

**ECONOMIC CONTRIBUTION OF PAWAGA-IDODI AND NGARAMBE-
TAPIKA WILDLIFE MANAGEMENT AREAS TO LOCAL COMMUNITIES'
LIVELIHOOD**

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**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF
THE REQUIREMENTS FOR THE DEGREE OF MASTER OF
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ABSTRACT

The overall objective of this study was to assess the economic contributions of Pawaga-Idodi and Ngarambe-Tapika Wildlife Management Areas (WMAs) to community livelihoods in Iringa and Rufiji Districts respectively. Primary data were obtained through household questionnaire survey, focus group discussion, and key informants interviews in four villages in the two WMAs. Secondary data were collected from WMAs documentary reports from district and village office, internet, journals and literature from Sokoine National Agricultural Library (SNAL). A total of 120 households were interviewed. Analysis of data was through Statistical Package for Social Science and Microsoft Excel. The results revealed similar economic opportunities in the two WMAs particularly on hunting tourism, photographic, lodges and campsites. Hunting tourism (62.2%) was reported as the major source of revenue, others were lodges & campsites (22%), donor support (1.8%), photographic (1.8%) and the 25% benefit sharing (8.8%). The results further showed that several economic activities are practiced in the area, where 71% of respondents indicated that farming is the major economic activity that contributes to their household income and (2%) from WMAs activities. This suggests that the role of the WMAs in improving people's standard of living is still low or unclear. Generally, respondents showed positive perception towards WMAs. Therefore the study recommends that there is a need to improve relationship among investors, local communities and WMA staff, improvement of business contracts, need for investors to follow village rules and regulation, awareness education and empowerment of local communities in running the WMAs.

DECLARATION

I, ASIA HASSAN MOYO, do hereby declare to Senate of Sokoine University of Agriculture that this dissertation is my original work done within the period of registration and that it has neither been submitted nor being concurrently submitted in any other institution.

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Date

The above declaration is confirmed by;

Prof. Y. M. Ngaga
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Date

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DEDICATION

I dedicate this work to my family whose love and thirst for knowledge continues to inspire me till today, especially to My parents Mr. & Mrs. Hassan Nassor Moyo for opening my eyes to the world, and for instilling the importance of hard work and higher education;

My sisters and brothers for their ongoing and endless prayers, inspiration and encouragement;

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To them I say: ‘the harvest is not always unseen’ .

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LIST OF ABBREVIATIONS AND SYMBOLS

AA	Authorized Association
AAC	Authorized Associations Consortium
CBC	Community Based Conservation
CBO	Community Based Organization
DFID	Department for International Development
EIA	Environmental Impact Assessment
GCA	Game Controlled Areas
GEF	Global Environmental Facility
GMP	General Management Plan
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (German Technical Cooperation Agency)
IUCN	International Union for Conservation of Nature
LAMP	Land Management Program
LUP	Land Use Plan
MBOMIPA	Matumizi Bora ya Malihai Idodi na Pawaga
MNRT	Ministry of Natural Resources and Tourism
NFM	Natural Forest Management
NGOs	Non - Governmental Organizations
PA	Protected Areas
RMZP	Resource Management Zone Plan
SCIP	Support for Community Initiated Project
SCP	Selous Conservation Program
SIDA	Swedish International Development Co-operation Agency
SLF	Sustainable Livelihoods Framework

SNAL	Sokoine National Agricultural Library
SPSS	Statistical Package for Social Sciences
TAWICO	Tanzania Wildlife Company
UNDP	United Nations Development Programme
UPE	Universal Primary Education
URT	United Republic of Tanzania
USAID	United States Agency for International Development
VGS	Village Game Scouts
WCA	Wildlife Conservation Act
WCS	Wildlife Conservation Society
WD	Wildlife Division
WMA	Wildlife Management Areas
WPT	Wildlife Policy of Tanzania
WWF	World Wildlife Fund

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background Information

Tanzania is the most wildlife-rich country in Africa in terms of large terrestrial mammals in which the resources have played an important role in the region's political and economic development (Nelson, 2006). During the seventy years of German and then British colonial administration, wildlife management practices generally continued and reinforced two fundamental strategies which are legally ban or restrict wildlife uses and establishing parks and reserves to protect animal populations (Neumann, 1998). In 1970s, Tanzania came up with Wildlife Conservation Act of 1974. The act focused on central control over wildlife and the elimination of local use rights. Over the years, international organizations and governments have invested in community based programmes and institutions to help in the management of natural resources (Shyamsundar *et al.*, 2005; UNDP-GEF, 2004; USAID, 2013). In fact, community conservation strategies are suited to help meet the Millennium Development Goals (MDGs), especially those related to eradicating poverty and ensuring environmental sustainability (Pathak *et al.*, 2005). In late 1980s Tanzania developed Community Based Conservation (CBC) concept that encouraged wildlife management at community level by allowing local landholders to manage wildlife on their land for their own benefits (MNRT, 1998).

Wildlife Management Areas (WMAs) are areas set aside for wildlife conservation on community lands. In these areas certain rights and responsibilities for wildlife management are devolved for communities, including rights for communities to capture revenue generated by wildlife and to determine how wildlife is utilized (URT, 2007). The WMAs are established by the Wildlife Conservation Act No 12 of 1974 and No 5 of 2009

under the Wildlife Management Areas Regulations of 2002 recently revised in 2012 (*ibid*). As stipulated in the 1998 Wildlife Policy of Tanzania, the local community should have been the sole governor, proprietor as well as beneficiary of WMAs. Currently there are 38 WMAs countrywide at different stages of development of which 17 WMAs have attained Authorized Association (AAs) status (AAC, 2012).

Fundamentally, community-oriented approaches to wildlife conservation such that WMAs usually have a strong economic rationale. They are typically based on the premise that if local people participate in wildlife management and economically benefit from this participation, then a “win-win” situation will arise whereby wildlife is conserved at the same time community welfare is improved (Stephanie, 2014). As such, today numerous pilot WMAs projects have been initiated in an effort to put this principle into practice for the benefit of both rural livelihoods and wildlife conservation interests (Kaswamila, 2012). Wildlife Management Area (WMA) is a type of protected area that is meant to encourage community participation in establishing and managing conservation, while acting as a source of income for the local community (Stephanie, 2014). The management practices of WMAs utilize a conservation model deemed participatory by the state and donors, with the goal of placing revenues in the hands of villagers in order to positively impact on their livelihoods and alleviate poverty (Humphries, 2013).

Economic contribution addresses the business and financial activity resulting from the use of a resource (Southwick Associates, 2014). Measuring WMAs contributions to local economic development does not just mean taking key macro economic growth indicators, such as output and employment, but also multiplier impacts both formal and informal sector employment, improved infrastructure and public services, and more benefits such as empowerment and improved governance (Ashley *et al.*, 2002).

Therefore, though WMAs have shown economic contribution to local people (Kaswamila 2012; Tynnerson, 2009) there are no assessments that have been done to assess and compare the economic contributions of more than one WMA to determine the factors influencing WMA performance differences.

1.2 Problem Statement and Justification of the Study

Many studies such as ‘An Analysis of the Contribution of Community Wildlife Management Areas on Livelihood in Tanzania’ (Kaswamila, 2012) and ‘Community Based Wildlife Management-its role in Conservation and Development’ (Tynnerson, 2009) have been conducted on the contributions of WMAs to community livelihood. However, most of these studies are based on single WMA study and may be difficult to provide meaningful policy recommendations based on a single study of WMA. There is no study which has tried to study two or more WMAs together to ascertain on the factors responsible for their success or failure of the economic contributions to local communities’ livelihoods.

Given the differences of these WMAs in terms of status, location, resources, donor support and accessibility, it is not easy to have the same level of economic contributions to communities’ livelihood. Nevertheless, since all the WMAs are guided by the Wildlife Management Areas Regulations and respective guidelines, rational economic contributions to local communities’ livelihoods are necessary in relation to the WMA’s revenues. Pawaga-Idodi and Ngarambe-Tapika WMAs are vital areas for wildlife and are located near the largest faunal reserves of Ruaha National Park and Selous Game reserve respectively. They are among the first pilot WMAs established in Tanzania since 2003 (WWF, 2014). They have been initiated and framed in 1992-2003 in the framework of two conservation projects, the Selous Conservation Project supported by German Technical

Cooperation Agency (GTZ) currently known as GIZ, and the MBOMIPA project supported by the Department for International Development (DFID) in the Ruaha ecosystem (WWF, 2012). The WMAs offer numerous goods and services to the national economy, to society at large, and to local livelihoods. But evidence shows that the cash and non-cash contributions made by wildlife and natural resources to local communities' livelihoods are not accurately captured by official statistic (DFID, 2002), and vary from one WMA to another. Therefore, this study aimed at assessing and comparing the two WMAs' economic contribution to local communities' livelihood and attributing factors.

The study provides insights on economic contributions both cash and non-cash of the Pawaga-Idodi and Ngarambe-Tapika WMAs to local communities' livelihood and factors/parameter that influence their contribution. Further, the findings of the study are beneficial to decision makers on how best to run the WMAs in accordance with the government policy objectives of promoting economic growth, rural development and sustainable management of natural resources in an attempt to deduce important parameters for WMA success.

Together with national parks and game reserves, the achievements made through improved WMA conservation also have important implications for stemming the loss of genetic and biological diversity, addressing and combating the impacts associated with ecosystem fragmentation, and in enhancing connectivity via corridors between parks and reserves. In addition, the knowledge will help other WMA's and organizations understand what challenges face the WMAs communities and their partners in protecting their natural resources and this learning is key for future WMA initiatives in Tanzania.

1.3 Objectives

1.3.1 Overall objective

The overall objective of the study was to assess the economic contribution of Pawaga-Idodi and Ngarambe-Tapika WMAs to local communities' livelihood.

1.3.2 Specific objectives

The specific objectives were to:

- i. Examine the economic opportunities and factors that influence their performance presented by the two WMAs
- ii. Determine sources and the trend of financial revenues accrued from the two WMAs since gazette
- iii. Determine the contribution of the two WMAs to local communities livelihoods
- iv. Assess the perceptions of local communities towards the WMAs

1.4 Conceptual Framework

This framework has been developed on the basis of the objectives and literature review in order to meet the intended purpose of assessing the economic contribution of WMAs on local communities' livelihoods. Fig. 1 shows that local community's livelihood (household income) is the function of the presence of WMA with its economic opportunities present in the area. WMAs contribute to household income directly through the income the member villages get from the revenue accrued from different economic opportunities practiced in the area, also through employment opportunities (village game scouts) paid salaries. The success of the WMAs in contributing to communities' livelihood depends on the presence of an investor, accessibility, location of the WMA and visibility of WMAs wildlife.

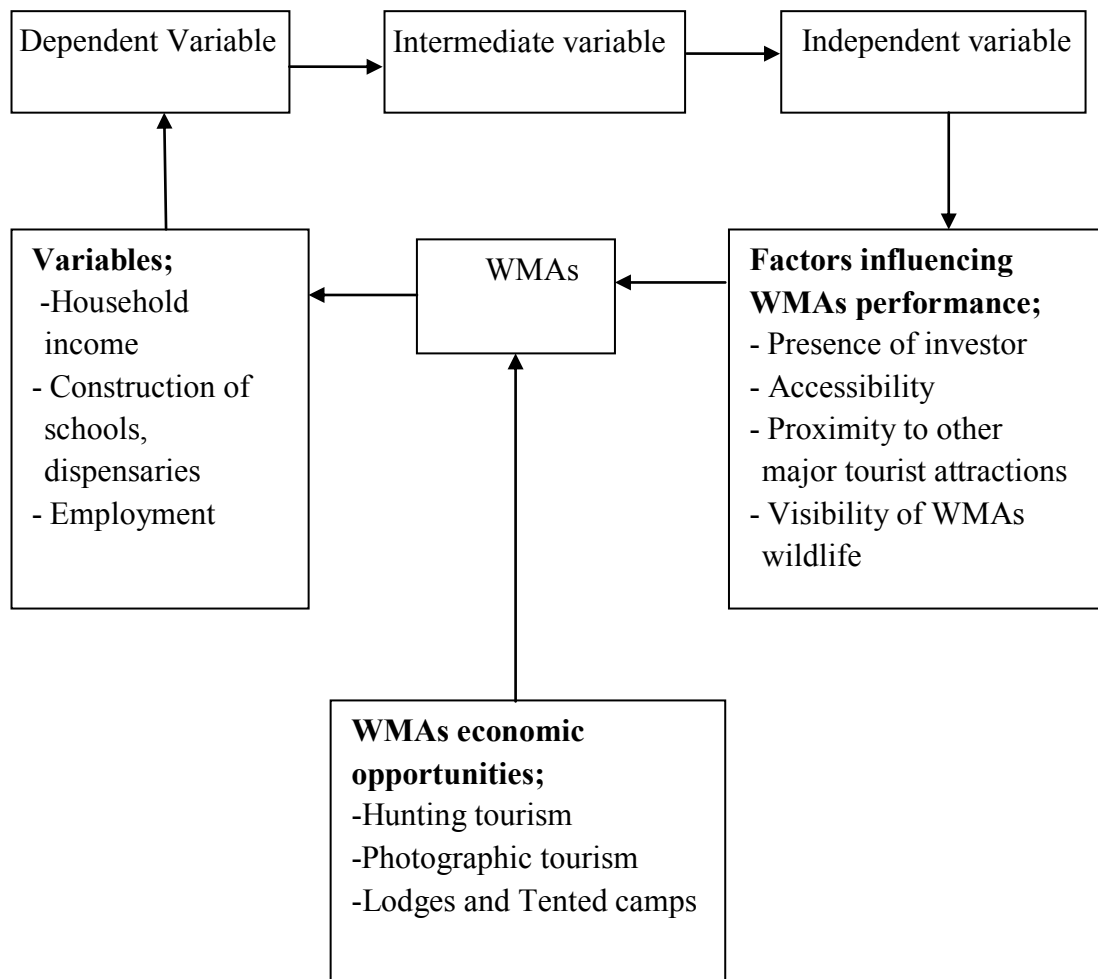


Figure 1: Conceptual framework summarizing key issues in the economic contributions of WMAs to local communities' livelihood

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 The Arusha Manifesto

After independence in 1961, Mwalimu Julius Nyerere, who was the first President of Tanganyika, released the Arusha Manifesto, which states that:

“The survival of our wildlife is a matter of grave concern to all of us in Africa. These wild creatures amid the wild places they inhabit are not only important as a source of wonder and inspiration but are an Integral part of our natural resources and of our future livelihood and well being. In accepting the trusteeship of our wildlife we solemnly declare that we will do everything in our power to make sure that our children’s grandchildren will be able to enjoy this rich and precious inheritance. The conservation of wildlife and wild places calls for specialist knowledge, trained manpower, and money, and we look to other nations to co-operate with us in this important task the success or failure of which not only affects the continent of Africa but the rest of the world as well. (MNRT, 1998: p7)”.

Since then the famous Arusha Manifesto became a useful tool for wildlife conservation in the country together with guidelines, regulations and laws implemented by Wildlife Division and other responsible institutions (MNRT, 1998).

2.2 Wildlife Policy of Tanzania

After the Arusha Manifesto, the Wildlife Policy of Tanzania (WPT) of 1998 became the first documented and inclusive policy for wildlife conservation and development (MNRT, 2007). The policy aims at involving society in wildlife conservation, management and

development. This came after recognizing some challenges confronted by the sector, one of them being high human population growth. The policy has the following five objectives:

- a) To protect and conserve wildlife,
- b) To promote sustainable utilization of wildlife,
- c) Better management and development of wildlife resources,
- d) To strengthen wildlife resource monitoring and research, and
- e) To enhance community education and public awareness about wildlife

A new aspect of the WPT is the focus on “rural communities and the private sector” as important actors which must be involved in wildlife management in order to ensure conservation and sustainable use (Tynnerson, 2009). In 2007, the Ministry of Natural Resources and Tourism (MNRT) made revisions to the Wildlife Policy of Tanzania by stating that it wanted to move away from a “protection focus to wise use principles for sustainable natural resources management” (MNRT, 1998). Though there are some critics which argue that the revisions of the Wildlife Policy in combination with the Wildlife Conservation Act of 2009 and creation of WMAs, actually serve to recentralize control of land and resources related to wildlife (Benjaminsen *et al.*, 2013).

Wildlife Policy of Tanzania developed strategies to ensure effective partnership with rural communities and the private sector outside PAs and providing those communities with direct and indirect benefits from wildlife utilization. The strategies encourage local communities with viable wildlife populations to establish Community-Based Conservation (CBC) programmes through development of Wildlife Management Areas (WMAs) (MNRT, 2007).

2.3 The WMA Regulations

In 2002, the WMA Regulations became a new subsidiary law under the WCA of 1974. The government of Tanzania enacted the first WMA Regulations in 2002 (revised in 2005), which detailed the process for establishing WMAs, and this was replaced by the 2012 WMA Regulations. The process initiated the first WMAs on village lands and was a start point for the utilization of the Wildlife Policy's objectives. The Regulations state that WMAs are areas set aside by the local communities to conserve and manage wildlife resources, and that the villagers are granted full responsibility. The goal is to empower the communities, so that they can take advantage of the benefits that come with wildlife resources and that complies with the policy (URT, 2007). The Minister of Natural Resources and Tourism is the one who designates WMAs, and the management of WMAs is by an Authorized Association (AA) which represents communities in one or several villages. The AA should be a Community Based Organization (CBO), made up by the local communities that wish to be assigned wildlife user rights by the Minister and the Director of Wildlife.

There is a process which all communities that wish to qualify for wildlife user rights must follow. Initially, a meeting must be held where the village decides to form a WMA; a CBO must be formed, which amongst other things needs a constitution, rules of membership, qualifications for office bearers and financial management procedures (URT, 2007). Also, the CBO has to present a Strategic Plan as well as a Land Use Plan, which both should be subject to an Environmental Impact Assessment (EIA). Thirdly, the CBO must form a General Management Plan (GMP) which should include the different zones of resource uses in the proposed WMA. After all these steps have been taken, the CBO can be presented to the Director of Wildlife, who then can decide to form the WMA (URT, 2007). If the application is approved and the WMA is gazetted, the CBO becomes an

Authorized Association, and is given limited user rights to the wildlife in the WMA. For villages situated in a Game Controlled Area, there is an additional step of having their land removed from reserved or conservation land and be included in community lands before the WMA can be official (*ibid*).

2.4 Wildlife Management Areas

Protection of wildlife appeared as a precedence to conservation and development organizations. Approaches to protect natural resources, including wildlife, have been the creation of national parks and other categories of PAs that exclude livelihood activities (Salafsky and Wollenberg, 2000). International Union for Conservation of Nature (IUCN) categorizes PAs into six categories of which four do not allow consumptive use of the resources by strictly defining borders that unauthorized people are not supposed even to cross. The conservation strategy caused local livelihoods to be in conflict with conservation since local people are forced to use resources outside the park (*ibid*). Though PAs are proven to be important for conservation, the idea faces difficult challenges and dilemma interrelated with rural development and wildlife conservation (Holmern, 2003). The social, economic, cultural and political challenges have often been beyond the capacity of conservation authorities and even local governments. In developing countries, the biggest dilemma is to spend money on strictly protecting wildlife resources, while poor people daily needs increase (Salafsky and Wollenberg, 2000). Responding to these challenges and limitations, conservationists looked for a trade-off, which will be beneficial to local communities and wildlife conservation. This came after realizing the importance of both PAs as part of conservation and local community economic development.

WMAs represent a new approach to wildlife management in Tanzania that has its roots in the late 1980s. In the country, this new approach emerged from the perceived failure of

past, traditionally centralized wildlife management policies and practices (USAID, 2013). WMAs emerged during the reform process in the 1990s as a framework for communities to manage and benefit from wildlife. This strategic shift towards a community-based conservation framework was enshrined in the 1998 Wildlife Policy of Tanzania. This policy promoted wildlife management at the village level by allowing;

“rural communities and private land holders to manage wildlife on their land for their own benefit” and “devolving management responsibility of the settled and areas outside unsettled PAs (protected areas) to rural people and the private sector” (USAID, 2013).

A Wildlife Management Area is an area of communal land set aside exclusively as habitat for wildlife by member villages (WWF, 2014). Involving local community in wildlife conservation became a new conservation approach worldwide after the failure of fortress approaches to conservation (Holmern, 2003). Local community participation in wildlife conservation came after realizing that conserving wildlife will not be possible if it will not involve local people. The main objective of the strategy was to involve people in conservation at the same time to help them to meet local livelihoods (Wapalila, 2008). The main objectives of the WMA process are to as follows: increasing participation of local communities in the management of wildlife resources, enabling local communities to derive benefits from wildlife resources and enhancing the conservation of wildlife resources (URT, 2013).

WMAs began to be formally implemented in 2003, following WMA Regulations first issued in 2002, and the first WMAs were gazetted in 2006. In 2009, Parliament approved a new Wildlife Conservation Act which enshrined WMAs in the overarching sectoral legislative framework. New WMA Regulations under the 2009 Act were issued in 2012,

which contain a number of key changes, including strengthening the communities involvement and influence over trophy hunting concession allocations in WMAs, as well as providing greater clarity around benefit-sharing. These were critical improvements to the devolution of authority to the WMAs (USAID, 2013). This WMA approach began with 16 pilot WMAs. Five of these pilot WMAs became first formally registered in 2006-07 (Ngarambe-Tapika, Mbarang'andu, Uyumbu, Burunge and Idodi-Pawaga), and by the end of 2012, 17 WMAs were gazetted with 21 more moving toward formal registration. From 2006 to 2012, the areas under WMA management nationwide grew from about 6700 to 27430 km² (>3% of the country's land area). Currently, there are 148 villages with a population of more than 440 000 people participating in WMAs (WWF, 2014).

2.4.1 Pawaga-Idodi WMA

Pawaga-Idodi WMA started 19 years ago in 1996 under a DFID community based conservation project in 5 villages. It was formed in the Lunda Mkwambi Game Controlled Area (GCA) by the consent of the government as detailed in the WMA regulations (MNRT, 2002) and the revised version (MNRT, 2005). The original project headquarter's office later became the AA MBOMIPA. MBOMIPA is a Swahili acronym, for “*Matumizi Bora ya Malihai Idodi na Pawaga*”, loosely translated as “*Sustainable use of Wild Resources in Idodi and Pawaga Divisions in Iringa District*”. Twenty one villages have been effectively mobilized to join the WMA and have been assisted by Wildlife Conservation Society (WCS) since 2003. Authorized Association status and User Rights were granted to Pawaga-Idodi in 2007.

2.4.2 Ngarambe-Tapika WMA

People have been living in the area that is now Ngarambe-Tapika WMA before the colonial period and traditionally had their own taboos and rules concerning the utilization of wildlife and other natural resources (RMZP, 2003; Majamba 2001).

Towards the end of the 1970s, commercial poaching became an increasing problem in and around Tanzania's PAs, and the Selous was no exception. The poaching caused declines in elephant and rhino populations and by the mid-1980s an estimated 5000 elephants were killed annually (Baldus *et al.*, 2001). Intensive anti-poaching campaigns, such as the militant Operation *Uhai* led to an outright war between villagers and wildlife officers. Participatory approach to wildlife management, the Selous Conservation Program (SCP) was initiated in 1988 among communities in the buffer zones of the Selous Game Reserve (Hahn and Kaggi, 2001). One of these villages was Ngarambe, and although the village did not officially join the SCP before 1995, the German Development Agency Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) had been carrying out anti-poaching work in the village since the 1980s. In 1997, WWF took over as facilitators of the Selous Conservation Program and GTZ pulled out. In 1998, Tapika village joined the Selous Conservation Program with a similar set up.

In addition, the process of establishing the WMA started in the late 1990s facilitated by the WWF, but it was not until the area was officially chosen to be one of the WMAs pilot, then the necessary arrangements began. In 2002, the Joint Land Use Plan was prepared and so was the Resource Management Zone Plan (Formo, 2010). In 2004, the CBO MUNGATA got its certificate of registration by the Ministry of Home Affairs. In February 2007, the WMA received its user rights from the Wildlife Division and simultaneously, the CBO got status as an Authorized Association (Formo, 2010).

2.5 Economic Opportunities of WMAs

Although Tanzania is presumed to be one of the richest African countries in terms of wildlife resources, wildlife has been under constant threat for a number of years. This is a matter of serious concern, given the fact that the country's economy is largely based on

natural resource utilization and extraction. There are attempts to remedy this situation by devolving the management of the wildlife resources to the local communities through the establishment of WMAs (URT, 2007). The aim is to achieve conservation through participation of local communities and to share the benefits with them. Conservation must pay for itself; otherwise it will not happen (*ibid*). It is important for all the stakeholders to recognize that the economic opportunities will vary between different WMAs. Some will be well endowed with wildlife and other resources, others less. Implementation of different economic opportunities will, therefore, generate different levels of profitability and the WMAs will not be equally profitable.

The Wildlife Policy of Tanzania of 2007 and the Wildlife Management Area Regulations made under Wildlife Conservation Act, 2009 create opportunities for community investments and other forms of community involvement in WMAs (URT, 2009). Other laws governing WMA activities include the 2008 Wildlife Conservation (Non-Consumptive Wildlife Utilization) Regulations and the 2010 Wildlife Conservation (Tourist Hunting) Regulations (WWF, 2014).

The implementation of the Wildlife Policy of Tanzania (WPT) and the creation of Wildlife Management Areas (WMAs) open doors for a number of enterprise opportunities for the local communities that now benefit little from the wildlife present in their areas. Although it is expected that WMAs will benefit local communities in different ways, little is actually known about which kinds of opportunities exist, or the costs and benefits of these opportunities. Clearly, the legislative texts and by-laws that will provide guidance on how to manage the WMAs, including the rights, responsibilities, and revenue-sharing formulas will greatly help define what the opportunities are and their parameters.

2.5.1 Trophy and resident hunting

Currently, villagers have almost no control over tourist hunting, and the benefits generated are limited to cash which the hunting companies choose to give (they are not mandated to do so) directly to the communities to ensure their cooperation. A few hunting companies have established special programs to provide direct benefits to the villagers in their hunting blocks. Robin Hurt Safaris and Tanzania Game Trekkers (TGT) were among the first to establish such programs, charging their hunter clients a 20-percent surcharge on the game fees (Christophersen *et al.*, 2000). This surcharge is dedicated to village development programs that the companies manage directly. In addition, 25 percent of the game fees collected by government are remitted to the District Councils for supposed redistribution to the villages. Although villagers ultimately receive some indirect benefits in the form of routine public services, these are not linked to the 25-percent remittances to the District Councils from the hunting operations.

The overall employment impact for the local communities in the GCAs is very small, limited to only a few guides or porters hired during the hunting season. The sale of quota-based hunting rights to tourist hunting companies and/or resident hunting groups present the most immediate, and supposedly the principal, economic opportunity for nearly all of the potential WMAs. A major advantage of hunting is that it generates considerable revenues right from the beginning with little or no investments needed by the AA—the resource is already present and available; it does not need to be produced (Christophersen *et al.*, 2000).

2.5.2 Game cropping

Game cropping is the commercial harvest of wildlife for meat, hides and other products. It is another consumptive economic opportunity carried out under permit issued by the WD

(Christophersen *et al.*, 2000). Ideally it is used as a mechanism to ensure that certain species of wildlife do not exceed the carrying capacity of their habitat. The side benefits include game meat supplied to the communities and restaurants. The markets for the meat however, are not yet well developed in Tanzania. The Tanzania Wildlife Company (TAWICO) had a monopoly on game cropping in Tanzania until 1999. The future status of this arrangement is uncertain because TAWICO is currently being privatized and the policy is under review. Currently, TAWICO pays the government a fee for each animal harvested and sells the meat, hides and other products in urban and rural areas. Game cropping has provided little benefit for local communities other than the occasional sale of fresh game meat at low prices. Cropping for fresh meat in remote areas also presents logistical challenges and may not be practical. Game cropping for local markets will not compete well against tourist hunting or even resident hunting. If communities were free to choose between cropping for local markets and hunting, hunting will almost always be the more financially attractive economic opportunity (Christophersen *et al.*, 2000).

2.5.3 Photographic tourism

Photo-tourism means all non-consumptive tourism-related activities, and it presents a clear economic opportunity for WMAs. The actual potential will vary considerably, however, is a function of several factors such as accessibility, proximity to other major tourist attractions (such as national parks or Ngorongoro), the visibility of the WMA's wildlife and the presence of other attractions such as scenic vistas, etc. One of the main reasons for the increasing demand for photo-tourism development in the WMAs is that tourists can engage in walking safaris and night tours. Example of photo-tourism development in the WMA (albeit illegal) is around Tarangire National Park. Six photo-tourism companies have negotiated contracts with villages and have established permanent tented-camps near the park. As part of the contract with the villages, the operators have obtained use rights to

an average area of some 2000 hectares each. The villagers agreed not to clear any land for agriculture in these areas. These arrangements generate direct benefits for villagers reflecting the agreements negotiated on the fees paid to the communities per bed night sold (Christophersen *et al.*, 2000).

2.5.4 Beekeeping

Beekeeping is an activity that is usually compatible with wildlife conservation and is usually allowed in the WMAs. Beekeeping plays a large role in socio – economic development as well as in environmental conservation. Its honey, pollen and brood are a source of food; it provides raw materials for various industries, medicine and income for beekeepers. It is a source of employment, provides income to the people, a source of recreation, ecotourism and foreign exchange earner.

Traditional beekeeping is practiced widely in Tanzania, although the hives and equipment used are inefficient, beekeepers are poorly organized, markets are not developed, and the quality of the honey produced is generally low. The local communities currently benefit little from this potentially very lucrative occupation. According to the Permanent Secretary (PS) of the Ministry of Natural Resources and Tourism (MNRT) in the *Orientation Workshop on Beekeeping* (April, 2000), less than four percent of the potential volume of honey is actually being produced (Christophersen *et al.*, 2000). Nevertheless, beekeeping and the value-added processing and marketing of honey, wax and other products, present a clear economic opportunity for most, if not all, WMAs. Nearly all future WMAs has potential to produce large quantities of quality honey and beeswax. Only the open, sparsely wooded grasslands of some WMAs in the north have little potential for honey production. The biggest constraints, and therefore, the biggest opportunities, are in processing and marketing. Improved processing and marketing

present a natural resource-based business opportunity for the AA of the WMA compatible with all other economic opportunities. It will also contribute substantially to the regeneration of the natural forests, complementary to the Natural Forest Management (NFM) activity.

2.5.5 Sustainable production of hay/livestock fodder

In some WMAs the sustainable production of hay and livestock fodder may be a potential opportunity so long as cash markets for hay or fodder could be developed and organized, especially markets in or close to urban areas. WMAs located close to Arusha and/or the Kilimanjaro Region, for example, could consider producing hay and fodder for markets already established in these regions, primarily for the purpose of improving the quality of the herds.

2.5.6 Sustainable production of medicinal plants

Availability of medicinal plants will always be of high priority for rural dwellers as commercial medicines are in short supply and/or too expensive. The production of these plants is, indeed, another potential economic opportunity because traditional medicines are naturally produced in the GCAs (Christophersen *et al.*, 2000). There may be considerable potential for managing WMAs for some of these products, if markets could be developed and organized. Therefore, once markets for the traditional medicines have been developed and are functioning, the opportunity should be added to the portfolio of activities to analyze in WMAs.

2.5.7 Mining

Mining has become a rapidly growing economic activity in Tanzania because of the high returns obtained from gemstones, Tanzanite, diamonds, gold, or other minerals. Alongside

with tourism, it is a priority sector in the economy. Since mining usually takes place on village land, on potential WMAs, there is a concern by the conservation community that the mining sector will always get priority over other land uses such as wildlife conservation because the two are not complementary. Areas rich in both wildlife and minerals, therefore, may not become a candidate for WMA application because the local communities would prefer to exploit the minerals rather than manage wildlife. As with photo-tourism and hunting discussed above, the potential for hunting and mining to co-exist is also very limited, if the proposed mining operation is not extensive, however, it may co-exist with hunting under proper zoning arrangements, including carefully planned access to the mining site so as to minimize disturbance to hunting. Also, the timing when mining operations can be carried out, and when they cannot during the hunting and off-seasons. Future consideration of mining operations on WMAs must involve village and District Authorities, the Commissioner of Mines, and the WD in the decision-making process. In addition, any proposed mining venture must be subjected to an environmental impact assessment (EIA).

2.6 Contribution of Wildlife Management Areas to local Communities' Livelihood

It is important to recognize that in Tanzania, the establishment of WMAs and the fundamental shift in philosophy and perspective that this represented are the significant achievements. The passage of legislation and regulations that made WMA formation possible required many years of coordinated efforts by dedicated government professionals, donors, NGOs, and community leaders who recognized that the best option for conserving wildlife outside of Protected Areas was through direct involvement of local population in managing wildlife for tangible local benefits. The WMAs represent the best hope for conserving wildlife outside of Tanzanian protected areas while enhancing rural economic development.

Economic contributions of WMAs are divided into communal benefits and individual benefits. Both of these sources are needed. a high- dollar communal revenue source is vital to provide enough revenue to make significant contributions to village governments, while smaller streams of revenue to individuals lead to household level development and provide tangible benefits to families in WMAs (URT, 2009). To date, no WMA has distributed cash dividends to individual households. Instead, the benefits have taken form of community development projects, community support initiatives and social welfare support.

WMAs give villages a framework within which they can better manage their land and benefit from the wildlife living there through legal user rights. At the national level, the Authorized Associations Consortium (AAC) has been formed to protect and promote the interests of the WMAs and their constituent villages. The benefit sharing percentages defined in both, the 2008 non-consumptive use of wildlife and the 2012 WMA regulations have helped WMAs and villages to understand and demand their rightful incomes.

2.7 Community Livelihood

According to Ellis (2000), the concept of livelihood is widely used in contemporary writings on poverty and rural development, but its meaning can often appear elusive, either due to vagueness or to different definitions being encountered in different sources. As such, a livelihood comprises people, their capabilities and their means of living, including food, income and assets (Carney, 1998). Livelihood is also defined as the access that individuals or households have to different types of capital (natural, physical, human, financial and social) (Ellis, 2000). A livelihood is said to be sustainable, if it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base (IISD, 2003).

Generally, since livelihood is a broad concept with huge asset as pointed above, the study covered one concept which was household income to make the study manageable.

Several factors influence the extent to which a household depends on a natural resource. Such factors include distance, infrastructure, wealth, household size, and level of education of members of household (Ongugo *et al.*, 2001). Some research findings had shown that poorer households depend totally on natural resources products due to limited access to alternative sources of income, while the more wealthy households mainly use the resources for larger commercial activities (Wass, 1995).

2.8 Trend of Financial Revenue Accrued from WMAs

The ability of WMA to generate revenue is dependent on location, presence of wildlife species of interest and availability of quality infrastructure such as roads and campsites. However, there is a great disparity in valuable wildlife endowment and infrastructure quality among the 17 WMAs. Most WMAs are relying on only one or two income streams, mostly photographic or hunting tourism. The risk in this is that the WMA could collapse, should these sources disappear for a significant period of time, something that is not unheard of in the tourism industry (USAID, 2013). There are opportunities in WMAs, however, to explore and tap into other sources of income, especially those deriving from local resource uses.

For example, the Ikona WMA in northern Tanzania adjacent to Serengeti national park, has a higher number of tourists than the four WMAs in southern Tanzania between the Selous Game Reserve and Mozambique border (Mbarang'andu, Nalika) which have lower numbers of tourists primarily because of dense forests that limit wildlife viewing opportunities, remote location and relatively poor infrastructure. The annual revenue in

Ikona WMA from tourism activities has steadily grown since its establishment. From 2007 to 2012, the combined value of yearly revenue from game viewing tourism has risen from about US\$ 63 000 to US\$ 915 000 and for hunting tourism the WMAs have earned yearly combined revenue totals that ranged between approximately US\$ 61 500 TO US\$ 198 000 (WWF, 2014).

2.9 Perception of Local Communities towards WMAs Benefits

The commitment of local communities to protected areas is essential for conserving biodiversity (Songorwa, 1999). Aswani and Weiant (2004) claim that, when local communities are excluded from Protected Areas (PA) management and their needs and aspirations ignored, it becomes extremely difficult to enforce conservation policies. However, it is not clear to what extent the involvement of local communities in PA decision-making processes in general contributes to enhance compliance of local communities with PA policies (Wilshusen *et al.*, 2002; Mascia, 2003; Pretty and Smith, 2004). There is some evidence suggesting that local communities are more likely to comply and to commit themselves to long-term conservation strategies, when their knowledge and opinions are incorporated into PA decision-making processes (Fu *et al.*, 2004; Gelcich *et al.*, 2005).

In most of the developing countries recognition of local community participation has resulted into the formation of various programs, which promote public participation in planning, decision-making, and management of different conservation initiatives including protected areas. However, the success of individual conservation measure or program depends on its effect to individual households or communities (Wapole and Godwin, 2001). Thus, the attitude and perception of communities towards conservation initiatives are important for sustainable management of natural resources. Perceptions of the local

community towards a given natural resource management programme is important; hence it needs to be not under estimated (Logomo, 2009). A number of studies show the importance of using local community's perceptions as an input for designing and applying an appropriate management plans for sustainable development, particularly in reserved areas (Kleftoyanni *et al.*, 2010). The current conservation debates put high emphasis on the need to integrate the views and needs of local communities in conservation process. Therefore, despite extensive knowledge about PAs management (Chape *et al.*, 2008), there is still little agreement about how fulfillment with PAs policies could be better achieved, due to the fact that local communities are the ones which interact with natural environment on daily basis as their major source of livelihood.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Description of Study Area

3.1.1 Location

The study was conducted in Pawaga-Idodi and Ngarambe-Tapika WMAs as shown in Fig. 2 below. The area has an exceptionally high variety of habitats including Miombo woodland, open grassland and swamps.

Pawaga-Idodi is known as a successful WMA, the area falls between latitudes 6.9°S to 8.0°S and 34.8°E and longitudes 35.7-E located in Idodi and Pawaga Divisions of Iringa District, Iringa Region, Tanzania (WWF, 2014). The southern boundary of Ruaha National Park forms the northern boundary of the WMA and to the south it is bound by the grazing lands of Idodi Division and by the grazing lands of Pawaga Division. Pawaga-Idodi was established in 2003 and gazetted in the year 2007 with land allocated by 21 villages namely: Isele, Kisanga, Kinyika, Magombwe, Mbugani, Mahuninga, Kitisi, Makifu, Tungamalenga, Mapogoro, Idodi, Malinzanga, Nyamahana, Mafuluto, Luganga, Magozi, Ilolo mpya, Mbuyuni, Kimande, Itunundu and Mboliboli (MBOMIPA, 2006). Today, Pawaga-Idodi consists of 776 km².

Ngarambe-Tapika WMA falls between latitudes 39°S to 39°30'S and longitudes 12°30' E to 13°E located in the Rufiji District, Coast Region, Tanzania. It covers an area of 731km² and it was established in 2003 and gazetted in the year 2006 with land allocated by two villages (Ngarambe and Tapika) that are located south of the district at the southeast edge of Selous Game Reserve (WWF, 2014). Ngarambe-Tapika WMA is a healthy and productive ecosystem dependent on freshwater inputs and annual flood cycles. The areas' pristine Miombo woodland and surrounding Kichi forests and Lung'onja plains serve as a critical dry season refuge for a range of important wildlife, including elephants (*ibid*).

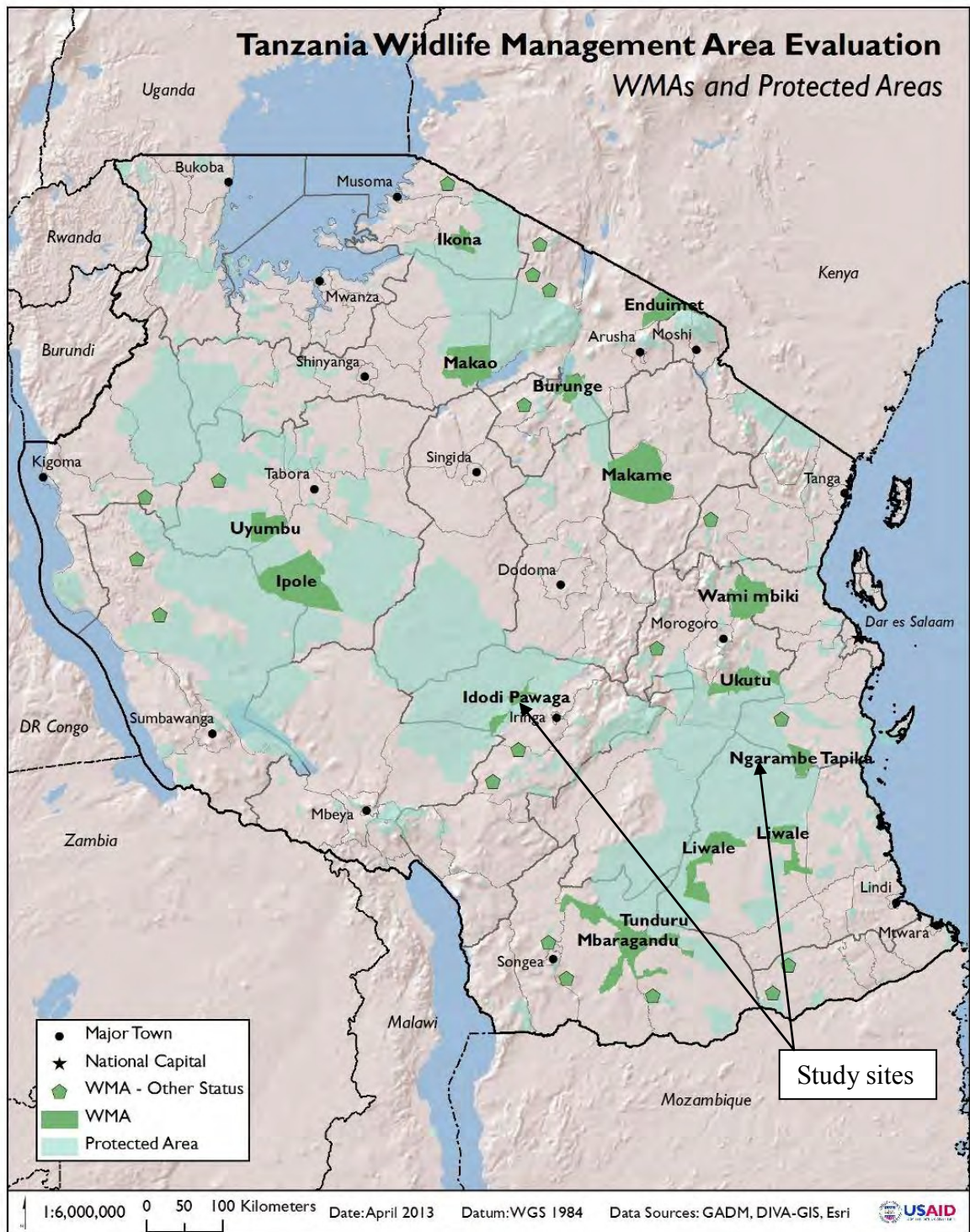


Figure 2: Location of study areas (adapted from googlemap.com)

Criteria for selecting Pawaga-Idodi and Ngarambe-Tapika WMAs

Both WMAs are among the first piloted WMAs established since 2003 and first to attain the status of user right (consumptive and non-consumptive use) (WWF, 2012). The two WMAs are supported by World Wide Fund for Nature (WWF), Authorized Association Consortium (AAC) and Wildlife Conservation Society (WCS). They support the WMAs get from different non-governmental organization conservation education, and funds to support the formation process and implementation of WMAs.

They are among the successful WMAs since their establishment and also they are located in different types of protected areas. Pawaga-Idodi borders Ruaha national park and Ngarambe-Tapika borders the Selous Game Reserve. Thus this support and location has influenced the dynamics of the two WMAs in terms of opportunities, challenges, threats and accessibility.

3.1.2 Climate and altitude

Pawaga-Idodi WMA and the surrounding area have wet season mainly between November and May with rainfalls varying from the southern highlands towards the northern areas around Mtera dam (Nahonyo *et al.*, 1998). Records indicate the southern highlands receive an annual average rainfall of between 750 and 1000 millimeters and drops gradually towards the northern areas (MNRT, 1998). The same further reported high temperatures all year round which reach 44°C in the dry season. Day temperatures are recorded to be quite hot in the dry season with relatively cool nights. Likewise, humidity in the dry season is relatively low with an increasing trend in evapotranspiration potential over the past decade records reaching 3260 millimeters per annum (SWECO, 1985 cited in MBOMIPA, 2006).

The landscape of the Ngarambe-Tapika WMA is largely defined by the tropical climate of the area with temperatures ranging between 13°C- 41°C with higher temperatures in the southern lowlands around Ngarambe village and Kingupira camp, and lower temperatures in the north-eastern Kichi hill forest as well as the higher altitude areas in the centre of the WMA (LUP, 2002). The area has a unimodal rainfall pattern with annual precipitation around 750 mm. The dry season begins in late May and lasts until early November when the beginning of the rainy season is marked by torrential storms normally towards the end of the month (McGinley, 2008).

3.1.3 Population

Pawaga-Idodi WMA has a population of 10 202 people with average households of four (NBS, 2012). The dominant ethnic group is the Wahehe, Wagogo, Wabena, Wakinga and Wasukuma (WWF, 2014). Ngarambe-Tapika WMA has a population of 5878 people with average households of 4.4 people (NBS, 2012). The dominant ethnic groups are Wangindo, Wamatumbi and Wapogoro.

3.1.4 Socio-economic activities

Agriculture is the main economic activity practiced by the local communities around Pawaga-Idodi. Approximately 95 percent of population in Pawaga-Idodi practices mainly mixed farming at the subsistence level in the lowland zone and livestock management (MBOMIPA, 2010). The crops that are grown in the area are maize, rice, simsim and Irish potatoes. The reason behind such diversity of crops is likely to be due to the area being rich in drainage network and forms catchments to major drainage lines including Rufiji, the Great Ruaha and the little Ruaha rivers (*ibid*). Other major rivers include Tungamalenga, Mahuninga, Kitanewa and Idodi rivers. Except for the great Ruaha, the rivers flow all year round and provide water for irrigation, fishing and domestic use. In

addition, the great Ruaha is reported to flow seasonally over the past few years (MNRT, 1998). The land is generally flat especially in the north and central parts and most of it located in the rift valley. The southern and eastern parts are hilly with undulating landscape, inselbergs are common on the low lying areas; there are black alluvial soils.

There is no livestock grazing in Ngarambe-Tapika WMA area, and the most dominant land use is agriculture. Nearly, all households have agricultural plots which are located close to or within half an hour walk away from the settlements (LUP, 2002). The most common crops are rice, maize, millet, simsim, groundnuts and cassava. All of these crops are primarily grown for subsistence, with the exception of simsim, which are commonly sold for cash. The crop diversity in the areas is influenced by the presence of enough rain and soil type of the area. In addition to agriculture, some forestry and beekeeping are also practiced. Besides from subsistence firewood gathering and some charcoal production by the villagers, commercial loggers from nearby towns and cities are the main exploiters of local forests (*ibid*).

3.1.4 Wildlife

Wildlife species present in the areas, include high density of ungulates such as Wildebeest, Elephant, Buffalo, Zebra, Giraffes, Impala, Common waterbuck, Sable Antelope, Hartebeest, Warthog, Hippopotamus. There are also carnivores such as Hyena, Lion, Leopard, Wild dog and Cheetah and different bird species.

3.2 Methods

3.2.1 Research design

Non-experimental research design was employed, where the cross sectional research technique was adopted in this study as it allows data to be collected at a single point in time without repetition from the representative sample. The reason for the choice of such a

design is that, it is appropriate for descriptive study and for determination of relationship between and among variables but also it is easier and economical to conduct research especially where there are resource constraints like time, labour and money and gives opportunity to capture uniformly a wide range of cross-sectional data (Namwata *et al.*, 2012).

3.2.2 Sampling procedure

3.2.2.1 Sampling design and intensity

Purposive samplings of four villages out of the twenty three covering the WMAs were taken. There were two WMAs and two villages from each WMA were selected. Ngarambe and Tapika villages for Ngarambe-Tapika WMA, and Tungamalenga and Kitesi from Pawaga-Idodi WMA. Selection criteria of the study villages were based on the fact that Ngarambe and Tapika are the only villages making up the Ngarambe-Tapika WMA. Tungamalenga and Kitesi villages for Pawaga-Idodi WMA were chosen because they have experience with community-based tourism operated by prominent safari companies.

3.2.2.2 Sample size

The sampling frame was the updated lists of households' registers in the villages of the study. The sampling unit was a household. A household refers to a single person or group of people who live, eat together and share common living arrangements (URT, 1994). A random sampling intensity of at least 5% was used to determine the sample size of the households interviewed in each village as described by Kayunze (1998). However, that sample size was not less than 30 per village. Overall, a total of 120 households were interviewed. According to Matata *et al.* (2001) 80-120 respondents are adequate for most socio-economic studies in Sub-Saharan Africa households. In each household, a head of household or member aged above 18 years was interviewed.

3.3 Data Collection

Both primary and secondary data were collected. Hence different methods of data collection were used.

3.3.1 Primary data collection

Primary data were collected through household interviews using questionnaires, Key Informants and Focus group discussions. A reconnaissance survey was carried out prior to actual data collection to provide a general picture of the research area and choice of villages.

3.3.1.1 Questionnaires survey and pre-testing

The semi-structured questionnaire with both closed and open-ended questions designed to capture both qualitative and quantitative data was used (Appendix 1). Before embarking on the major survey, pre-testing of the questionnaire was conducted to ten households in a neighbouring village to check the reliability of the questionnaires, ability and likelihood of the interviewees in understanding and answering questions and minimize possibilities of missing relevant information. Some questions were then modified, dropped or added to get the right instrument.

Some of the issues covered through questionnaires included the economic opportunities present in the area, socio-economic contribution and the local community perceptions. Such issues were captured by asking questions like what are the economic activities present in your area, what factors led to the failure/success of the WMA, challenges faced and benefits earned from having WMA in your area, and community conservation aspects/issue. Some of the questions were to capture demographic characteristics of the household which are useful to relate with socio-economic responses.

3.3.1.2 Focus Group Discussions (FGDs)

Semi-structured participatory discussions were conducted with a small, but variable number of discussants between 6-8 (Byers, 1996). Checklists were used to guide focus group discussion (Appendix 3). Two focus group discussions one from each WMA with 10 people of similar backgrounds and experiences (e.g. female, males, head of household, Natural resources leaders) were considered. The participants were asked on how they perceived the implementation of the WMA on their village land, awareness of the use of revenues paid to the WMA by investors and its uses in socio-economic development at village level. Also were asked to mention contribution of WMA to the village. The respondents were further asked on mechanisms which they thought are required to be in place to make the WMA effective and sustainable. Such information helped to supplement the information obtained from household interviews.

3.3.1.3 Key Informants Interview

Unstructured interviews were conducted with key Informants. Checklists were prepared for each category and used to collect information from the key informants (Appendix 2). This involved interviewing 2 District Wildlife Officers, 2 WMAs Officers, 4 Village Game Scouts, 4 Village leaders and 4 knowledgeable elders. The information intended captured the stream of revenues generated and contributions made by the WMA to local communities' livelihood in their perspective, WMA opportunities, challenges and strategies to promote the WMAs. The WMAs chairpersons provided information on the financial trend of the respective WMA since their establishment.

3.3.2 Secondary data

The study involved collection of secondary data to support primary data. This was reviewed from the financial reports and General Management Plans (GMP) of the two

selected WMAs. Other documents were obtained from village and district offices, documentary reports from district office, internet, books and journals, literature from Sokoine National Agricultural Library (SNAL) especially previous studies.

3.4 Data Analysis

3.4.1 Qualitative data analysis

Qualitative data that emerged from the verbal discussions with key informants and focused group discussion respondents were analyzed by using Content structural analysis method. The details of the components of verbal and dialogue discussions which were held with different respondents were broken down into smallest meaningful units of information with an idea to reduce the total content of communication to a set of categories that represent some characteristics of research interest.

3.4.2 Quantitative data analysis

Descriptive statistics was performed for quantitative data. Statistical Package for Social Sciences (SPSS) and Excell spread sheet computer packages were used to analyze the data. Questionnaires were coded to facilitate entry in the computer. The analysis of information on perceptions of the respondent towards WMAs, socio-economic characteristics of respondents, sources and trend of WMAs revenue where analyzed descriptively into means, frequency, and percentages and presented in tables and graphs.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSIONS

This chapter presents results and discussion on economic opportunities, sources and trend of revenue, economic contribution of WMAs and communities' perceptions on WMA benefits.

4.1 Socio-economic Characteristics of the Respondents

The socio-economic characteristics of the population sample for the two surveyed WMAs are summarized and presented in the Table 1. The socio-economic characteristics of respondents examined in this study were sex, marital status, age group, household size and education level. The purpose of choosing these characteristics was to get a general overview of what the respondents are composed of and how these characteristics could influence conservation (WMA) practices towards poverty reduction in the study areas.

Table 1: Socio-economic characteristics of respondents (n=120)

Variable	Characteristics	Frequency	Percentage
Sex	Male	68	56.7
	Female	52	43.3
Age Group	18-37	63	52.5
	38-57	52.7	43.3
	58-77	5	4.1
Marital Status	Married	99	2.5
	Single	11	9.2
	Widow	5	4.2
	Divorced	5	4.2
Education level	Illiterate	25	20.8
	Primary	80	66.7
	Secondary	9	7.5
	Collage	6	5

4.1.1 Sex of respondents

Results show that the highest percent of respondents (56.7%) were males, while 43.3% were females (Table 1). The possible explanation for this trend is that high proportions of males in the study area were heads of households compared to females. However, males were most likely interviewed simply because the household was the sampling unit and the males were the heads of households regardless of the fact that many household activities were done by females. This is common in African traditions where most societies are patrilineal, and in such circumstances, men are in most cases the head of the households. Sometimes, females had to respond on behalf of their husbands due to some special excuses like absence. Similar findings by Emmanuel (2013) reported that in cases where both wife and husband were available, the husband was interviewed because the researcher aimed at interviewing the head of the household.

Furthermore, the study results are different from that of Moswete (2009), on Stakeholder perspectives on the potential for community-based ecotourism development and support for the kgalagadi transfrontier park in Botswana, where there were more females (55%) than males (45%) respondents and the reason for such results could be cultural and timing, since during the time of the survey males were at work in farms, fields, cattle-posts, while females stayed home attending household chores and children. Also, in rural Botswana, it is common for men to out-migrate to other towns and villages in search of job opportunities.

4.1.2 Age group of respondents

The findings revealed that 52.5% of respondents lies in the age bracket of 18-37, 43.3% in the 38-57 age brackets and the 58-77 age group being least and constituted 4.1% of the total sample (Table 1). The age ranged between 18 and 70 years, while the average age

was 44 years with the youngest respondent being 18 years and the oldest was 70 years of age. This indicates that most of them were still in their middle age and likely to be receptive and active to conservation activities and can afford to carry out various productive activities as they engage themselves in different opportunities. On the other hand, low percentage in the category of 58-77 years of age is a clear indication that a small percent of the people in the village are aged and dependent, so they were living with other family members. A similar finding was observed by Emmanuel (2013) in the respondents' age structure, which showed more than half of respondents were aged between 25 to 60 years old. This suggests that the district had more active working age group. Furthermore, Mandara (1998) considered economically productive age from 18-60 years. The age group above 60 was considered a high dependency ratio age structure which economically is less productive.

4.1.3 Respondents marital status

Findings show that 82.5% of the respondents were married, 9.2% single, and 4.2% widowed and 4.2% divorced (Table 1). The highest percent grabbed by married couples, which is a common phenomenon in most rural areas in Tanzania. On the other hand, the low percentage of single respondents is a reflection that was observed in the youthful age category of 18-37 years, and again low percentage to widow and divorced which is likely that the respondents were females who were left alone after their husbands had died and others divorced. Similar findings are reported by Emmanuel (2013) that marriage has an effect on the production as it increases labor availability in the household for sharing in income generating activities between husbands and wives and other family members. In addition, Muywanga (2004) reported that married couples are likely to be more productive than single persons due to labor supply, hence household well-being. This is also an

indication of the African belief in some areas that four hands can produce better than two hands (Zinjama, 1986).

4.1.4 Respondents' education level

The findings show that majority (66.6%) of the respondents had attained primary education, 20.8% illiterate, 7.5% secondary education and 5% collage education (Table 1). Generally, most of the respondents were educated which implies that they have knowledge for someone to understand and adopt new conservation interventions, but also read from books and newsletters and other sources of information. The large percentage (66.6%) in Table 1 of primary education level among respondents is typical in many rural areas and is likely to be a product of the philosophy of Universal Primary Education (UPE). Again, the illiterate group constituted 20.8% and is likely because most of household heads were aged people who did not attain formal education thus likely to come across them. The percent of respondents with secondary school was small (7.5%) due to shortage of secondary schools in the villages. For example, in Ngarambe and Tapika villages there was no secondary school. Other factors that contributed to poor secondary school attendance include long walking distances to school as observed in Tungamalenga and Kitesi villages and inability of parents to pay for school fees. The low percent of respondents that had college education is likely due to lack of money for the parents to pay school fees and the fact that those who managed to go to college would not be interested to remain in villages where good social services and well paid jobs were scarce. Similar findings were observed by Nshubemuki (2009) in the study on the role of joint forest management in Ruvu north forest reserve on the livelihood of the participating communities who revealed that the majority of respondents (65.6%) had primary education, 32.8% had no formal education, while 1.6% had ordinary level secondary education. Moreover, Kamwenda (1998) pointed out that level of education is considered

as an important factor in relation to natural resource utilization and conservation. The increase in education level also increases options of respondents to identify livelihood options (Mayeta, 2004). Moreover, Maro (1995) reported that primary education can foster human creativity, community readiness to integrate innovations into sustainable use of natural resources and management. In addition, Munishi *et al.* (2007) and Kideghesho *et al.* (2007) reported that better educated residents have access to better employment and that education has a direct influence towards peoples' participation in conservation activities. Generally, education creates awareness, positive attitudes, values and motivation for better natural resources management among the people.

4.1.5 Respondents' household size

Respondents' household size in Pawaga-Idodi and Ngarambe-Tapika WMAs are indicated in Figure 3. Household size was categorized into four groups; 0-4, 5-9, 10-14 and above 14 household members.

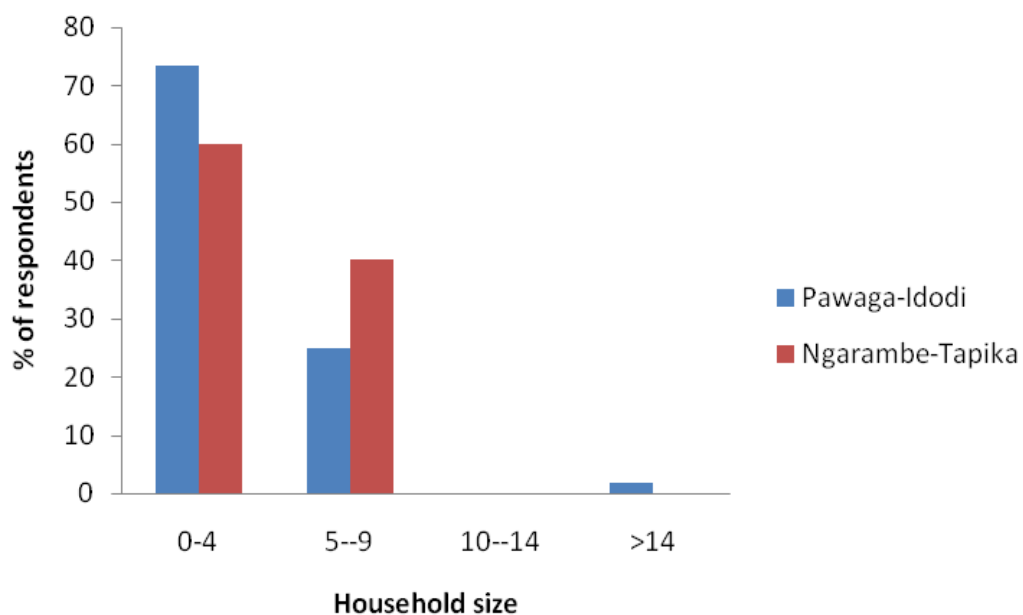


Figure 3: Percentage distribution of respondents' household size

Results show that 73% of households in Idodi-Pawaga WMA had household sizes of a range between 0-4 members, and 25% (5-9) and 2% (>14) household members (Figure 3), whereas at Ngarambe-Tapika WMA, 60% of respondents had household sizes of a range between 0-4 and 40% (5-9) (Figure 3). This depicts that majority of respondents in the two WMAs have household sizes ranging between 0-4. Most likely, they are aware that having many children is a burden to them in fulfilling daily household basic needs. As shown from the results, only 2% of all 120 respondents declared that household size was greater than or equal to 14. This in most cases is explained to be found in households having more than one wife (2 to 3) and each one having several children. Similar results was observed by Nshubemuki (2009) who reported that majority of respondents (37.7%) had household size of 4 to 5 people, 23.8% had 3 people or less, 19.7% had 6 to 7 people and 18.9% above 7 people.

4.2 WMAS Economic Opportunities and Factors that Influence their Performance

4.2.1 Responses on WMAs economic opportunities

According to the respondents several economic opportunities such as hunting tourism, photographic tourism, lodges and camp sites were identified (Table 2).

Table 2: Responses of household heads on economic opportunities

S/ N	Economic opportunity	Pawaga-Idodi (n=60)		WMA		Ngarambe- TapikaWMA (n=60)				Total (n=120)			
		Yes		No		Yes		No		Yes		No	
		F	%	F	%	F	%	F	%	F	%	F	%
1	Hunting tourism	43	71.67	17	28.33	41	68.3	19	31.67	84	70	36	30
2	Photographic tourism	13	21.67	47	78.33	0	0	60	100	13	10.83	107	89.17
3	Tented camps	5	8.33	55	91.67	1	1.67	59	98.33	6	5	114	95
4	Lodges	12	20	48	80	0	0	60	100	12	10	108	90

The results indicate that four different economic opportunities appeared to be known to the respondents in the two study areas. The economic opportunities identified include hunting tourism (70%), photographic tourism (10.83%), lodges (10%) and camp sites (5%) (Table 2). This shows that hunting tourism is much familiar with the respondents as an economic opportunity in the study areas than the other opportunities. About 35% of Tanzania's land area is used as tourist hunting blocks, and of this area about half of all blocks are located on village lands where local communities reside (Sulle *et al.*, 2011). Hunting concessions ('blocks') are leased by the Wildlife Division through five year lease agreements with private hunting companies (*ibid*).

According to Igoe and Croucher (2007), tourist hunting in Tanzania is a recognized industry with a long history and in recent years, the industry has been growing tremendously. It is now one of the main sources of income in many areas in the country, as well as a source of foreign currency into Tanzania. There are more than 130 hunting concessions in Tanzania, operating in areas covering over 200 000 km², which are being rented out to hunting outfitters holding a license to carry out tourist hunting. Over 60 animal species can be hunted with a tourist-hunting license. The Wildlife Division earns around 10 million US dollars per year on its concessions (Igoe and Croucher, 2007).

Furthermore, Southwick Associates (2014) on Economic Contributions of Georgia's Wildlife Management Areas in 2013 showed that the activity most frequently participated in WMAs by both residents and nonresidents is hunting. There are an estimated 105 000 residents within the target visitor group who hunt on WMAs with an average of 14.9 days per year for a total of 1.6 million days annually and an estimated 6600 nonresidents within the target visitor group who hunt on WMAs with an average of 11.6 days per year for a total of 76 000 days annually (Southwick Associates, 2014).

It is apparent from the results that hunting tourism as an economic opportunity in the areas was mentioned by 71.1% and 68.3% in Pawaga-Idodi and Ngarambe-Tapika WMAs respectively (Table 2). In comparison, Pawaga-Idodi has higher percentage than Ngarambe-Tapika. Pawaga-Idodi WMA has an investor that is carrying out hunting activities in the given hunting blocks whereas Ngarambe-Tapika WMA lacks an investor.

Photographic tourism is the second mentioned opportunity (21.7%) known by respondents only in Pawaga-Idodi WMA and was not mentioned in Ngarambe-Tapika WMA (Table 2). This can be explained by the minimal earnings from photographic tourism investments in the WMA. This is due to lack of legitimate contracts between investors in tourism lodges (in Tungamalenga) and the AA or villages in which the investments have been made. Another reason that favours Pawaga-Idodi WMA to practice photographic tourism is due to its location being along the road to Ruaha National Park, whereby the tourists visiting Ruaha national park make a stop to the villages especially Tungamalenga where varieties of tourist attractions such as of cultures (curio shops), traditional ngomas are presented by the villagers. As reported by Nelson (2007), Burunge WMA is also located in an important migratory corridor between Tarangire and Lake Manyara, particularly for species such as elephant, buffalo, zebra and wildebeest, which regularly move between the two areas. The main Arusha-Dodoma trunk road cuts through the member villages. Due to its positioning along this road and between two of the main National Parks in Tanzania's northern tourism circuit, Burunge WMA has the greatest commercial potential for tourism than any existing WMAs in Tanzania. Based on this case, tourism is already at an advanced stage of development in this WMA, with a total of four lodges or permanent tented camps, which generate considerable earnings.

Results showed (0%) to Ngarambe-Tapika, most likely because the respondents are not aware of this opportunity and is not practiced in their place. As for a place to conduct

photographic tourism the area need to have several influencing factors such as accessibility, proximity to other major tourist attractions (such as national parks or Ngorongoro), the visibility of the WMA's wildlife and the presence of other attractions such as scenic vistas of which Ngarambe-Tapika is poor in these.

In addition, tented camps and lodges were found to be among the economic opportunities known by the respondents. As it is presented in Table 1, based on respondents in Pawaga-Idodi, 5% mentioned tented camps while 12% mentioned lodges whereas Ngarambe-Tapika had (1%) for tented camp and (0%) for lodges. The relatively high response for Pawaga-Idodi was also reflected by the observation in one of the sampled village; Tungamalenga which was found to have about three different campsites and lodges as follows; Community Development hostel at Kimande, Guest houses at Itunundu and Tungamalenga villages, Tungamalenga camp, Hill Top and Sunset Mountain Lodges and Tandala tented camp.

4.2.2 Factors influencing WMAs performance

A number of factors were identified from the respondents as essential for success or failure of the WMA. At Pawaga-Idodi WMA, household respondents revealed that presence of investors which stimulate different economic opportunities in their area plays an important role on the success of the Pawaga-Idodi WMA because they get revenue from them and at the same time communities get the benefit shared.

Results from key informants in Pawaga-Idodi WMA pointed out that money obtained as benefit share from WMA revenue supported 42 students (2 from each village member) to secondary school. The support was in form of tuition fee TZS. 23 060 500 in a period between 2008-2011 and four students in Ngarambe-Tapika WMA. Pawaga-Idodi WMA managed to employ 37 VGS from within the villages.

Apart from success factors, respondents also pointed out a factor that in one way or another led into failure of the project. One of the factors mentioned is conflict that the WMA has with the investor in the photographic tourism block. Another factor that was raised by the respondents is on lack of skilled professional personnel. Currently Pawaga-Idodi and Ngarambe-Tapika WMAs lack professional employees who will help in building up the project especially for treasurer and WMA manager.

4.3 Sources and Trend of Revenue in the WMAs

4.3.1 Sources of revenue

According to the respondents, sources of the WMAs revenue were mentioned as follows: hunting tourism, photographic tourism, campsites, fines, donor supports and lodges (Figure 4). The results show that 63% of respondents indicated hunting tourism as main source of WMA revenue, fines was reported by 13%, followed by photographic tourism (11%), campsites (8%), donor support (3%) and lodges (2%) (Figure 4).

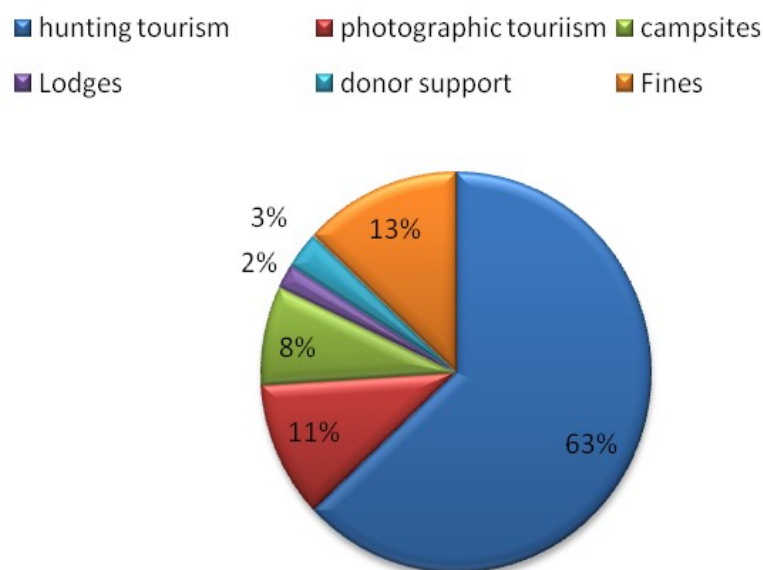


Figure 4: Percentage of respondent's response on WMA revenue sources

The results show that the respondents are aware of what is the main source of their WMAs revenue. The findings are similar to those of secondary data that were obtained at the office of the WMA (Table 3). According to the field data, between 2007 and 2014, a total of TZS 876 566 010 (Table 3) were realized from different sources mainly photographic tourism, hunting (domestic and tourist), villages conservation fee, central government 25% benefit sharing, lodges and campsites, hunting block fee, donor support and other miscellaneous.

Table 3: Sources of WMA revenue at Pawaga-Idodi (2007-2014)

Source of Revenue	Amount in TZS	%
Hunting tourism	545 200 000	62.2
villages conservation fee	10 500 000	1.2
Government 25% benefit share	77 519 057	8.84
Photographic tourism	1 623 303	0.2
Lodges and campsites	192 994 750	22.01
Block fee	9 310 000	1.06
Donor support	13 239 000	1.8
Miscellaneous	14 303 900	1.63
Total	876 566 010	100

The results show that, 62.2% of the revenue came from hunting tourism as the main revenue source (Table 3). Although hunting tourism is seasonal, it is seen to be the major contributor to the revenue collected. It is the main activity attracting foreigners, covering a large area and therefore has the potential to have many hunting blocks.

Lodges and campsites is the second contributor (22%) to the WMA revenue as reported in Table 3 for the period of 7 years (2007-2014). Many lodges and campsites are constructed in Pawaga-Idodi WMA in Lunda resource use zone. Pawaga-Idodi generate higher income due to its location near national park and earnings to the WMA come from land rent and bed-night fees from tourists visiting the Parks.

The government 25% benefit sharing from tourism hunting activity is released to the WMA each year of the hunting season. It is ranked 3rd in contribution to WMA revenue as indicated by 8.8% of the total (Table 3). The reason behind this small percentage is that the government is not releasing the 25% of the benefit sharing to the WMAs in each year as stated in the 2007 Wildlife Policy. It was pointed out that the WMA has received its share for four years since the WMAs received its user rights in 2007.

Also, results about 1.8% of the total revenue came from donor support (Table 3). The pilot projects in Tanzania have generally been driven with funding from international donor agencies and facilitation by NGO's. For example, the World Wildlife Fund (WWF) has been a key player in capacity building and land use planning and management. Generally, NGO's are potentially powerful actors as they can push communities into certain decisions and can provide material benefits and employment.

The results are supported by Tynneron (2009) that rural communities in the Burunge WMA were sponsored by a number of institutions and organizations. The Land Management Program (LAMP) which was started in 1991 and supported by the Swedish International Development Co-operation Agency (SIDA) has contributed in terms of technology, knowledge and funding for such things as land use planning, seminars and training on wildlife management, village scouts and women groups. From this observation, it can be said that different institutions and organizations both local and international donors are among the sources of WMA revenue, and they contribute to local communities in different aspects.

The villages making up WMAs have to contribute a certain amount to the WMA to support in conservation activities. Therefore, the result shows that 1.2% of WMAs total revenue was contributed from this source at Pawaga-Idodi WMA.

Block application fee as one of the source of revenue to WMAs contribute at about 1% of the total (Table 3). This fee is paid after every 5 years because the time for owning a hunting block is for five years.

Photographic tourism was the last contributor to the WMA revenue by 0.2% of the total (Table 3). This source gives significantly low contribution to the revenue. The main reason for this is a lack of legal contracts between investors in tourism lodges (in Tungamalenga) and the AA or villages in which the investments have been made.

4.2.2.1 Trend of Pawaga-Idodi WMA revenue

The trend revenue for Pawaga-Idodi WMA from different sources combined from year 2003/04 to 2014/15 presented in the Figure 5.

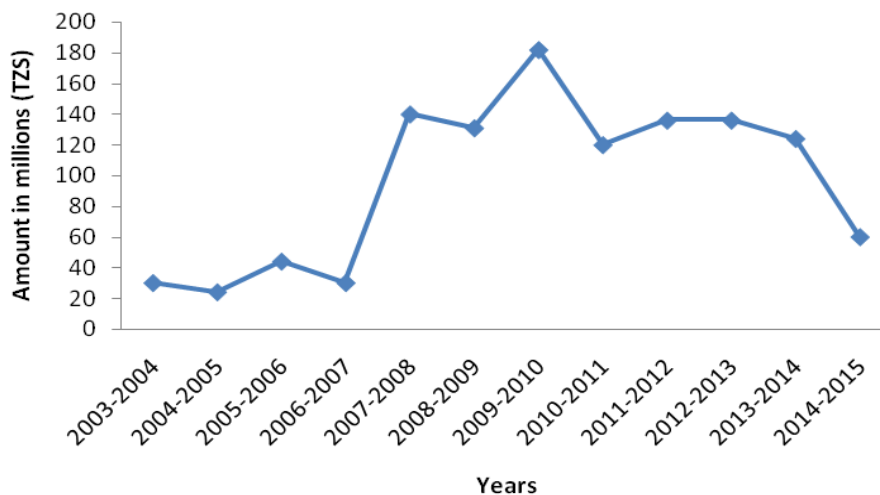


Figure 5: Trend of Pawaga-Idodi revenue collection

The results show that, between 2003 and 2006, Pawaga-Idodi was generating low revenue (Figure 5). This is because at that time it was working as Community Based Organisation (CBO), and had not attained the AA status which allows the WMA to conduct different economic activities that will enable it get revenue. Therefore its revenue in that period was from donor and government support. In 2007-2010 results show a dramatic increase of

revenue (Figure 5). Then, there was a gradual fall in revenue in 2010 to 2014 and thereafter falling gradually (Figure 5).

Overall, revenue collection over years showed an increasing trend for Pawaga-Idodi especially between 2007 and 2010. The WMA attained its user rights in 2007 that allowed them to attract investors to come and invest in their place. The increase is probably due to their bargaining power and more rights on resources being assigned to different economic opportunities. Another reason that made Pawaga-Idodi gain higher revenue over time is due to its location. As pointed out earlier, it is located along the road to Ruaha national park where tourists pass in the village and tourism is conducted there. This has provided other opportunities such as lodges and campsites constructions and some of the tourists prefer to spend their night there.

Similar results were reported by Sulle *et al.* (2011) in Enduimet WMA which lies in an area of high potential for tourism adjacent to Mount Kilimanjaro, one of the Tanzania's most popular tourism sites, and the Namanga border crossing with Kenya, which is one of the main thoroughfares for tourists. Since its establishment in 2007, the WMA has been able to generate significant revenue from tourism, mainly coming from permanent tented camp located in Elerai village (*ibid*). Therefore, from these results it can be argued that WMAs that are positioned close to national parks generate more revenue due to the economic opportunities created by being close to the parks.

Contrary to that, in 2010-2015 Pawaga-Idodi experienced drastic fall in revenue primarily due to legal and contractual conflicts with tourist companies both hunting and photographic and disputes between villages (Idodi, Kitisi and Malinzanga) over benefit

sharing. Also, the fall of revenue was brought about by the lack of its 25% of benefit share from the government which also is a source of revenue to WMA.

4.2.2.2 Trend of Ngarambe-Tapika WMA revenue

The trend revenue of the WMA from different sources is presented in the Figure 6. Ngarambe-Tapika WMA collected a total of about TZS 210 025 000 from the year 2003-2015.

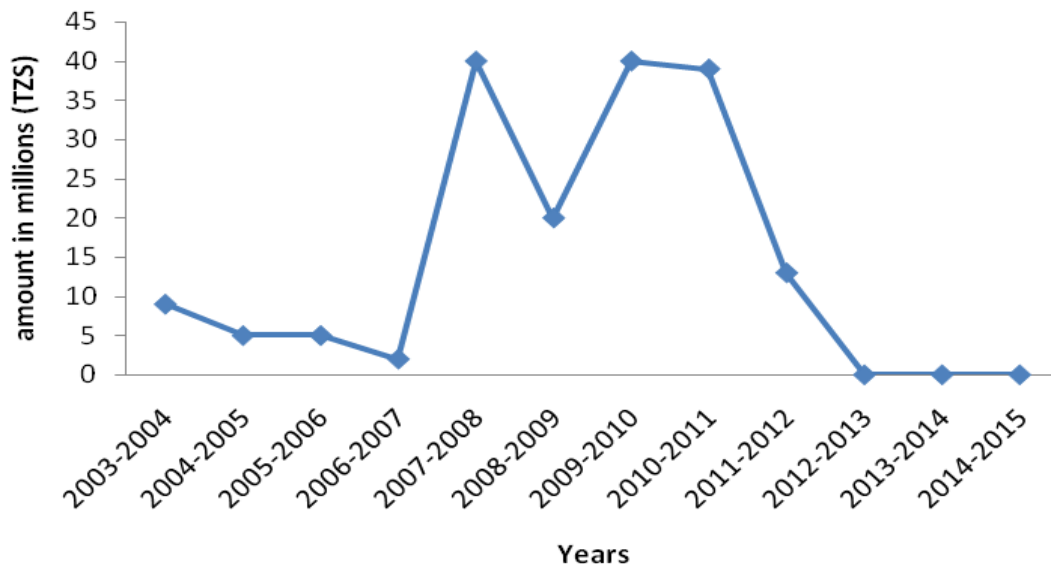


Figure 6: Trend of revenue collection (Ngarambe-Tapika WMA)

The results show that there was low revenue collection from 2003 to 2006, then there was an increase in revenue in the years between 2007 to 2010 though a fall in revenue is seen in the year 2008 (Figure 6). And from 2011 to 2015 the revenue showed a drastic fall. In 2003 to 2006, the low revenue collection is explained by the fact that the WMA by then was working as CBO that was driven as a pilot study under donor support and also it had no user rights. Soon after the WMA got its user right in 2007 it started generating revenue. Thus in the year 2007 to 2010 WMA had raised its revenue from its economic activities being carried out in the area especially hunting tourism and the 25% of government

benefit sharing. There is a drastic fall of revenue in 2008 which is explained by the conflict that rose between the investor and the AA. The conflict was resolved and the WMA was getting its revenue. As for Ngarambe-Tapika WMA, in the year 2011-2015, drastic fall of revenue was apparent. This is explained by the presence of a conflict with the investor and since then to date no economic activity is conducted in the area hence, there is no collection of revenue (Figure 6).

4.3 Socio-economic Contribution of WMAs to Member Villages

All revenue passed from the WMA to the villages goes through a standard Village Council allocation and Village Assembly approval process, then is used to invest in social services, with most investments allocated for education, water and other services.

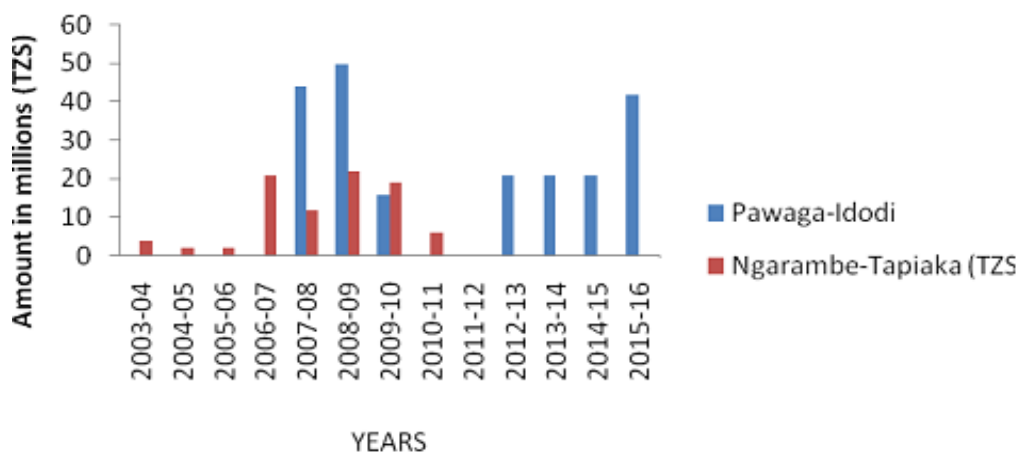


Figure 7: Contribution of WMAs to villages in monetary term

Results show that, in the year 2003-2007, Pawaga-Idodi WMA member villages were not receiving money because it had not yet attained its Authorized Association (AA) status which gives them mandate to conduct different economic activities and accommodating investors (Figure 7). Therefore after obtaining this status in 2007 Pawaga-Idodi started generating revenue and its member villages started getting their share and significantly

larger than Ngarambe-Tapika WMA (Figure 7). Again, in 2010/12 (Figure 7) the member villages did not get their share and this was due to legal and contractual conflicts with four tourist-hunting companies and disputes between villages over benefit sharing as reported earlier.

Pawaga-Idodi distributes the money into different ratios to the member villages, as Pawaga-Idodi is divided into two groups of member villages, fourteen that have contributed land to the WMA and seven that contributed none. Therefore, land contributors get 70% of Pawaga-Idodi income and for the remaining 30% to the villages that contribute none. A significant portion of the money is committed to a large number of community social services depending on the preferences in that year. Such services include health services, schools, construction of village offices, students' bursary. It has generated employment to the surrounding communities whereby about 8 villagers have been employed as village game scouts. This has helped them to earn additional income to sustain their household needs. In addition to generating revenue, tourism development around Pawaga-Idodi provides some local employment and opportunities to sell local goods especially from women's groups that produce and sell handicrafts. The gains from employment and sell of handicrafts play a significant role in poverty alleviation at household level.

For Ngarambe-Tapika WMA, the results also show that from 2003 to 2011 the village members have been receiving money from AA, and in 2011 to 2016 no money was given to the villages. It was observed that in the year the villages were getting money it's because the AA was generating revenue from different sources and shared the benefits with the villages. The money the villages got was used in the development of various

social services such as construction of dispensaries, schools, village office, and paying student bursaries.

However, from the year 2011 to date the WMA member villages are not getting their share because of the conflict the WMA has with its investor. Consequently, the investor is not paying the concession fee and also not operating hunting and camping activities that could enable the WMA get revenue. Also, this WMA has not offered permanent employment opportunities to the villagers instead the village game scouts (VGS) act as temporary employees. When the game scouts conduct patrols, they get allowances to the turn of 120 000 TSZ at an interval of four months. However, as pointed out earlier the WMA is not receiving money from the investors due to conflicts and therefore no allowances are paid to VGS. This implies that in the long run the VGS may not be willing to work and therefore affect conservation efforts and increase unemployment. The result from focus group discussion revealed that WMA provides money to communities to support social services like construction of schools, wells and dispensaries.

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). Similarly, Kaswamila (2012) indicated that the funds from WMA to villages 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.

All the household respondents and focus groups could identify social services and infrastructure built entirely or partially from AA payments to their village councils. These

contributions were delivered to the communities and not to individual households. There was, in fact, a considerable uniformity in the social projects approved, which tended to be related to education, health, or water supply. Generally, AA-distributed money could only contribute to part of the cost of these structures or services.

Similar results were reported by Makupa (2013) responding to the question about whether communities accrued benefits at the household level from Ikona WMA. Interviews with administrators revealed that they currently see no direct conservation benefits accruing to households, but they perceived indirect benefits at the household level. The indirect household benefits reported by WMA administrators include control of problem animals invasions especially elephants, enabling the community to increase crop harvests which in turn adds to the household economy.

4.4 Local people's Perception on WMAs

4.4.1 Perceived attitude towards the existence of WMA

Local communities were asked, if they are happy with the presence of WMA in their village land and the results are as shown in Table 4.

Table 4: Respondent response on existence of WMA

Response	Ngarambe-Tapika WMA (n=60)	Pawaga-Idodi WMA (n=60)	Total (n=120)
Yes	27 (45)	42 (70)	69 (57.5)
No	33 (55)	18 (30)	51 (42.5)

Figures in paranthesis express percentage

Findings show that, 57.5% of respondents in the study areas revealed that they are happy with the existence of WMA in their area and 42.5% were negative on the existence of

WMA in their areas (Table 4). These results indicate that communities have seen the benefit of having a protected area in their region and its importance. These results are similar to those reported by USAID (2013) who did an evaluation of five WMAs and found 80.7% of the respondents felt that the village had done the right thing in agreeing to join the WMA, while only 11.2% did not agree.

Again, about 70% of the respondents from Pawaga-Idodi revealed that they were happy in having the WMA in their land. This is probably attributed to the support they get from the WMA, whereas 30% of the respondents perceived it negatively (Table 4). Regarding Ngarambe-Tapika WMA, 45% of households interviewed revealed a positive response on the presence of the WMA in their place and about 55% perceived it negatively (Table 4). The main reason behind this is probably explained by the conflict the WMA has with its investor who has refused to pay the required fees from his investment. Therefore, it appears that satisfaction or happiness of people with respect to WMA depends to a large extent on what the investor does to the communities.

Comparatively, Pawaga-Idodi respondents were relatively happier than Ngarambe-Tapika (Table 4). This is explained by the fact that Pawaga-Idodi was more successful because the WMA was operating different economic activities that make the villages receive their share (money), while it was different for Ngarambe-Tapika which had few years of revenue contribution to the villages and less economic activities in some of the years (Figure 5 & 6).

4.4.2 Perception on the increase in number of wild animals in their place

Respondents were asked to reveal if they feel the number of animals has increased in their place as a result of conservation efforts.

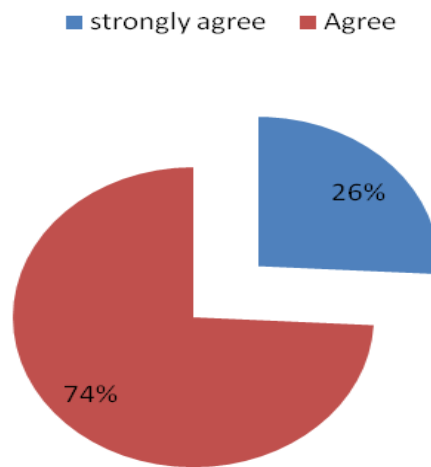


Figure 8: Perception of respondents' on the increase in number of animals

The results revealed that 74% of the respondents have agreed and 26% strongly agreed that wild animals have increased in number (Figure 8). Essentially, the results imply that all respondents have positive attitude and seem to perceive a difference in number of animals before and after the implementation of WMAs in their areas.

Songorwa (1999) highlights that the Selous Conservation Program has contributed to increased numbers of wildlife populations, which negatively affected community food production due to crop raiding. According to USAID (2013) WMAs evaluation report at Burunge, Enduimet, Ipole, Pawaga-Idodi, and Wami-Mbiki WMAs, 81.4% of respondents felt that the WMA had had positive impact on wildlife numbers and conditions in their area by increasing its abundance. In the same report, another 80.9% indicated that wildlife habitat destruction had been stopped and 70.6% felt that some species were coming back. In the same line, Makupa (2013) in conservation efforts and local livelihoods in Western Serengeti, Tanzania, reported similar observation that community members of Nyichoka, Robanda, and Rwamchanga villages reported increases of some wildlife species in the WMA. This situation increased opportunities to watch wild animals, including species

such as leopards, cheetahs, and lions, which were rarely seen in the area before the establishment of Ikona WMA.

4.4.3 Perception on the amount of money received and how it is spent

Local communities were asked as to whether they are aware of the amount of money the member village receives from WMA and its use. The results indicate that majority (90%) agreed, 10% strongly agreed that they were aware (Figure 9). This shows that all respondents are knowledgeable on the money received and know what the money was used for the development of the member villages.

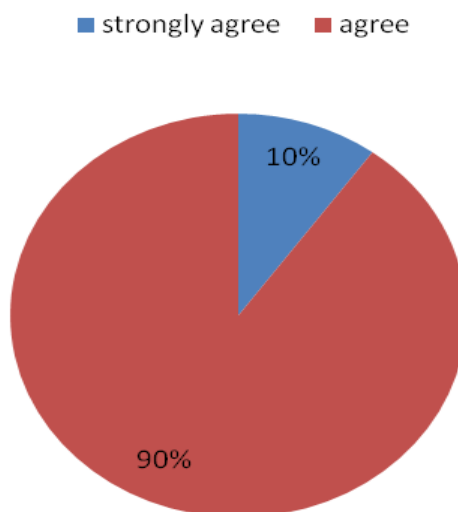


Figure 9: Respondents' response on the amount and use of money village get

Mehta and Heinen (2001) and Buer (2003) suggested that provision of direct and indirect benefits to communities surrounding a conservation area would promote incentives for people to receive conservation initiatives positively. Based on these results, it is expected that households who perceived that they know the amount of share and the use of the money given to them are likely to be more supportive to the benefit sharing scheme between WMA and local communities.

4.4.4 Perception of change in living standards of local communities

The results revealed that 74% of the respondents agreed that WMAs have changed their living standards, while 26% disagreed (Figure 10). Majority have agreed that their living standards have changed due to the presence of WMAs in their respective areas. The possible explanation for this could be the fact that before the presence of WMAs in their areas people were concentrating in poaching and cutting down trees which to them, they thought was the right thing to do.

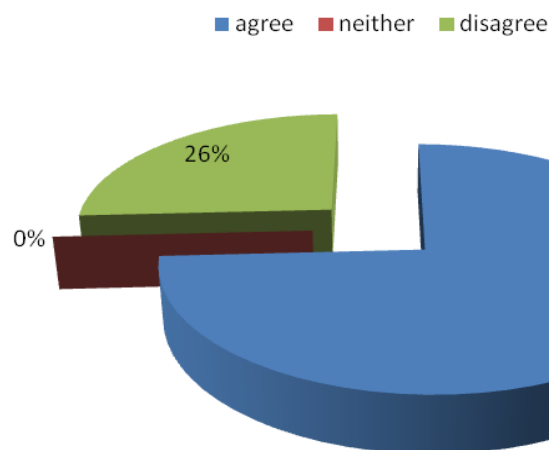


Figure 10: Respondents response on the change of living standards

Similar results was observed by USAID (2013) at Burunge, Enduimet, Ipole, Pawaga-Idodi, and Wami-Mbiki WMAs in response to a question on satisfaction with the health, education, and water supply characteristics of the local community. About 60% of respondents indicated that the WMA has increased their quality of life while 29.4% indicate that there has been no change. Kaswamila (2012) had different findings on 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. The WMA as an institution was lowly ranked relative to other institutions, which suggested that the role of the WMA in improving people's standard of living was still unclear. The

institutions with impacts in order of importance were schools, churches and mosques (*ibid*).

4.4.5 Perception on the awareness of WMA management

The respondents were asked a question on who was responsible for the management of the WMA and the results are summarized in Table 5.

Table 5: Respondents' response on WMA management

Owner	Pawaga-Idodi (n=60)	Ngarambe-Tapika (n=60)	Total (n=120)
Government	17 (28.3)	9 (15)	26 (21.7)
Villagers	43 (71.7)	51 (85)	94 (78.3)
Investor	0 (0)	0 (0)	0 (0)

Figures in parenthesis represent percentage

For Pawaga-Idodi WMA, 71.7% of the respondents indicated that villagers living near or within WMA have the responsibility, while 28.3% of the respondents thought that the government was responsible for the WMA conservation (Table 5). Regarding Ngarambe-Tapika WMA, 85% of respondents perceived that communities have the responsibility in managing the WMA while 15% thought that the government is the one that manages the WMA. Overall results show that majority of respondents (78.3%) in both WMAs stated that villagers were responsible in managing WMAs and 21.7% stated that government are responsible in managing WMAs (Table 5). This reflects that communities are to large extent aware that WMAs belongs to them and that they are supposed to manage them.

4.5 Economic Activities Influencing Household Income

According to the respondents and field observations, household sources of income in the study area are shown in Figure 11. Cash income can be from WMAs, crop or livestock sales, wages, petty business and remittances whilst in-kind include consumption of farm produce, payment in-kind and transfer or exchange of products (Ellis, 2000).

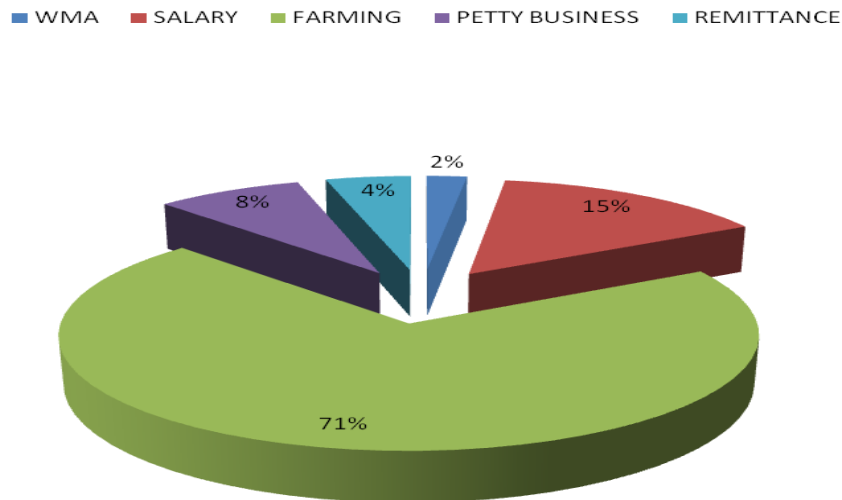


Figure 11: Responses on income sources of households in the study area

It was found out that households' income in the study areas is obtained through undertaking different cash earning activities such as farming, petty business, WMA allowances, and wage labour (Figure 11).

4.5.1 Income from Farming

From the results, it implies that agriculture farming is a major source of household income in the study areas. About 71% of the respondents indicated that household incomes come from farming production mostly maize, simsim, sunflower, wheat and rice (Figure 11). All the sampled participants grow agricultural crops in their area. In Tanzania, agriculture contributes 51% of total household income, while 40% of rural household income is derived from sources outside farm production (Abdallah and Sauer, 2005). According to URT (2001), crop production is the main activity for about 50% of the smallholder households in Tanzania and most of these farmers are practicing subsistence agriculture.

A study done by Wapalila (2008) in Mikumi National Park, on Protected Areas, local people livelihoods and conflicts, reports that the main livelihood activity in rural areas of many developing countries is agriculture. In Tanzania, agriculture is a source of livelihood for about 80% of citizens; majorities of these are leaving in rural areas. Agriculture has

strong linkages with the non-farm sector through agro-processing, urban markets and export trade. However, farming practices reduce wildlife migratory routes, which lead to higher incidences of crop damages caused by animals. This tends to fuel conflicts between farmers and wildlife. Moreover, as most of the agricultural practices are “slash and burn”, normally in few years’ large tracts of habitats and forests are lost (Christophersen *et al.*, 2000). In turn, this changes the ecology of the area for sustaining certain species of wildlife and the opportunity costs may be very high.

4.5.2 Income from salary

About 15% of respondents mentioned salary as one of the sources of household income (Figure 11). This mainly comprised of people who are employed in various places as Nurses, teachers, Village game scouts (VGS). These are the ones who add their household income from the salary. The average salary per year was about AS 313 000. These results imply that most of the households labour force works in farm activities that are non-wage. This trend is similar to the findings by Monela *et al.* (2000) who reported that in the rural areas about 15.4% of the labour force was earning income through working as casual labour.

4.5.3 Income from petty business

The results show that, petty business is one of the household sources of income as responded by 8% (Figure 11). The petty businesses in the study area were referred to as small shops, restaurants (mgahawa) within the village, selling of local beer, carpentry and weaving. Several households in the surveyed areas were doing small businesses to supplement daily household income. Carpentry was reported to include furniture such as beds, chairs, doors and windows are being manufactured and sold and raw materials for this equipment such as timber, which are obtained from natural forests. Carpenters

reported to buy timber of their choice particularly mninga (*Pterocarpus angolensis*) that produce furniture of high quality.

Local beer brewing was very common in the rural areas especially in Ngarambe and Tungamalenga villages. This type of business is seasonal. It is normally low in the cultivation season, when the majority of the people are usually busy in preparing, planting and weeding their farms. The beer brewing becomes most common soon after harvest. According to Mfaume and Leonard (2004) in Tanzania, entry into small business entrepreneurship is usually not seen as a problem; one can start small business at any time and in any place.

4.5.4 Income from remittance

According to the respondents' remittance income was mentioned by about 4% (Figure 11). This implies that some of the respondents are relying on the income from their family members who live in town. Total remittance was estimated by adding all incomes a household receives as reciprocity from family members and relatives not living in the household. Remittance in consumptive form was converted to the market value. Remittance was a source of income to older respondents than younger ones. The overall contribution is low because there are few households, which receive remittances.

4.5.5 Income from WMA

About 2% of the respondents indicated that household income is derived from WMA (Figure 11). In general, few households depend on direct income from the WMA. It was pointed out earlier that some village members work as village game scouts and received an average of 150 000 TAS per year. Kaswamila (2012) revealed that despite the low income contribution by Burunge WMA, the potential for increased revenue is 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.

CHAPTER FIVE

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

WMAs are important entities to bring about positive impact to the livelihoods of the people and poverty alleviation in rural areas. A study of these two WMAs has presented similar economic opportunities particularly hunting tourism, photographic tourism, lodges and campsites, government and donor contributions. However, it is apparent that the performance of WMAs is influenced by location, infrastructure, visibility and resources present and level of investments. Pawaga-Idodi WMA performed relatively better because of the presence of the investor. Ngarambe-Tapika had an investor, but for a short period. Also it was characterized by conflicts.

WMAs receive earnings from activities within the WMA, with the main source of income being hunting or photographic tourism activities. However, they are not yet able to earn enough from these activities to cover their basic costs. Hunting was presented to be the main source of revenue to both WMAs. An upward and downward trend of revenue over the years was observed in the two WMAs and was explained by the existence of conflicts with investors due to contract terms and payments.

Furthermore, most villages that are found near protected areas have established WMAs with the expectation that they could have a livelihood impact at the individual and community levels. However, it is apparent that nearly the entire household livelihood in rural area depends on traditional livelihood practices such as farming, petty business, remittance and salary. WMAs are yet to make significant impact at household level although these appear to be a significant contribution at community level. Although direct

benefits to households are rare, WMAs do provide limited employment opportunities for Village Game Scouts (VGS) as reported particularly to Pawaga-Idodi WMA and allowances for AA representatives and leaders. There are also some local employments generated by investor activities inside the WMAs.

Additionally, majority of the villagers acknowledged the establishment of WMA and perceive it positively.

5.2 Recommendations

Basing on results and conclusions, the following recommendations can improve performance of WMAs in Tanzania:

- i. There is a need to diversify and promote the market of WMAs economic opportunities and products which will provide more opportunities to investors and local communities to improve their household income and expansion of the WMA projects.
- ii. It is apparent that revenue flow to WMAs is affected by contract conflicts with investors. Therefore knowledge and skills are required in contract negotiations. Local governance is fundamental for the delivery of WMAs on all of their social, institutional, and conservation objectives. If local governance is weak or performs at a low level, financial benefits may be lost due to mismanagement, community well-being will not improve, conflicts will be more frequent, and overall community support for the WMA is likely to be eroded.
- iii. Success of WMAs depends to a large extent on accessibility by tourists on their way to National parks of game reserves. Therefore, WMAs and National parks or game reserves and other conservation initiatives need to work together to promote development of WMAs.

- iv. Awareness and sensitization of communities should continue to enable them appreciate WMAs belongs to them. This is because a small percent of the communities still believed that WMAs belongs to government.

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APPENDICES

Appendix 1: Household questionnaire

PART A: Introductory information

Serial number:

Date of interview:

Village:

Ward:

District:

Name of respondent:

Relation of respondent to household head: (1=wife, 2= husband, 3= others)

PART B: Household socio-economic characteristics

1. How many dependants do you have (1= Total number of children 2= Total Number of relatives)

2. Number adults (\geq 18 yrs): Female Male

3. Wealth category (1 = High; 2 = Medium; 3 = Low)

4. Were you living in this village before WMA was introduced? (1=YES, 2= NO)

Respondents information (fill in the space provided)

Household Member	Gender	Age	Marital status	Education level	Occupation	Income/Wage/salary (Tshs.) Daily/weekly/monthly/annually
	1)Male 2) Female		1)Married 2)single 3)Widowed 4)Divorced	1) Illiterate 2) Primary 3) Secondary 4)University	1) Employed 2)Farmer 3) Petty business 4) Student	
1.Respondent						
2						
3						
4						
5						
6						

Economic opportunities and parameters presented by the two WMAs that influence their performance

3. Are there any WMA economic opportunities that you know? (1=Yes, 2= No) If yes, mention.....
2. How are the economic opportunities performing? (1= Good, 2= Satisfactory, 3= Poor)
3. What factors influence the performance of the economic opportunities?

PART C: Household income sources

1. What is the major source of your income?
 - i. Salary from conservation activities(WMA)
 - ii. Salary from non-conservation activities
 - iii. Farming activities
 - iv. Petty business
 - v. Others
2. Which of the following categories best describes your gross total household annual income in Tshs? (1= Less than 100 000, 2= 100 000 to 200 000, 3= 210 000 to 300 000, 4= 410 000 and above)
3. Does anyone in your homestead (including yourself) have a leadership position currently in WMA? (1=Yes, 2= No)
4. Do you know the sources of revenue generated by WMA? (1=Yes, 2= No) If yes, state the sources,,

PART D: Socio-economic contribution of WMA

1. Have WMA intervention changed in any of your main and supporting economic activities? (1= yes, 2=No)
If yes how has it changed?
2. What limitations you have had by having a WMA in the village?
..... (1= reduced land for cultivation,
2= Reduced land for grazing, 3= Lack of access to wildlife resources, 4= Increased wild animals)
3. Is your land adequate? (1=Yes, 2=No)
4. Is tourism happening in this village? (1=Yes, 2=No) if yes, mention the activities
5. What benefits you have got from having WMA in your area?
(1= Sponsorship for students, 2= jobs, 3= funds for village projects, 4= money)

PART E: Local people's perceptions on WMA benefits

In this section tick the box what is the respondent's perception towards WMA benefits

Statement	Strongly agree	Agree	Neither	Disagree	Strongly disagree
The WMA boundaries are respected by the communities					
There are by-laws that village government made for serving conservation activities					
Animals have increased in number due to presence of WMA					
The benefits we get from WMA has changed our living standards					
Presence of WMA have become one of the sources of household income					
All member villages get the same amount of money from WMA					
I know how the village spend money received from WMA					

Is the existence of WMA in your village land pleases you? Yes/No

What are the challenges the local communities face due to presence of WMA in their village?.....

.....

Appendix 2: Checklist for key informants

Site Location: Date: Time:
am/pm

Interviewee Name: Age: Gender:
.....

Job Title:

Years at Current Job: Years at Current Residence:

Responsibilities:

Village leaders and Natural Resources Committee (VNRCs)

1. What was the main reason(s) for forming the WMA?
2. Existence of WMA plan and regulations
3. Who are the key players in NRM in your area?
4. Contribution of wildlife resources to household income before and after WMA

Wildlife resources	Before WMA	After WMA
Firewood collection		
Bush meat		
Jobs		
Building materials		
Students sponsorship		

5. What are the sources of revenue of WMA?
6. Can you say something on the trend of WMA revenue?
7. What are the benefits gained from an existing WMA?
8. How did you achieve the benefits?
9. Awareness on the importance of WMA
10. Local communities and access to wildlife resources
11. Any benefits and costs communities get from having WMA in their land?
12. Local leaders' role and mandate in management of WMA.
13. Income generating activities introduced in the village due to introduction of WMA
14. How do you share the benefits?
15. What is the communities' perception on managing Wildlife resources in their village land?
16. What do you suggest to be done on the future of WMA and local communities?

District Officers

- 1 Existence of WMA plan and regulations
- 2 What WMA economic opportunities or projects are in practice in your area?
3. How are the WMA economic opportunities performed?
- 3 The contribution of WMA to the improvement of the rural communities
4. What benefits does your community accrue from the WMA?
5. Money from economic opportunities fees
 - a. How much money is received?

- b. How is the money spent?.....
 - c. Any regulations on how the money should be spent
 - d. Future community projects
.....
6. What are the challenges you experience from WMA?
 7. What are your views towards the future of WMA and local communities?

Elders/ Old people

1. History of the area and changing livelihood.
2. Contribution of WMA to communities' livelihood.
3. Economic opportunities present in the area.
4. Resource use and management by indigenous people in the area.
5. Any benefits you accrue from WMA?
6. What challenges do you face from WMA?
7. Is there wildlife in your village or surrounding areas?
8. Are there more or less wildlife TODAY than there were 10 years ago or NO change?
9. Do you think it is important to conserve wildlife in the village?
10. What can you say on the future of the WMA and local communities?

Appendix 3: Questions for focus group discussion

1. What was the main reason(s) for forming the WMA?
2. Contribution of wildlife resources to household income before and after WMA

Wildlife resources	Before WMA	After WMA
Firewood		
Bush meat		
Jobs		
School fees		
Building materials		
Students sponsorship		

3. What are the benefits gained from an existing WMA?
4. How did you achieve the benefits?
5. How do you share the benefits?
6. Are there any community projects funded by WMA revenues?
7. What are the challenges you are facing in having WMA in your village?
8. How can these challenges be addressed?
9. What do you think you have not performed better based on your earlier set goals?
10. What are the policy constraints that you experience in your operations?
11. How are the policy constraints faced by the group solved?
12. What are your views on the future of the WMA and the village?