a WMA involves the following main steps: creation of awareness among villagers of the merits and disadvantages of having a WMA; a village assembly's approval of an application for WMA formation taking into consideration village council recommendations; formation of a Community-Based Organization (CBO); preparation of a strategic plan; preparation of a land-use plan; carrying out of an Environmental Impact Assessment (EIA) prior to approval of a land-use plan; preparation of village by-laws that support a land-use plan; and preparation of a resource management zone plan. The CBO then makes application to the director of wildlife for designating part of village land as a WMA; the director considers the CBO's application and sends his recommendation to the Minister of Natural Resources and Tourism; and finally the minister declares a designated WMA by order in the gazette. After this, the CBO applies to become an Authorized Association (AA), and the AA applies for a user right and hunting block to the director of the Wildlife Division. The AA may also enter into investment agreements with potential investors [21, 22]. However, from local people's perspective, this seems to be a complicated process, which may delay the formation of WMAs and the realization of tangible benefits accrued from them.

WMAs are one of the categories of wildlife conservation areas in Tanzania. Other categories include Game Reserves and National Parks and National Conservation Areas (see Figs. 1 and 2). At a local scale, however, there are some challenges to realization of sustainable wildlife management areas. Some of these challenges can be immediately linked to human influences [22, 23], for example, loss of wildlife habitat and widespread wildlife poaching. In the sections that follow, I explain most of WMAs' challenges and the possible solutions (opportunities), giving examples of wildlife projects elsewhere in Africa.

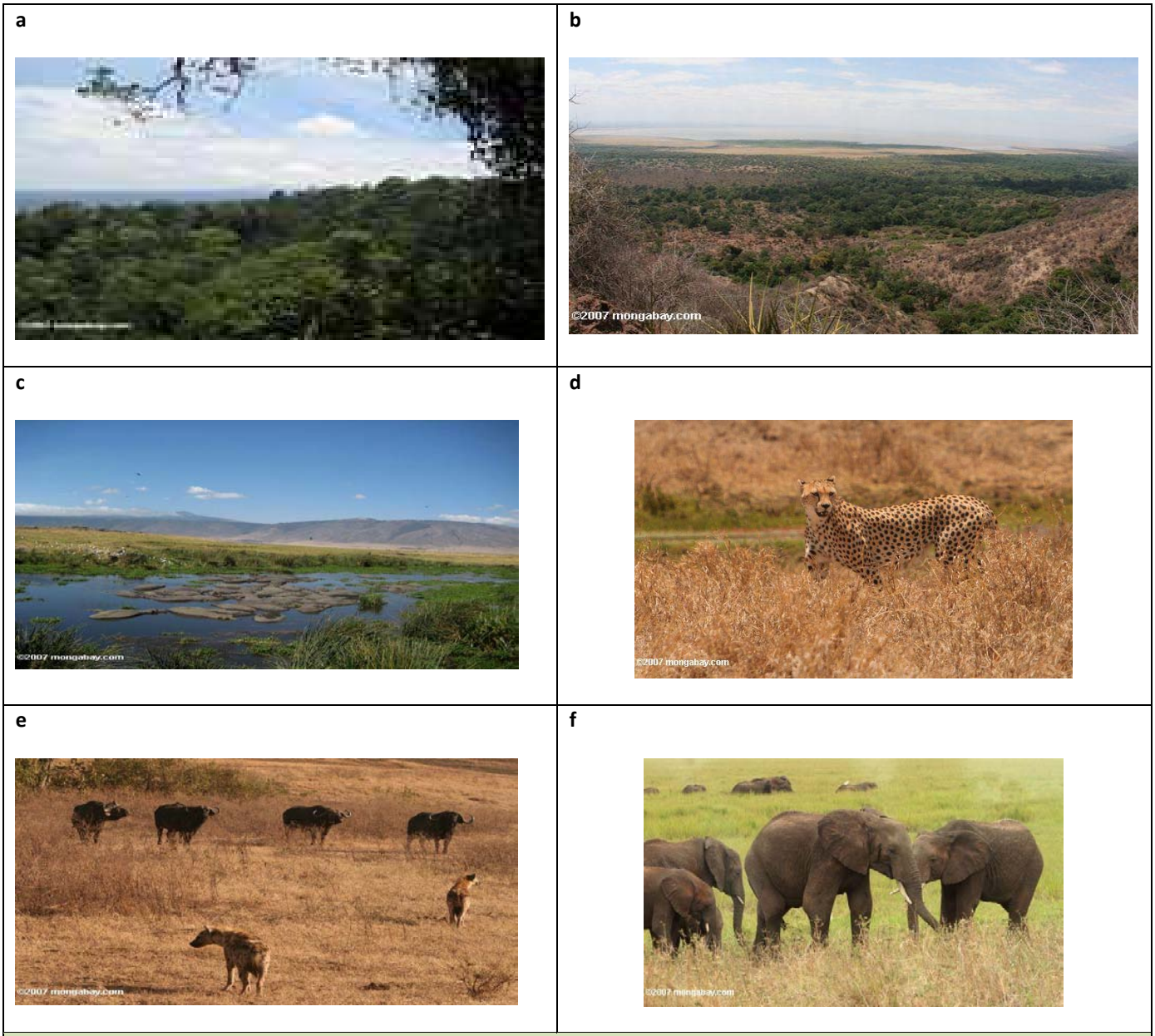

Fig. 2. Photos of some protected areas' landscapes and wildlife in Tanzania. *a*-African montane forest, *b*-Lake Manyara National Park as seen from the rift valley wall, *c*-Hippo pool in the Ngorongoro Crater, *d*-Cheetah (Acinonyx *jubatus*), *e*-Group of buffalo eyeing two spotted hyena, *f*-African elephants. Photos by Rhett Butler – see: http://travel.mongabay.com/tanzania/topics/ngorongoro%20crater10.html

WMAs in fragmented landscapes: what can be done?

The importance of land as a fundamental resource in conservation of wildlife cannot be over emphasized. In rural areas where most wildlife is found, a significant proportion of the landscape is used for agriculture, grazing, and settlement. As human population density near wildlife rich areas increases [24], even more land is needed for livelihood maintenance. This has increasingly brought human land-use zones into contact with conservation areas [25]. Therefore, there has been a negative trade-off between rural communities' interest in land use and conservationists' interest in healthy wildlife populations. Some vivid examples in Africa include the Zambezi valley of Zambia at Livingstone, where expansion of farmlands into forested areas has led to ecological devastation and widespread human-wildlife conflicts [26]. In some wildlife areas of Kwale District in Kenya, local people have been compelled to leave their productive land because of crop raiding animals such as elephants, baboons, and monkeys [27]. The conflict between the Bénoué Wildlife Conservation Area and the adjacent communities in Northern Cameroon [28] is another example of the tension arising from co-existence between human land-use activities and wildlife conservation. The root cause of the negative attitudes towards conservation among Khwai communities around Moremi Game Reserve in the Okavango Delta in Botswana is the displacement of these communities in order to provide land for gazettement of the game reserve [29]. In some areas of Western Serengeti National Park in Tanzania, wild animals have found themselves on the frontline of land-use conflict with pastoralists [30]. Displacement of Wagalla people from Ugalla Game Reserve in Western Tanzania in the 1960s [31] has contributed to the current poor support of local communities for conservation efforts. All these are only a few examples showing how land and its resources have become a source of friction between wildlife and human beings.

Land-use conflicts between wildlife and humans have resulted in wildlife habitat fragmentation and biodiversity loss. In regions with high population growth rates (Table 1) coupled with unsustainable land-use activities, wild animals often find themselves in a hostile environment. An important question is, "What is the most effective pattern of habitat fragments/patches to ensure sustainable co-existence between wildlife species and local communities?" [32]. There has been substantial discussion about habitat patches and the movement of wildlife species between different patches amid human pressure, with special attention to the decline of wildlife populations [16, 33-35]. Some wildlife biologists have argued that "species connectivity" may help to stabilize wildlife populations. Connectivity is defined as the extent to which individuals of different species can move from one habitat patch to another in a fragmented landscape. However, spatial arrangement and the quality of different habitat elements influence species connectivity [25]. Species-specific connectivity entails having knowledge of different species and their different habitat requirements [36-38].

Owing to the importance of species' ability to move between suitable habitat patches, WMA stakeholders, namely central government, local governments, and non-governmental organizations, should put emphasis on the regular assessments of the land-use systems and how they influence quality of the actual and potential wildlife habitats in the WMAs. Since tourist hunting and hunting for subsistence by local communities (through permits) are among the land uses in the WMAs [39, 40], and poaching is often a problem, intensive utilization of wildlife resources is most likely. In such a scenario, enhanced species' dispersal can effectively stabilize wildlife populations, especially in areas of habitat isolates created as a result of fragmentation and destruction of natural vegetation [41-43].

Table 1. Intercensal Population Growth Rates in Regions with WMAs in Tanzania. Adapted from [46]

Region	1988-2002 Growth Rates (%)	Wildlife Management Areas
Arusha	4.0	Enduimet and Loliondo
Manyara	3.8	Burunge and Makame
Tabora	3.6	Ipole and Uyumbu
Morogoro	2.6	Twatwatwa, Ukutu and Wamimbiki
Ruvuma	2.5	Songea and Tunduru
Mara	2.5	Ikona and Tarime
Pwani	2.4	Ngarambe-Tapika
Iringa	1.5	Idodi-Pawaga
Lindi	1.4	Liwale

Human population density

In order to ensure sustainability of WMAs, effects of human population density in regions with WMA projects should not be dismissed. The intercensal (1988 - 2002) population growth rates show that, of the regions where WMAs have been initiated, growth rates of the Arusha, Manyara, and Tabora regions are rapidly increasing (Table 1). The WMA projects in these regions, namely Enduiment, Loliondo, Burunge, Makame, Ipole, and Uyumbu, have been facing conservation challenges related to resource use and local participation [44, 45]. The Lindi region, where the Liwale WMA is found, has the lowest growth rate of 1.4%, far below the total Tanzania growth rate of 2.9% [46]. Comparison of the population size by districts reveals that Tarime is the highest, followed by the Kilosa, Urambo, and Babati districts (Fig. 3). The WMAs in these districts are; Tarime (Tarime district), Twatwatwa (Kilosa district), Uyumbu (Urambo district), and Burunge (Babati district), respectively. These WMAs have also been confronting varied resource use conflicts, which are partly due to high population density [21].

Adequate knowledge about human population size and growth rates is helpful in setting conservation priorities, because population density may be used to determine resource use intensity and act as a surrogate measure of the degree to which wildlife resources in WMAs are under threat. For example, in the game-controlled areas and open areas (where most of the WMAs are established), density of human habitation is high and bushmeat hunting is also a serious problem. Consequently, densities of most wild ungulate species are relatively low [47]**.** In districts with high population size such as Tarime (Fig. 3), bushmeat exploitation is a critical problem [48]. Mung'ong'o and Mwamfupe [49] reported that high population density in Kilosa district has significantly contributed to devastation of natural resources. The high population growth rate of Urambo district (Fig. 3) and its rapid development, as well as demand for a better quality life, have encouraged illegal hunting of wildlife (Fig. 4) for both commercial and subsistence purposes. In an interview with Rolf Baldus on May 21, 2006, Tim Caro (a scientist researching wildlife issues in Tanzania) argued that demand for bushmeat in Tanzania is partly caused by increasing living standards of people. Elsewhere in Africa, for example in West Africa, hunting for bushmeat has hugely contributed to decline in wildlife populations. This has always been attributed to rapid human population growth along with the demand for higher standards of living [2,50,51].

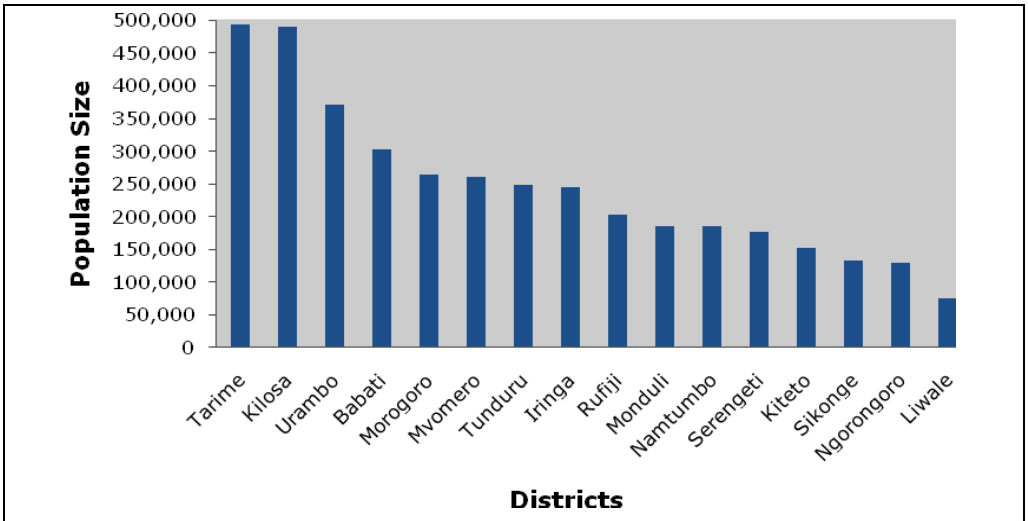

Fig. 3. Population Size in Districts with WMA projects, Tanzania. Adapted from [46]

Factors influencing resource access and utilization

The principal natural resources in WMAs include forest, wildlife, and fish. Although highest priority is currently given to wildlife utilization as the main activity, all other natural resources should also be considered in the utilization schemes of the WMAs [52]. A study on economic opportunities in WMAs identified, among others, four main economic openings through which rural communities can optimize the use of WMAs. These are: subsistence hunting, non-consumptive tourism, beekeeping, and utilization of forest resources [53]. However, making effective use of these opportunities calls on the local communities to be equipped with resource utilization technologies and entrepreneurial skills. Such skills can unleash creativity and innovation for improved ways of resource exploitation. For example, construction and use of fuel-efficient stoves may reduce wood consumption and thereby contribute to a reduced deforestation rate [54]. Initiation of successful small-scale income-generating activities (IGAs) in WMAs, which can improve people's livelihoods and take care of the environment, demands proper marketing strategy [55]. Beekeeping in Uyumbu and Ipole WMAs, for example, has been one of the important economic activities among the villages involved in the WMA projects. Yet in order to enable local communities to expand their beekeeping enterprises, training and firm market structures are needed [56].

Sustainable natural resources accessibility plans should also be developed and clearly documented in the terms of reference of any WMA project. To enhance resource accessibility and reduce conflicts, all the stakeholders (see Fig. 5) in WMA projects are obliged to observe important roles played by all the institutions involved. Institutions provide "rules of the game" [57]; proper institutional arrangements will provide a good link between WMAs and local communities. It is, however, regrettable that most of the WMA projects are lacking stable institutional structures. Pragmatically, there are no clear boundaries between the roles played by the Wildlife Division; regional, district and village governments; non-governmental organizations; tourist hunting companies; and local communities [45]. In order to make a real

change in resource accessibility and ownership at local levels, institutional structures need to be flexible enough to allow access for local institutions' voices to be heard at all levels of the WMA project plan formulation and decision making, and a genuine bottom-up approach should be employed.

The extent of resource ownership is defined in different ways by different official documents governing the use and management of natural resources in the country. For example, while the wildlife policy of 1998 maintains that natural resources in WMAs will be under the control of local communities, the Forest Act of 2002 declares on page 98, section 69 (1), that "all biological resources and their intangible products whether naturally occurring or naturalized within forests including genetic resources belong to the government . . . ." [58]. In addition, when forests are found in WMAs, the Forest Act stipulates that forest management plans may contain forests other than village land forest reserves, and the plans will control the use and management of resources in such forests. This may bring some confusion on utilization of forest resources within WMAs, and limit the span of communities' resource ownership.

From the government's perspective, the central economic role of WMAs is commercial hunting (e.g., in the Mbomipa, Okutu, Ikona, Ipole, and Uyumbu WMAs) [59]. This may perpetuate conflicts because people will have higher expectations and depend too much on revenues accrued through tourist hunting instead of initiating alternative ways of benefiting from WMAs. Despite the revenues believed to accrue to hunting activities, in the situation where the government is taking a lion's share of such revenues, successful participatory conservation will be a dream, which will never come true. For example, in Burunge WMA conflicts between district government and local communities exist because the government does not want to respect communities as important stakeholders and their wildlife-based needs are disregarded [45].

There have been arguments about the capacity of CBOs to properly administer sustainable use and management of WMAs. The College of African Wildlife Management (CAWM) in the Kilimanjaro region has been training government officials and local people from areas with WMA projects. Among other things, CAWM is conducting short entrepreneurial courses for district and village government officials as well as selected community members [60]. However, the effectiveness of this exercise may be constrained by uncertain market structures and lack of adequate experience as well as capital on the side of the local communities.

Fig. 4. Photograph showing male impala (*Aepyceros melampus)* killed by poachers with pictured muzzle loaders. Photo by Paulo Wilfred taken in the Miombo woodlands, Urambo District, Western Tanzania.

Participatory and sustainable resource accessibility and utilization plans have been a matter of greater concern in many other countries of Africa. Tanzania has a lot to learn from the experience of other countries. In the southern part of Africa, in Malawi for example, local communities had negative attitudes towards establishment of Kasungu National Park. However, the development of simple wildlife-based enterprises increased local participation and made people realize the tangible values of wildlife management [8]. The Administrative Management Design (ADMADE) program in Zambia has been funding different development projects for communities in and around Game Management Areas (GMAs). The ADMADE-funded projects include classrooms, houses for teachers, clinics, shelters for hammer mills used to grind maize, village shops, and capital for cottage industries. The program also trains village game scouts in order to reduce poaching and expand the scope of local communities' involvement in wildlife conservation [9]. The Living in a Finite Environment (LIFE) project in Namibia has emphasized wildlife conservancies where local communities have legal rights to consumptively utilize wildlife and enter into contracts with investors in tourist hunting and photographic tourism [61]. The Community-Based Natural Resources Management (CBNRM) program in Botswana attempted to reduce conservation costs tolerated by local communities. This was done by letting the government own wildlife resources, but the user rights were delegated to communities [52]. Korup National Park has been one of the few protected areas in Cameroon, areas which are successful in integrating people's needs into conservation plans. Through developing proper use programs, the park has reduced land-related conflicts with the surrounding communities [62].

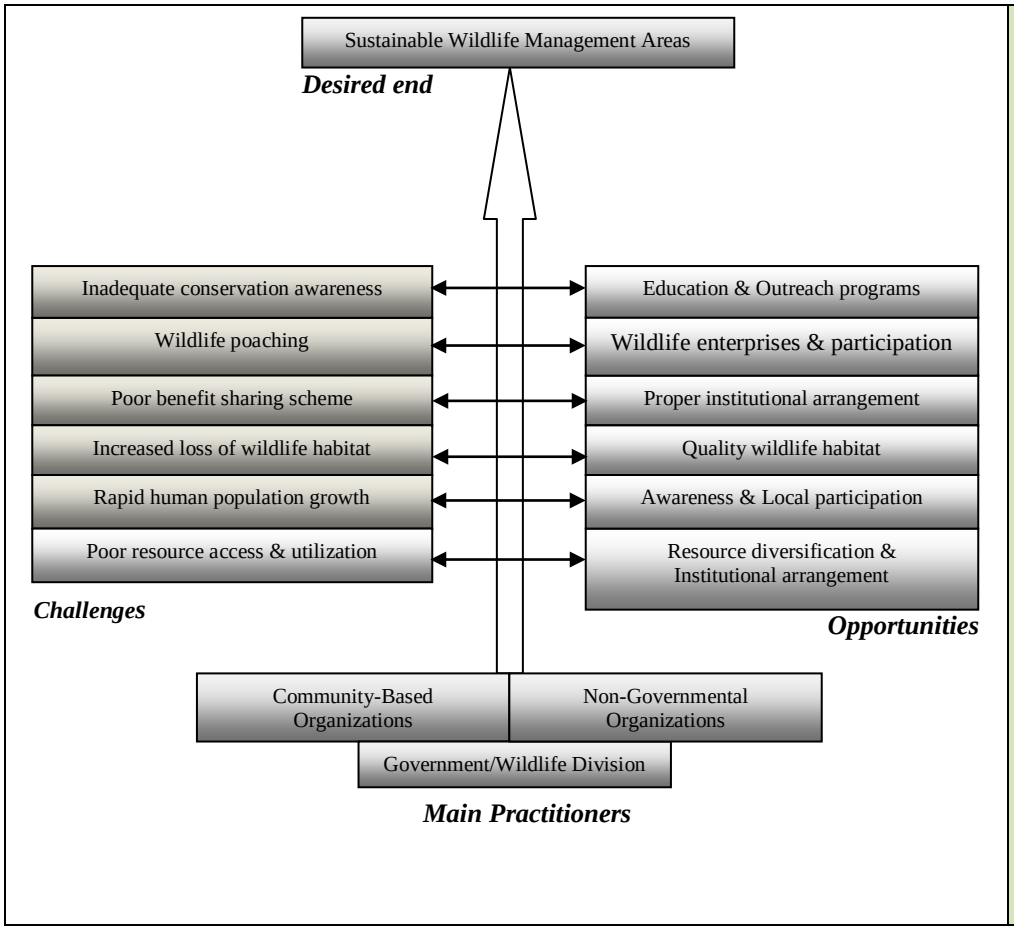

Fig. 5. Theoretical framework for sustainable wildlife management areas in Tanzania

Implications for conservation

Indeed, there has been an overwhelming need for ensuring that WMAs are sustainable and can better meet their intended objectives. This section presents some recommendations as an attempt to stimulate further discussion on sustainable conservation of WMAs in Tanzania.

1. There should be effective interventions for dealing with procedural complexity that involves distinct and time-consuming steps in the establishment of a WMA. Miniwary [22] pointed out the example of Enduimet WMA, in which local people had to wait for about 10 years (from 1997 to 2007) before they were issued a certificate of authorization. Such scenarios belittle the importance of WMAs and degrade their empirical credibility as one of the valuable land-use options.

2. Effective monitoring of WMA projects will enhance their performance [63] and help participants understand habitat dynamics of the wildlife species at the landscape scale as well as determinants of species' dispersal, particularly in the fragmented landscapes.

3. Conservation awareness and extension programs toward advocating sustainable utilization of wildlife resources should be emphasized. Such outreach programs are an important vehicle for the dissemination of conservation awareness and education in the rural areas. Caro and Scholte [2] consider "outreach programs" to be among the most crucial activities in reducing escalating pressure on wildlife resources.

4. A diverse range of natural resources in the areas with WMA projects prompts two significant conservation activities. The first is the widening of sustainable wildlife-based economic opportunities for local communities [64] in order to promote a sense of belonging to WMA projects among the local people. However, extensive conservation training programs that are blended with entrepreneurship skills are necessary in building the capacity of local people, and unlocking their creativity and innovation to initiate natural resources-based income-generating ventures in areas with WMAs. The second activity is promoting harmonization of resource utilization schemes. In the guidelines for the designation and management of WMAs, the Wildlife Division of Tanzania pointed out that the authorized associations (AAs) may allow resource utilization in the WMAs based on the regulations of the respective resource management authorities. For example, utilization plans for fish resources should adhere to the Fisheries Act of 1970, while the utilization of forest and bee resources should follow the regulations in the Forest Act of 2002 and Beekeeping Act of 2002, respectively [65]. This may create a jumble of differing conservation obligations that AAs must understand and meet unless such utilization regulations are harmonized and simplified at the grassroots level.

5. A theoretical framework (Fig. 5) depicts in general the factors influencing realization of sustainable Wildlife Management Areas. Community-based organizations initiate WMA projects in collaboration with the government, and non-governmental organizations also play a role in conjunction with both the government and community-based organizations. In order to achieve a desired outcome (sustainable wildlife management), pragmatic collaboration among the practitioners is key to addressing conservation challenges through the available opportunities.

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