

## Table of Contents

<i>Items</i>	<i>Pages</i>
1. Introduction	1
1.1. Background	1
1.2. Study rationale and objective	4
2. Description of the study area	5
2.1. Location of the study areas	5
2.2. Institutional set-up	7
3. Literature review	8
3.1. Paradigm shift	8
4. Discussion of monitoring indicators	11
4.1. Identification	12
4.2. Measurement	13
5. Methodology	13
5.1. Data type and source	14
5.2. Primary data collection	14
5.2.1. Sampling methods	14
5.2.1.1. Data collection instruments	15
5.2.1.2. Key informants	16
5.3. Data analysis	17
5.3.1. Participatory rural appraisal (pra)	17
5.3.2. Structured surveyed	17
5.3.3. GIS data	17
6. Findings	17
6.1. Situation analysis	17
6.2. Level of development of wmas	21
6.3. Social aspects	22
6.3.1. Location and size:	22
6.3.2. Population	25
6.3.3. Natural resources:	30
6.3.4. Taboos and Rituals Related to Natural Resources Conservation	31
6.3.5. Village governments:	34

6.3.6. Village government office:	36
6.3.7. Existing community based organizations:	38
6.3.8. Knowledge of the wma concept:	40
6.3.9. Wildlife related court cases:	42
6.3.10. Collaboration with other stakeholders:	44
6.3.11. Social services	46
6.3.12. Community solidarity	52
6.4. Economic aspects	54
6.4..1. Economic services	54
6.4.2. Economic activities	55
6.4..3. Consumption, production and productivity	61
6.4.4. Utilization of natural resources	65
6.4.5. Village government income, expenditures and development plans.	67
6.4.6. Development of the WMA	69
6.5. Ecological aspects	71
7. Emerging Issues	75
8. The way forward	76
9. Bibliography	80
10. Appendices	82

## List of Tables

<i>Items</i>	<i>Pages</i>
Table 6.1: List of Villages And Population Size by District, Division, and Wards	16
Table 6.2: Number of Households and Population Size by Sex and Village (Bagamoyo District):	26
Table 6.3: Distribution of Village Committee Members by Gender in Kanga Village	35
Table 6.4: Average Area Under Different Crops	57
Table 6.5: Price of Most Demanded Consumer Goods	60
Table 6.6: Income Distribution for Basic Needs	61
Table 6.7: Common Characteristics of Wealth Ranks	62
Table 6.8: Involvement in Economic Activities	63
Table 6.9: Productivity of Crops/ Activities and Lower Range	64
Table 6.10: Yield of Selected Crops Based on Household Survey	64
Table 6.11: Sources of Village Government Income	68
Table 6.12: Village Government Main Expenditure Items	69
Table 6.13: Animal Census Trends in the Wami-Mbiki Pilot WMA During Oct 1997 - Nov. 2002	72
Table 6.14: Summary of Species Composition, Sex and Age Structures of Wildlife In Wami-Mbiki	75
Table 8.1. Level of Development of Pilot WMA	77

## List of Photos

<i>Items</i>	<i>Pages</i>
Photo 1: Evidence of Past Hunting Activities in the Wami-Mbiki Area	19
Photo 2: Livestock Keeping in Kambala Village.	24
Photo 3: Ritual Place in Kinzagu Village	32
Photo 4: Ritual Place in Pongwe Msungura Village – The Msungura Hills	33
Photo 5: Kanga Mountain, A Place for Rituals in Kanga Village.	33
Photo 6a: Poor Housing as Observed in Pongwe Kiona Village, Bagamoyo District.	36
Photo 6b: Poor Houses as Seen in the Background Around the Village Center in Pongwe Kiona Village	36
Photo 7: Kinzagu Village Office	37
Photo 8: Mindu Tuliene Village Office	37
Photo 9: Primary School Building in Kinzagu Village (Not Completed).	46
Photo 10: New Classrooms at Makombe Primary School (Mmem Program).	47
Photo 11: Kanga Primary School, Some of the Rehabilitated Buildings.	47
Photo 12: Water Tank in Kambala Village	50
Photo 13: Traditional Well in Kidudwe.	51
Photo 14: Toilet Constructs Adjacent to the River Bank – Mziha Village .	51
Photo 15: Impala ( <i>Aepyceros Melampus</i> ) is the Most Abundant Species in Wami - Mbiki WMA	73
Photo 16: Female Kudu in a Typical Miombo Wooded Grassland	73

## List of Figures

<i>Items</i>	<i>Pages</i>
Map 1: Tanzania - Location of Game Reserves	3
Map 2: Location of Wami-Mbiki WMA	6

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# REPORT ON THE BASELINE STUDY OF WAMI-MBIKI PILOT WILDLIFE MANAGEMENT AREA

## 1. INTRODUCTION

### 1.1. Background

December 2002 marked the beginning of a new era of wildlife conservation in Tanzania. The exact date was 15 December, 2002 when the Minister for Natural Resources and Tourism signed and released for gazette Regulations made under Section 84 and 19 of the Wildlife Conservation Act, 1974 governing the establishment, administration and use of areas to be known as Wildlife Conservation (Wildlife management Areas).

The WMAs Regulations, 2002 brought into operation a long awaited opening for the integration, involvement and participation of rural communities in the management, ownership and utilization of wildlife resources in the country. The objective is to engage meaningfully and practically the majority of Tanzanians living in rural areas in managing and benefiting from the country's rich biodiversity. This is a concrete step of putting into implementation the Tanzania Wildlife Policy of 1998 in which the Government shows its commitment of involving local communities in the conservation of wildlife resources and thereby directly benefit from such undertaking. The move enhances the Government of Tanzania commitment to effectively managing the nation's wildlife resources for the benefit of its citizens. Thus integrating conservation work with rural development activities will contribute to poverty eradication efforts while sustainably managing the country's biodiversity resources.

In addressing this aspect, the following challenges have been identified:

- The need to promote involvement of local community participation in wildlife conservation in and around the PA network;
- The need for integrating wildlife conservation with rural development
- Ensuring that wildlife conservation competes with other forms of land use
- Enhancing the recognition of the intrinsic value of wildlife to the rural people,
- Minimizing human-wildlife conflicts whenever they occur,

- To contribute to poverty alleviation in rural areas.

The Wildlife Division (WD) in the Ministry of Natural Resources and Tourism (MNR&T) in collaboration with various partners, NGOs and local communities has been supporting the implementation of Community Based Conservation (CBC) activities in villages adjacent to Core Wildlife Protected Areas (i.e. Game Reserves, National Parks, and the Ngorongoro Conservation Area). Map 1 shows the distribution and location of Game Reserves in Tanzania.

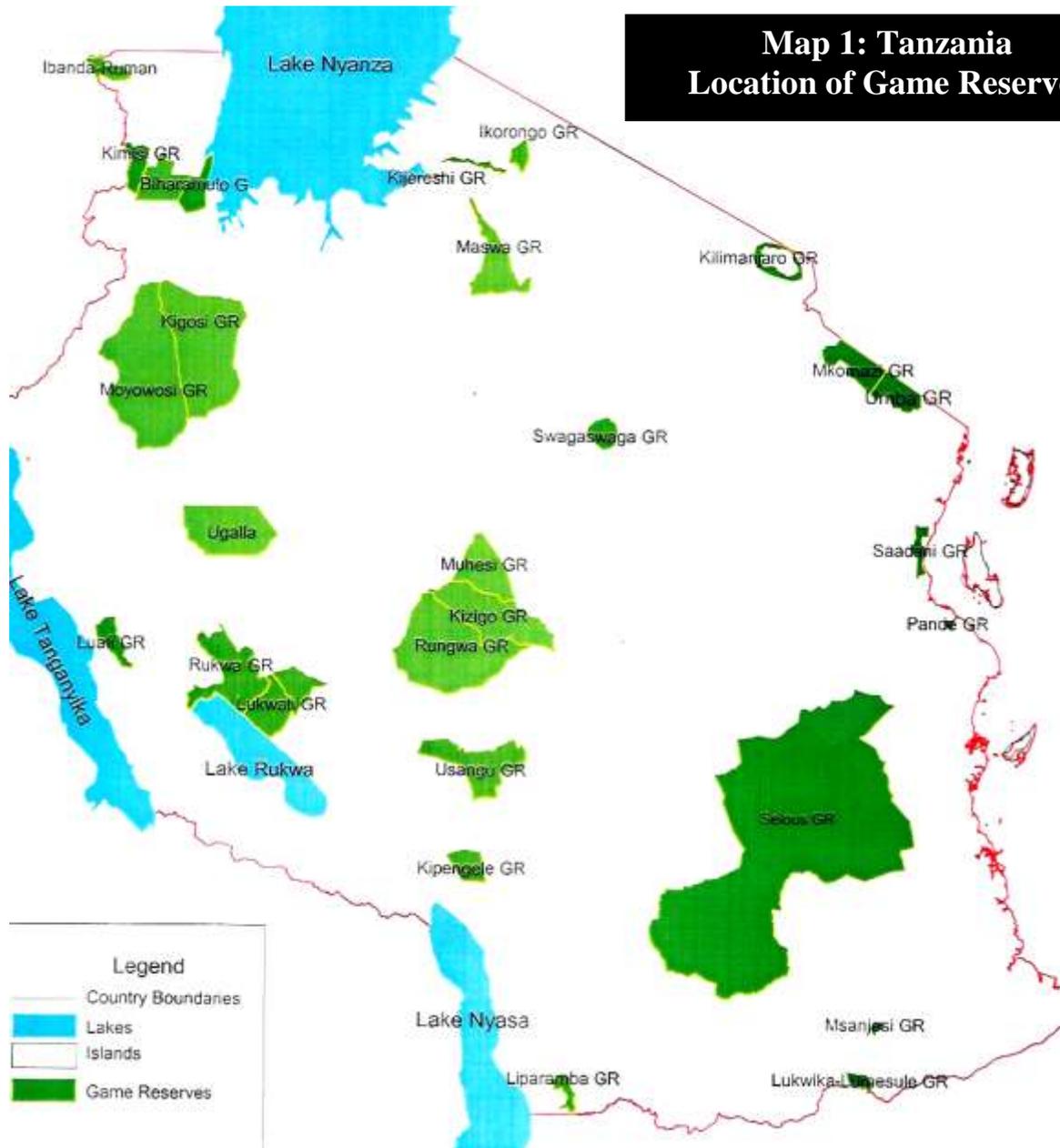
Most of the CBC activities in these areas relate to the utilization of wildlife and forest resources for tourism, live animals and forest products and eco-tourism. This has stimulated other activities including farming, handcraft and several community-based ventures, small and macro enterprises.

Since this is a new management approach, capacity and experience have to be built. As such, the Government chose to operationalize the WMAs concept in 15 Pilot areas and the process is to be closely monitored during the next three years using agreed monitoring indicators. An evaluation is to be done at the end of the three years period to assess achievements and challenges met.

In order to develop the monitoring indicators, the Wildlife Division in collaboration with its close partners and donors in CBC work, commissioned a study for collecting baseline data in all the Pilot WMAs,. The work was contracted to teams of consultants on 1<sup>st</sup> February 2003. Four working groups comprising an Ecologist, an Economist and a Sociologist each were contracted to undertake the research work in different parts of the country.

Wami – Mbiki Pilot WMA is found in Bagamoyo, Mvomero and Morogoro Districts in Coast and Morogoro Regions. The WMA has an area of 2,500 sq km covering 24 villages. Wami-Mbiki has a good population biomass of ungulates and other species of wild animals all the year round. But the other two WMAs of Uyumbu and Ipole have visible variation in numbers and diversity of wildlife species during the rainy and dry seasons of the year.

**Map 1: Tanzania  
Location of Game Reserves**



The Wami–Mbiki area extending from the Coast to Morogoro Regions is little known by ordinary people save for hunters and forest resource users for traditional fishing, collection of medicinal plants, and during recent decades, charcoal and timber extraction. The area is relatively remote in that there are no major development activities and as such has a minimum of road tracks used by that special groups of people exploiting the natural resources base of the area.

Wami-Mbiki was and continues to be an important hunting ground for both its resident local communities and for the urban hunters from Morogoro, Dar es Salaam, Kibaha, Bagamoyo and Turiani (Madizini). This rather small enclave harbors a wealth of wildlife due to its remoteness, diverse habitats, and the presence of permanent water of the Wami River. Blessed with species diversity ranging from cane rats to Elephants, Wami-Mbiki Pilot WMA can rightly boast of being rich and therefore ready to operationalize.

## **1.2. Study Rationale and Objective**

The Wildlife Sector in Tanzania has been undertaking major reforms aimed at improving its contribution to the national economy as well as to the livelihood of rural communities so that they live in harmony with wildlife by practicing sound conservation of the natural resource biodiversity, ecological processes and landscape. The most recent change in the sector was the gazetting of regulations that permit rural communities to engage in businesses related to wildlife conservation. This opened a new window in the history of wildlife management and utilization in Tanzania, which is an outcome of more than a decade of experimentation in what is known as community based conservation (CBC). The philosophy is a product of the 4<sup>th</sup> World Parks Congress, held in Caracas, Venezuela in 1992 – whose theme was “*Parks Without Boundaries*”.

Ethical arguments have been raised by many people that, excluding people who live adjacent to PAs from the use of resources, without providing them with alternatives, is increasingly viewed as politically infeasible and ethically unjustifiable. Communities occupying lands adjacent PAs boundaries frequently bear substantial costs while receiving few benefits in return.

In the Public Sector Reforms currently taking place in Tanzania, costs cutting have obliged the downsizing of government employees. The exercise has affected mainly central government staffing levels. The outcome has been a thin workforce to handle all the tasks formally performed a number that is more than four times as large. By implication, the government no longer has the capacity to effectively manage wildlife inside and outside the PAs. The establishment of WMAs as strong and competitive estates run and managed by local communities who will own and benefit from the natural resources therein, provides a solution to this problem. The process under which the WMAs Guidelines were developed through a comprehensive and intricate participation of all stakeholders, gives a lot hope that the same will succeed.

According to the Terms of Reference [ToR] signed on 30th January 2003, between WWF – TPO and Team Members of the WWG; the later were to carryout consultancy work that will provide a situation analysis of baseline information from three Pilot WMAs namely Wami–Mbiki, Uyumbu and Ipole. The assignment, with a duration of 79 days had the objective of collecting, analyzing and compiling baseline data to generate information to be used in the preparation of Monitoring Indicators and Monitoring Plans to be applied later for evaluating the performance of the three WMAs at the end of three years of operation. The ToR are contained in Appendix 12. The work entailed review of existing literature on CBC and those directed at developing WMA paradigm shift as discussed under section 4.

## **2. DESCRIPTION OF THE STUDY AREA**

### **2.1. Location of the Study Areas**

The study area referred in this report covers the Wami-Mbiki WMA only. The WMA is located in Bagamoyo, Mvomero, and Morogoro Districts. Map 2 shows the location and distribution of villages in the Wami-Mbiki WMA.



WAMI-MBIKI Pilot WMA covers an area of 2,500 sq.km, which is spread over three Districts namely Bagamoyo District in Coast Region, and Mvomero and Morogoro Rural Districts in Morogoro Region. The WMA has a total number of 24 villages out of which 13 villages are in Bagamoyo District, 3 villages are in Morogoro Rural District, and 8 villages are in Mvomero District. The Wami-Mbiki area is located in the central eastern part of Tanzania between latitudes 06°10'00" and 06°30'00" S and longitude 37° 50'00' and 38°15'40" E.

## 2.2. Institutional Set-Up

The Wami-Mbiki Pilot WMA is implemented through joint efforts between Ministry of Natural Resources and Tourism under the Wildlife Division (WD), Villages District Councils of Bagamoyo, Mvomero and Morogoro Districts, the Danish Hunters association (DJ) funded by the Danish Ministry of Foreign Affairs (DANIDA). The local communities and socio-economic development anticipate the project to assist in poverty alleviation efforts through sustainable wildlife management.

Since February 2002, the member villages were working on a draft constitution for the CBO. The constitution was passed at a meeting at Bwawani where representatives of the member villages attended. A CBO with the name "*Wami-Mbiki Society for Protection and Utilization of Natural Resources*" was officially registered on 15<sup>th</sup> July 2002 to oversee the management of the natural resources in the Wami-Mbiki WMA on behalf of the member villages.

The first election for the various posts in the CBO was held in September 2002. The General Assembly of the Wami-Mbiki CBO has 48 members<sup>1</sup> each village is represented in the General Assembly by two members. The Central Committee has 12 members (8 men and 4 women) who were elected from the members of the General Assembly.

In addition to the village representative to the General Assembly, each village has trained Village Game Scouts (VGSs). So far most of the villages have had three VGSs trained in Songea. These trained VGSs are managing the day-to-day patrols and security issues in the

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<sup>1</sup> There 4 women in the General Assembly, and all of them were elected to join the Central Committee.

WMA. Efforts are being made to train more VGSs so as to enhance the security of the WMA both at the village level and for the whole WMA.

Basic infrastructures for conservation and management purposes have been established in the core area. These include improvement of access roads and opening up of new internal tracks and roads. There is a CBO Headquarters at Mkongo Camp, where the WMA management staffs are housed. These staffs include the Project Manager, Project Accountant, and the Project Advisor. At the village level, there are two committees, which have been established to manage the resources and funds from the WMA. There are committees are:

- Village Natural Resources and Environment Committee: This committee has 9 members (at least 2 women members).
- Village Community Development Committee: This committee has 6 members who enter into the committee by virtue of their positions in the village (i.e. Village Chairman, Village Executive Officer, the 2 Representatives to the General Assembly, and the 3 VGSs).

On the human resources side the project has achieved that game scouts have been trained and are functioning, that village natural resources committee have been established and are operating, village Development Committee are operating and the village school committees are established and operating. Environmental awareness has increased among members of village natural resources committees. With regards to community development the project has enhanced capacity and institution building activities, and undertook primary school improvement activities in many villages, managed and implemented by the villages themselves.

### **3. LITERATURE REVIEW**

#### **3.1. Paradigm Shift**

Despite its potential, wildlife in Tanzania has not contributed much in the social economic development of the rural communities. This low profile can be attributed to the ill conceived land tenure systems and development policies, repressive wildlife legislation, inadequate planning and coordination among stakeholders with interest in wildlife, inadequate financial

capacity to effectively manage wildlife by the government institutions and limited ability in marketing wildlife and its by products.

In recognition of the above failures the Wildlife Sector in Tanzania launched a programme aimed at integrating biodiversity conservation with economic development of the rural communities. The programme launched a decade ago constitutes what one would call CBC initiatives now to be found in various parts of the country but mostly around the core protected areas especially National Parks and Game Reserves

Good examples are those around the Selous Game Reserve where active CBC projects have been running for some years now. The Community Conservation Service (CCS) work done by TANAPA around the Serengeti, Tarangire, Lake Manyara, Ruaha NPs also provide lessons to be learnt. All these undertakings were initiated during the 1990s and have provided learning ground where lessons and experiences gained demonstrate the need to integrate rural socio-economic development with wildlife conservation and true devolution of power to the local communities to enhance the sustainable development of both.

The traditional approach to nature conservation in Tanzania had been through the gazettment of various categories of Protected Areas (PA). These comprise Reserve Lands as stipulated for in the Land Act No 4 of 1999. The administration, control and management of these areas is entrusted in the hands of a number Government institutions which include the following:

- The Wildlife Division administers Game Reserves, Game Controlled Areas and all other wildlife found outside the PAs.
- Tanzania National Parks (TANAPA) is mandated to administer all areas gazetted as National Parks
- The Ngorongoro Conservation Area Authority (NCAA) administers the Ngorongoro Conservation Area.
- The Forest and Beekeeping Division (FoBD) controls all areas gazetted as Catchments Forest Reserves and Government Forest Plantations.
- The Marine Parks and Reserves Unit of the Fisheries Division (MP&RU) administers all gazetted Marine Parks and Marine Reserves.

Restrictive laws have been used in the control of using the PAs estates, which denied in most cases, access of people living in the rural areas to the resources found in those areas. Such a

phenomenon persisted during the colonial era up to about the late 1980's. Here the government took a leading role and the communities remained passive spectators. A strong law enforcement unit had to be in place to suppress emerging conflicts from the depressed local communities. The measure of performance was based on the number of arrests of illegal hunters, fishermen and extraction of timber and other forest products.

A major drawback to the CBC programme was lack of a legal framework dealing with community integration within the existing Wildlife Act (1974). This weakness was somehow reduced when a new Wildlife Policy (1998) was adopted by the Government.

Although the TWP made a breakthrough in recognizing the role of rural communities in getting involved in the management and use of wildlife resources in the country, yet the absence of a legal instrument continued to be felt. The recent bold step taken by the Ministry of Natural Resources in gazetting WMAs, Regulations (2002) has opened the way forward. The new move addresses key questions regarding full integration in terms of local communities being now mandated to manage and use wildlife resources. In other words they are now responsible and accountable for the management and sustainable use of wildlife in village lands. This is a historic evolution in the conservation of wildlife resources in Tanzania. It is a major paradigm shift from the previous position whereby wildlife resources in the whole country were the property of government to the new position where local communities now have ownership or use right of wildlife resources in prescribed areas (WMAs).

The Government has released some Guidelines for Designation and the Management of WMAs; but it is the hope of everyone that in due course, the WMAs will be fully owned run and used by the rural communities for their own benefits. That times frame will depend on how fast facilitators (NGOs) will help local communities to build need management, administrative and financial capacities to be able to run WMAs effectively.

The move and effort achieved maps the way for integrating, involving and empowering local communities in the Management and use of wildlife resources found in WMAs. Total commitment is required from resources managers and other users in helping the diversification for wildlife use and creating of innovative marketing strategies that promote

the development of local entrepreneurship as well as joint ventures between the private sector business community and the rural communities.

Needless to mention that sound economic development should benefit every citizen of Tanzania both in urban and rural areas. Poverty eradication is a critical necessity due to the fact that economic growth and per capital income is still very low in this country. In fact, poverty is the biggest enemy in the rural communities.

It is paradoxical that despite the rich biodiversity, which Tanzania is endowed with, its wildlife has had little impact on improving the livelihood and food security of the rural people. Many constraints account for this including poor land tenure practices and ownership of wildlife. Since Wildlife was fully state-owned, local communities living on the periphery of protected areas, bear significant conservation costs, in the form of wildlife damage to their crops, livestock and human lives. This further impoverished rural communities, and as a result, their attitude towards government conservation programmes had been negative. Subsequently, illegal off-take of PA wildlife resources has continued unabated. The much spoken emplacement of rural people in the recreational use of wildlife is limited and the benefits derived from wildlife based tourism hardly reached the people in adjacent rural areas.

Consequently rural communities viewed the government's perceived values of wildlife, the legislations and policies governing the management of wildlife's as antagonistic, which ignore their socio-economic dependence on their wildlife resources. The reaction of the local people is manifested through illicit encroachment into PAs for various consumptive uses and sometimes demands for degazettement of a given PA.

#### **4. DISCUSSION OF MONITORING INDICATORS**

The primary objective of this study is to compile baseline information for the purpose of developing indicators for monitoring the performance of these and other WMA during the three year trial phase and subsequently. The indicators are being sought from three different perspectives; Social, economic and ecological. The social and economic indicators will be used to monitor respective aspects that will impinge on the WMA ecology and the environment in general as local residents and outsiders strive to meet their various social and

economic needs. Meanwhile, the ecological indicators will be used to assess the level of sustainable utilization of the natural resource base. Such information will provide guidance in order to address in due course any unsustainable practices arising due to human activities or other due natural and biological dynamics within the ecosystem.

Indicators are parameters that can be monitored to track the performance of an activity, development project or program, policy change or any other intervention over time. Indicators can be direct when they seek to reflect changes that are being sought by the intervention directly. Sometimes it is not possible or easy to measure the parameter of interest directly. For example, changes in the well being of communities are best captured indirectly through proxy indicators. Both types of indicators will be used in this study.

One of the most important characteristic of an indicator, apart from being simple and consistent is its being measurable. Indicators may be measured using qualitative means such as changes in attitudes and feelings, proper functioning of community organization or by quantitative means such as numbers of people, animals or any other parameter of interest, yield of crop or Natural resources products, price of products and many others. Indicators may also be behavioral such as changes in sanitary facilities. Indicators are only useful to the extent that the means of verification can be general and cost effective. In the discussion, which follows, the process of identification and determining the measurement of indicators for the performance of the pilot WMAs is presented.

#### **4.1. Identification**

The process of identifying feasible indicators for the monitoring and evaluation framework of the pilot WMAs was done in two steps. First, the team of consultants proposed a set of indicators, which were discussed and streamlined, based on which a checklist of questions for focus group discussion was developed. Also, a questionnaire for the household survey was designed to meet the requirements of proposed indicators regard general information about the villages and proposed indicators under social, economic and ecological parameters. (Appendix 10).

## 4.2. Measurement

During the field survey and in the process of analyzing the data, the proposed indicators were assessed based on two important aspects; ease of availability and measurability. The indicators could be obtained through direct observation, recall by villagers during informal and focus group discussion or during interviews for the structured survey. Key informants also provided useful insights of some indicators. Other indicators could be obtained through direct measurement or counting as well as photographs. Records at the District level and those of village government provided useful information, especially those pertaining demographic aspects and village financial records. The means of measuring each of the indicators, which has been selected for monitoring the performance of the WMAs during this pilot phase are indicated under section 8 of this report.

## 5. METHODOLOGY

The study covered three Wildlife Management Areas (WMAs), which have been described in detail under section 3.0. As stated under the ToR, the main goal of the study was to collect data that would provide baseline information and monitoring indicators in the following broad areas;

- Social factors like health, education, water; human demographic structures, administrative set-ups, immigration and emigration of people.
- Economic activities like agriculture, livestock, beekeeping, shopkeepers and traders, laborers and other employment opportunities revenue generating sources for each village like charcoal burning and harvesting of timber
- Ecological factors covering animal and plant species composition, age and sex structure for animals; habitats condition including availability of water for wildlife and occurrence of wild fires; crops raiding by wild animals plus subsistence hunting.
- Communication networks like roads and tracks used for transport

In the case of ecological and environmental factors, the reconnaissance surveys for field truthing were used to assess:

- Habitat condition- vegetation types, dominant plant species, any degradation or disturbance on the vegetation and the state of recovery.

- Edaphic and environmental factors such as fires, rainfall regimes, droughts, floods,
- Wild animals populations, species composition, sex and age structures; animal movements and migrations; current utilization; crop raiding animals plus any other damage caused by wildlife to the local communities in the respective WMA.

It was intended that each village within the three WMA would be visited during the field survey. However due to logistical problems and the short duration within which field work was undertaken, two village under Wami –Mbiki could not be contacted. These are Kaloleni in Bagamoyo district and Gwata Ujembe in Morogoro district. The list of villages, which were contacted and their basic statistic are given under section 6.

## **5.1. Data type and source**

Information for the study was collected from primary and secondary source secondary data were collected from various documents, which were provided by the client and those obtained from other sources. Additional information, especially those pertaining to conceptual aspects of the study were obtained from literature on the management of natural resources. The list of documents which were used are presented under the bibliography section, the type of data which was required fall under three categories; social economic and ecological.

## **5.2. Primary Data Collection**

### ***5.2.1. Sampling Methods***

Rural appraisal (PRA) and structured surveys were used to collect ecological indigenous knowledge about the WMA as well as socio-economic information. The PRA focus group members were selected from among the villages. In most cases prior information was sent to the villages such that the focus group included about 20 people who were representative of the village population by gender, age and location within the village in a few cases such prior information on the selection criteria. Efforts were then made to get as representative a sample as possible. In Wami Mbiki a total number of 232 people participated in the Focus Group Discussions. About 72% of the Focus Group participants were males and 28% were females.

In addition there were discussions with key informants both within the villages as well as district regional officials. Information about the volume of sales was sought from owners of shops and kiosks who were willing. The list of people who were contacted is provided under Appendix 1.

Multistage sampling was done to select villages and respondents for the structural survey. From each WMA selection of villages was done purposively to ensure representation by district and of predominantly livestock keepers' villages in the case of Wami-Mbiki. In Wami-Mbiki was also ensured. For Wami-Mbiki eight villages (33%) were selected. Two researchers assisted to collected data for the structured survey. Respondents were selected randomly, but taking into account spatial, gender and age representation. In All cases the research assistants worked in different sub-villages.

#### *5.2.1.1. Data Collection Instruments*

##### *a) PRA and questionnaire Administration.*

To facilitate collection of primary data, a number of instruments were used, including a checklist of question to guide discussion during focus group discussion. This is appended under Appendix 8. A pre-coded questionnaire was developed and used for the structured surveys. It is given in ppendix 9. All three research were involved in the PRA. As stated earlier two research assistants administered the questionnaire for the survey.

##### *b) Observation and Transect walk.*

Observation was used to collect both socio-economic and ecological information on social-economic aspects observation was made on the general well being of the village in terms of type of house, performance of crops, which were in the field and other qualitative aspects, which are reflected in the report. In the case of Wami-Mbiki, where the WMA has contributed towards construction of classrooms and teachers house, these were often visited.

In the case of ecological data, initial observation was done by driving through part of the WMA to get a general picture of the vegetation, animals and the flora and fauna in general. The composition of plant species and the number of plant species and the number of animals was noted. Where appropriate, photographs were taken. Additional transect walks were then planned and executed to visit several sites of interest within the WMA such as where

concentration of animals had been reported by villagers. Ecological data was collected through three methods:

- i. Focused Group Discussions were used to obtain information on the history, trends and species composition for both plants and animals. Animal movements, migration routes, water-drinking areas, for the wild animals; were all-important factors influencing the year round distribution and abundance of wildlife in any given area. The vegetation or specifically the habitat condition that we know to be a factor of soil, terrain, temperature and rainfall plus the influence that man exerts on vegetation- could therefore best be linked to the history of man in the area. Human activities that had great influence on the vegetation included but not limited to, shifting cultivation, growing and curing of tobacco, charcoal burning, lumbering, wild or uncontrolled fires fcaused by man for various reasons and livestock husbandry.
- ii. Assessment done using road transects surveys: Road counting of animals was conducted in each of the three Pilot WMAs in order to assess species composition; age and sex structure and habitat for each species
- iii. Use of indices such as night calls for carnivores, spoors and dung or droppings.

#### 5.2.1.2. Key Informants

Discussion with key information mostly involved government staff and political leaders. Visits were made to Regional Commissioners in Morogoro, and District Commissioners in Morogoro, Mvomero, and Bagamoyo. However the substantive Ditriect Commissioner (DC) and the District Executive Officer (DED)in Bagamoyo was out of office on other duties during our visits. Discussion was held with their Representatives. The team also met the DED for Morogoro, who also serves Mvomero district. In each district the team met with the District Natural Resources Officer, the game and forestry officer or their representatives.

Other key informants who were contacted include the the management of Wami– Mbiki Staff and the General Manager of Mtibwa Sugar Company. To conclude the fieldwork, briefing and discussion were held with representatives of DANIDA in Dar es Salaam. Discussion was done with staff from the wildlife division during preparation for fieldwork. A representative from the wildlife division Mr. Peter Otaro also accompanied the team during most of the fieldwork. A list of institutions that were contacted is appended (Appendix 2)

## **5.3. Data Analysis**

### *5.3.1. Participatory Rural Appraisal (PRA)*

Information from the focus group discussion was summarized, sometimes in tabular form. Analysis for economical data was done using excels. Parameters, which were computed, include frequencies, means and range (Maximum, minim and mode). Social data was analysed by descriptive statistics and qualitative assessment. Ecological data that was gathered through PRA meetings was used to describe the general ecological situation of the WMA. Such data was analyzed and supplemented with observations, which were made through direct observation in the field. Results for the analysis are discussed in section 7 of this report.

### *5.3.2. Structured surveyed*

Information from the structural survey was analysed using the statistical package for social science (SPSS). Frequencies Means and range were computed. The outputs were summarized in table and they are discussed in section 7 of the report.

### *5.3.3. GIS Data*

GIS data were gathered and plotted on a map to demonstrate the location and distribution of villages over the pilot WMAs. Digital maps were provided in Wami-Mbiki.

## **6. FINDINGS**

### *6.1.1. Situation Analysis*

Wami-Mbiki is the conservation project that involves local communities in the conservation and protection of natural resources. The project is mainly concerned with conservation of wildlife in a proposed Wildlife Management Area with the Mbiki area covering 13 villages in Bagamoyo District (Coast Region) and the Wami areas covering 3 villages in Morogoro Rural District and 8 villages in Mvomero District. The actual location of the Wami-Mbiki

WMA is located between latitudes 06°10'00" and 06°30'00" S and longitude 37° 50'00' and 38°15'40" E. The project area comprises of two main parts, namely; the *core area* covering about 2,500 sq.km and the *buffer zone* covering about 1,200 sq.km.

The *core area* is earmarked for conservation of natural resources, notably wildlife resources. The *buffer zone area* separates the *core area* from the *village land*, and various human activities are carried out, including cultivation, fuelwood collection, livestock grazing, and hunting, to mention only a few. The buffer zone is earmarked for sustainable socio-economic development activities through utilization of biological and ecological resources available in the area (Kakakuona, 2001). The Wami-Mbiki project involves local communities in the conservation and protection of natural resources, including wildlife. The project is mainly concerned with conservation of wildlife in a proposed WMA with the Mbiki area covering 13 villages in Bagamoyo District (Coast Region) and the Wami areas covering 3 villages in Morogoro Rural District and 8 villages in Mvomero District. Table 6.1 summarizes the administrative coverage of the Wami-Mbiki WMA.

Table 6.1: List of Villages and Population Size by District, Division, and Wards

.District	Divisions	Wards	Villages	Population Estimates
Bagamoyo	Msoga	Ubena	1. Visakazi	3,700
			2. Mwidu,	2,400
			3. Kaloleni,	2,700
			4. Tukamisasa,	1,900
		Lugoba	5. Diozile	1,450
			6. Makombe	1,120
			7. Mindu Tuliene	850
			8. Kinzagu	490
	Mbweve	9. Kifuletwa,	1,842	
		Msata	10. Pongwe Msungura	500
			11. Pongwe Kiona	2,190
		Kwaruhombo	12. Kwamsanja	1,950
			13. Kwaruhombo	3,600
Mvomero	Turiani	Mtibwa	14. Lukenge	?
			15. Kidudwe	?
			16. Kunke,	?
		Hambeti	17. Kambala	?
		Kanga	18. Kanga,	3,260
			19. Mziha,	3,600
	20. Dihinda		4,200	
Morogoro	Mikeese	Mkambalani	21. Mkono wa Mara	1,120
		Mikeese	22. Maseyu	1,660
			23. Gwata Ujembe	?

This Wami-Mbiki WMA is implemented by the joint forces between Ministry of Natural Resources and Tourism under the Wildlife Division (WD), Villages District Councils of Bagamoyo and Morogoro Districts, the Danish Hunters association(DJ) funded by the Danish Ministry of Foreign Affairs (DANIDA). The project anticipated for poverty alleviation through sustainable wildlife management by the local communities and Socio-economic development.

As observed in Table 6.1 above, Wami-Mbiki WMA has 23 villages spread over three districts, namely bagamoyo, Mvomero, an Morogoro Districts. There are 13 villages in Bagamoyo District<sup>2</sup>, 8 villages in Mvomero District<sup>3</sup>, and 3 villages in Morogoro Rural<sup>4</sup>. The area is approximately 2,500 sq. km managed as a single WMA.

Evidence from the past decades indicates that there were heavy and a random cutting of trees for fuel wood, charcoal burning, timber, as well as clearing for shifting cultivation inn the Wami-Mbiki area and its surroundings. Also illegal hunting and over exploitation of wildlife species, and fisheries were practices as demonstrated in Photo 1. Largely environmental degradation is due to poverty and also inhabitants (target group) lack of knowledge with



regards to the values, management, planning and utilization of Natural Resources and the impacts of degrading their immediate environment.

*Photo 1: Evidence of Past Hunting Activities in the Wami-Mbiki Area*

Environmental degradation is mostly noticed in the project area, with the people having a tendency of carrying out agricultural activities in small areas leaving ample land area, using the fire to clear land for cultivation,

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<sup>2</sup> Village in Bagamoyo District are Visakazi, Mwidu, Kaloleni, Tukamisasa, Diozile, Makombe, Mindu Tulieni, Kinzagu, Kifuletwa, Pongwe Msungura, Pongwe Kiona, Kwamsanja, and Kwaruhombo.

<sup>3</sup> Villages in Mvomero District are Lukenge, Kidudwe, Kunke, Kambala, Kanga, Mziha, and Dihinda.

<sup>4</sup> Villages located in Morogoro Rural are Mkono wa Mara, Maseyu and Gwata Ujembe.

cultivation near water sources, heavy illegal exploitation of natural resources, livestock overgrazing in some area, water pollution in river etc.

In an attempt of arresting the situation towards sustainable natural resource conservation, Wami-Mbiki Project is aiming at having a training program to carry on an environmental education to target beneficiaries. This is aimed at raising the awareness and involving local communities in environmental conservation issues including natural resources in and out Wami-Mbiki area.

The objective is to combine natural resources conservation (notably wildlife) with promotion of socio-economic development in the area through community based conservation approach within both the core area and the buffer zone. The specific objectives of Wami-Mbiki are:

- Conservation and management of the biological resources in the core area.
- Development of community projects aimed at raising income/profits
- Establishing eco-tourism activities
- Development including capacity building and transfer of necessary know-how to the villages to enable them to sustainably manage the project area but also enabling them to improve the management of the natural resources on village land.

The project prospects are to ensure the long-term sustainability of the project through empowering the villages to administer their natural resources in a sustainable manner. Similarly, the project aims to improve community's involvement in the protection management and sustainable utilization of the Natural Resources present in Wami-Mbiki for the future. A Community Based Organization (CBO) has been formed and entrusted by villagers to manage the wildlife resources on their behalf and for the benefit of entire community. To ensure a proper gender representation in the CBO, it has been stipulated that at least one of the village representatives should be a woman. Each member village is represented by two members of the Assembly. To address the gender aspect at the village level, the members of the Natural Resources and Environment, and Village Development Committees are required to have at least two women each committee holding different post.

The main objective of the Wami-Mbiki WMA is to combine natural resources conservation (notably wildlife) with promotion of socio-economic development through community based

conservation approach within both the *core* and *buffer* zone. The specific objectives of Wami-Mbiki are:

- Conservation and management of the biological resources in the core area.
- Development of community projects aimed at raising income/profits
- Establishing eco-tourism activities
- Development, including capacity building and transfer of necessary know-how to the villages to enable them to sustainably manage the project area but also enabling them to improve the management of the natural resources on village land.

### ***6.1.2. Level of Development of WMAs***

The project prospects are to ensure the long-term sustainability of the project through empowering the villages to administer their natural resources in a sustainable manner. Similarly, the project aims to improve the communities' involvement in the protection management and sustainable utilization of the natural resources in the Wami-Mbiki WMA to meet the present and future needs. So far, a Community Based Organisation (CBO) has been formed and registered. The CBO has been entrusted by villagers to manage the wildlife resources on their behalf and for the benefit of all member villages.

A formal leadership for the CBO has been elected. The starting point was to elect two village representatives into the General Assembly of the CBO. From this the Assembly of 48 village representatives, a Chairman, Treasurer, and members of the Steering Committee for the CBO were elected. In addition to the formulation of a representative leadership, a Village Game Scout (VGS) has been trained in each village. In-house training is going on to increase the number of VGSs who are responsible for the day to day patrols in the WMA.

Regarding the conservation component, the *core area* has been delineated and demarcated on the ground and is being protected. Destructive exploitation of the biological resources (poaching, logging and charcoal burning) has basically stopped, and there are all signs that the wildlife population is rapidly increasing. Whether this observation is mainly due to migration into the area from outside or due to increased breeding success remains to be verified.

On the human resource development, the project has been successful in training VGSs and is functioning. At the village level, the Village Natural Resources Committees (VNRC), and Village Development Committees (VDC) have been established and are operating. Environmental awareness has increased among members of VNRC.

On community development the project has in addition to the capacity and institution building activities, the project has been involved in undertaking primary school improvement activities in most of the member villages. The construction activities are managed and implemented by the villages themselves.

Basic infrastructures for conservation and management purposes in the Wami-Mbiki WMA have been established in the *core area*, access roads have been improved, and new internal tracks and roads have been opened up.

### **6.1.3. Social Aspects**

The village profiles for the villages involved in the Wami-Mbiki WMA are summarized in this section. Efforts have been made to get all the necessary information for each village.

#### **6.3.1. Location and Size:**

While 13 villages are located in Bagamoyo District (Kifuletwa, Tukamisasa, Visakazi, Mwidu, Diozile, Makombe, Kwaruhombo, Kwamsanja, Pongwe Kiona, Pongwe Msungura, Kinzagu, and Mindu Tulieni), there are eight villages in Mvomero District (Lukenge, Kidudwe, Kunke, Kambala, Kanga, Mziha, and Dihinda). In Morogoro District only three villages are within the Wami-Mbiki WMA (Mkoo wa Mara, Maseyu, and Gwata Ujembe).

*Kifuletwa* village has three sub-villages, namely Changalikwa, Kifuletwa and Kikwazo. Over 90% of the population in Kifuletwa is Ziguas. Currently, there is no in-migration reported in the village. However few youths do migrate out to other areas (rural and urban in search for employment). *Tukamisasa* village is located in Ubena Ward, Msoga Division. The village was registered in 1974 (Reg. No. 59). It has 9 sub-villages, namely Tuka Mjini, Mazimuni, Kongwa, Choza, Kichangani, Kidung'hwe, Mbuyu A, Mbuyu B, and Kipere. About 926 people are in the productive labour force. The dominant ethnic groups in the village are

Wakwere, Wazigua, Wamasai and Wagogo. The Masai and Gogo are the immigrants. They are attracted by availability of grazing and agricultural lands. Few youths migrate out to other areas (rural and urban in search for employment).

*Visakazi* village is located in Ubena Ward, Msoga Division. The village is adjacent to the Bwawani Prison, and along the boundary of Morogoro and Coast Region. It neighbours Gwata Ujembe village in Morogoro District. The two villages are separated by the Ngerengere River which forms the boundary between Morogoro and Bagamoyo Districts. The main ethnic groups in the village are the Wakwere, Wazigua, and Waluguru. Other ethnic groups available in the village include Wanyakyusa, Wasukuma, and Wangoni. *Mwidu* village is located in Ubena Ward, Msoga Division. The village is has 6 sub-villages namely Mwidadi (62 households), Magogodo (50 households), Mwidu A (39 households), Mwidu B (88 households), Lungo (45 households), and Mbega (32 households).

*Diozile* village is located in Lugoba Ward, Soga Division. The village was registered in 1975 and is dominated by the Zigua, Masai and Wakwere. Other minority tribes include the Gogo, Hehe, and Pare. The village is divided into five sub-villages, namely Lubaya, Lugeja, Kologomba, Changa and Makole. *Makombe* village is also located in Lugoba Ward. It has six sub-villages, namely Makombe A, Makombe B, Visaluti, Lufako, Kinduli, and Lamboni. The indigenous people in this area are the Wakwere, but there are other tribes like the Gogo, who have moved into the village basically for charcoal making activities. The main source of income for the village is charcoal.

*Kwaruhombo* village is located in Mbewe ward, Kwaruhombo Division. The village has six sub-villages, namely, Turiani, Vuga, Kilanga wageni, Luhanga, Mmisu, and Jaira. Kwamsanja village is located in Kwaruhombo wards as well. It has three sub-villages, namely Mazingira, Kweditembe, and Maganga. *Pongwe Kiona* village is located in Msata Ward. It is divided into 16 sub-villages, namely: Msete, Kwadigongo, Mzimuni, Kwamsala, Kwausungu, Mpakani A and Mpakani B. Others are Kwesweza, Kwadikwighi A, Kwadikwighi B, Kwelilonga, Tengen, Kilima Ngwingu, Mpaji Mungu, Wami River, and Kwang'ombe. The dominant ethnic groups in Pongwe Kiona are the Zigua and Ndengereko. Other tribes available include the Yao, Malila, Gogo, Hehe, Kaguru, and Pare.

*Pongwe Msungura* village is in Msata ward. It is divided into four sub-villages, namely Miembe Saba, Mswelezi, Mkuyu, and Tabora. *Kinzagu* village is located in Lugoba ward. It is one of the poorest villages in the area. This situation is probably caused by poor leadership. The village is divided into four sub-villages, namely Mindi Lugata (27 households), Mindu Mlimani (110 households), Mindu Bwawani (34 households), and Mindu Kwamkucha (16 households). *Mindu Tuli* village is in Lugoba ward. There are four sub-villages namely, Kinduli, Nadamya, Makombe, and Mafyeko. The main inhabitants of the village are the Masai and Kwere. There are few Gogos who have migrated into the village in search for employment as herders or cultivators.

*Lukenge* village is located in Mtibwa Wards, and has three subvillages namely Lukenge A, Lukenge B, and Songambe. The main ethnic groups in the village are the Zigua. Other tribes include Pangwa, Bena and Masai. *Kidudwe* village is located in Mtibwa ward, and has six sub-villages namely, Kwasungura, Kwatorondo, Kwazuberi, Kwamchungwa, Mgudeni, and Mnazi Mmoja. Like Lukenge the village population is dominated by the Zigua, and Wabena and Wasandawi are the minorities. *Kunke* is located in Mtibwa Ward as well. It is dominated by the Zigua and Kaguru, while the Wabena, Wandali, wasafa, Wabarbaig and Masai are the minorities. The village also experiences remarkable immigration especially during the harvesting season in the Mtibwa Estate.

*Kambala* village is located in Hambeti Ward, Mvomero Division. This is a pastoralist village in which the main activity is livestock keeping rather than agriculture (Photo 2). Kambala has five sub-villages, namely: Mwangaza, Upareni, Nderkesi, Maroloi, and Kwaboga. The village is renowned for its environmental conservation activities. The village has therefore allowed vegetation regeneration throughout its territory.



Photo 2: Livestock Keeping in Kambala Village.

*Kanga* village is located in Kanga Ward, Turiani Division. The village was registered in 1974 (Reg. No. 59). It has 5 sub-villages, namely: Chalongwe, Kisaukwe, Sechambo, Ukindu and Lusonge. The dominant ethnic groups in the village are Wazigua and

Wachaga. *Mziha* village is located in Kanga Ward in Turiani Division. The village has eight sub-villages, namely Kambini, Kwamkomba, Selewa, Cheula, Kwankonje, Kwabeku, Kibatula and Kwafiheka. The main ethnic groups in the village are the Wanguu and Wakaguru. Other minority groups in the village are the Wabena, Wanyamwezi, Masai, Wagogo, Wantaturu, and Waha. Currently, the village experiences no outmigration, but there is notable in-migration in search for arable land and pasture. *Dihinda* village is located in Kanga Ward, Turiani Division. The village is located near the Mtibwa Sugar Factory. Mlumbilo village is located in Mtibwa Ward, Turiani Division. It also borders the Mtibwa Sugar Plantations.

*Mkono wa Mara* village is located in Mkambalani Ward, Mikese Division. The village is adjacent to the Kingorwila Prison and has 3 sub-villages namely Sangasanga, Mkono wa mara and Muguzi. *Maseyu* and *Gwata Ujembe* villages are in Mikese Ward, Mikese Division along the trunk road. Maseyu has 5 sub-villages namely Mavuru, Mazizi, Chatupa, Nambala and Kituramhalo. Gwata Ujembe also has 5 sub-villages. Among the three villages, Gwata Ujembe has the largest population.

### 6.3.2. Population

Table 6.2 summarizes the number of households, population size by sex per village:

The village population in Visakazi is estimated to be around 3,700 and there 407 households. Visakazi village is divided into 5 sub-villages, namely: Mpakani (79 households), Visakazi Kati (116 households), Visakazi mashariki (70 households), Visakazi Juu (98 households), and Lukwambe (44 households). Migrants into Visakazi mainly come from the existing military camps (Kininko and Bwawani). There is also a camp for the NCC Contractors who are constructing the Chalinze-Morogoro road. Most of the immigration is caused by employees from these institutions, businessmen and women, farmers and livestock keepers. Out-migration is mainly due to transfer of workers to other areas.

Table 6.2: Number of households and population size by sex and village  
(Bagamoyo District):

District	Village	No. of Households	Population		
			Males	Females	Total
Bagamoyo	Kifuletwa	593	1,864	1,791	3,655
	Tukamisasa	603	1,480	1,421	2,901
	Visakazi	407	1,887	1,813	3,700
	Mwidu	680	715	686	1,401
	Diozile	331	912	877	1,789
	Makombe	187	445	427	872
	Kwaruhombo	308	1,377	1,323	2,700
	Kwamsanja	197	484	465	949
	Pongwe Kiona	250	1,384	1,329	2,713
	Pongwe Msungura	200	441	424	865
	Kinzagu	187	518	498	1,016
	Mindu Tulieni	258	1,050	1,008	2,058
	TOTAL	4,201	12,556	12,063	24,619
Morogoro	Mkono wa Mara	341	507	558	1,065
	Maseyu	541	645	678	1,323
	Gwata Ujembe	-	1,750	1,500	3,250
	TOTAL		2,902	2,736	6,638
Mvomero	Lukenge	319	915	861	1,776
	Kidudwe	1,320	3,729	3,652	7,379
	Kunke	-	1,658	1,725	3,383
	Kambala	406	702	1,898	2,600
	Kanga	480	1,279	1,628	2,907
	Mziha	799	2,474	2,025	4,499
	Dihinda	720	2,069	2,153	4,222
	TOTAL		12,826	13,942	26,766

The population in Mwidu village is estimated to be 1,401 of which 659 are men and 742 are women. In total the village has 680 households. The main tribes living in Mwidu are the Wakwere, wazigua, Wamalila and wagogo. The Wamalila came to the village from Mbeya in 1982 mainly for charcoal making business, and the Wagogos and mainly migrating for agricultural reasons. The distribution of labor by sex indicates that the main women's activity is cultivation activities and small scale businesses. On the other hand, men's major activities are cultivation and charcoal making. Out migration from the village is rare, but those who

migrate out are doing so in search for employment elsewhere. Most of these are primary school leavers.

In Diozile, there are 331 households in the village, and the total population is 1,789 people. The Masai, Gogo, and Hehe are immigrants who are attracted by availability of a conducive environment for livestock keeping (Masai), and availability of suitable agricultural land (Gogo), and charcoal business (Gogo and Hehe). Out-migration is negligible in Diozile village.

Makombe has 872 people (456 women and 416 men). There is only temporal out-migration in the village whereby the youths move out in search for employment elsewhere. However, the rate of out-migration is counterchecked by more immigrants who come into the village for charcoal making.

Kwaruhombo village has a total population of 2,700 and 308 households. About 90% of the population in Kwaruhombo are Ziguas. There are few in-migrants who come into the village for agricultural and lumbering purposes. The village has six sub-villages, namely, Turiani, Vuga, Kilanga wageni, Luhanga, Mmisu, and Jaira.

Mkamsanja village started in 1975 and has 197 households and about 959 people. The dominant ethnic groups in the village are the Zigua and Kaguru. Other ethnic groups are Wabena and Wanyamwezi. There are few in-migration from neighbouring villages who come to the village for agricultural reasons.

Pongwe Kiona village has 250 households and 2,713 people. In-migration in the village is mainly dominated by the Gogo, Hehe, Kaguru malila and Pare. These people come to the village mainly for agricultural purposes, and some to seek employment in the AJV farm which employ about 1000 people.

Pongwe Msungura village has 200 households and a total population of 865 people. The dominant ethnic group is the Kwere. Other tribes are the Gogo, Nyamwezi and Masai. In-migration is mainly done by these latter groups. Out-migration is negligible in this village and this is basically involving the youths who move to towns and other areas in search for employment. The pastoral Masai come to the village on seasonal basis. Other in-migrants are attracted by

charcoal business and agricultural activities. Only one third of the village land is actually put under agriculture.

The total number of households in Kinzagu village is 187 and the total population is 1,016 people. The dominant ethnic groups are the Kwere and Zigua. Other tribes are the Gogo and Masai. Some in-migration is happening in the village due to presence of about four big Quarries. Other in-migrants are the pastoral Masai for grazing purposes. Out-migration is very limited in the village. Other in-migrants are attracted by charcoal business and agricultural activities.

Mindu Tulieni village has 258 households and a total population of 2,058 people. These latter groups mainly do in-migration. Out-migration is temporal, livestock keepers sometimes move out with their livestock in search for pasture and water.

In Lukenge village there are 1,776 people, among which 915 are women and 861 are men. There are 319 households in the village. In-migration is experienced in the village basically due to search for arable land and employment. Pastoralists move into the village in search for pasture and water. Employment opportunities in the sugar estates and availability of fertile land act as pull factors for migrants into the village.

Kidudwe village receives an average of 700 immigrants every year who are basically seasonal labourers in the sugar plantations. However, very few return to their homes. The majority remain with anticipation of getting employment in the next season. So far this is the largest village in the area with about 1,320 households and 7,379 people (3,729 men and 3,652 women).

The population of Kunke is estimated to be 3,383 or higher. No data was obtained with regards to sex distribution of the village population. The majority of the migrant population are the labourers and pastoralists. It was not possible to get the population

Kambala village has number of 406 households and total population of 2,600 people out of which 27% are males and 73% are females. This very low sex ratio might be a result of seasonal migration among the male population.. The main ethnic groups in the village are the Maasai and the Pare. Other tribes include the Ziguas and the Gogos. There is little in-

migration into the village because the Maasai in this village have settled. Similarly no out migration is experienced. There is seasonal out-migration just to send livestock to places where there is enough pasture.

Kanga village total number of households is 480, and the population is 2,907 out of which only 39% are in the labour force. The proportion of the males in the total population was 44% and that of females was 56%. There is little in migration. About 10 households entered the village from Turiani in 2002. They basically come in for agricultural purposes. No permanent out migration has been reported.

Mziha has a population of 4,499 people distributed in 799 households. About 55% of the population is males and 45% are women. This high proportion of male population may be a reflection of sex selective migration in the favour of men. Immigration in Mziha is practiced by the massai who move in the village in search for pasture and water for their livestock. There is very limited outmigration from the village.

Dihinda village has number of 720 households and total population of 4,222 people. The main ethnic groups in the village are the Wazigua, and Wanguu. Other ethnic groups available in the village include Wakinga, Wasukuma and Wanyiramba. There is little in-migration into as compared to out migration. Most of the people who move into the village are basically come on agricultural reasons, especially to cultivate rice, maize and sugarcane. The people who move out of the village do so just because they want to follow their relatives elsewhere.

The population of Mkono wa Mara is about 1,067 people. The main ethnic groups in these villages are the Waluguru, Wakwere and Wazigua. Other ethnic groups available include Wapare, Masai, Wagogo, Wachaga and Barbaig. In migration into the Mkono wa Mara is largely dominated by the pastoral Masai and Barbaigs who come to the village in search for pasture and water in the Ngerengere river. There are also few Prison officers who settle in the village. Maseyu and Gwata-Ujembe have 1,323 and 3,250 people, respectively. Most of the in-migrants in Maseyu and Gwata Ujembe are agriculturalists, employees, and businessmen. Out migration from these village is negligible. Few people migrate on transfer to other areas, and the pastoral people move out in search for pasture elsewhere.

### 6.3.3. Natural Resources:

The main natural resources available in the villages include land, wildlife, forests, water and fish. In Diozile village, the *Pugwe, Isotele and Gimuga Forests* were mentioned as the main natural resources which the villagers were really proud of. The details of these resources will be discussed in the ecological section of the report. In Tukamisasa village for example, villagers have more access to forests for charcoal making, timber, fuelwood, building poles, fruits, vegetables, and medicinal plants. Initially people in Visakazi were living in the areas that have been demarcated for the WMA and they were resettled during the villagization exercise in 1970s. Initially the Mwidu was famous for Mininga Maji, Mipingo and stones. These resources are no longer easily available. The forest resources are used for charcoal making, timber, fuelwood, building, poles, fruits, vegetables, and as a source of medicines.

Mindu Tulieni village belong to pastoralists. The village government has enacted stringent by-laws that restrict tree felling for charcoal making and other non-sustainable uses. Due to there restrictions, the village land is now covered with a good vegetation cover. This has brought a significant change and a big difference when compared with the neighboring villages which practice charcoal making business. The restrictions were effected since 1980s and are now starting to pay off. Mindu Tulieni village land was surveyed in the 1960s. The villagers showed the old map demonstrating the village land boundaries. Even with this map in hand, the village is still facing problems with its newighbour.

In Kambala village, the village government decided to protect the entire village land and no person is allowed to cut down trees. All villagers have accepted this regulation. However, sometimes outsiders come to cut trees in the village surroundings. In most cases such acts lead to serious conflicts. These natural resources are the village's contribution to the WMA. Apart from contributing land and forests to the WMA, the village land is well protected and there is enough vegetation cover to meet the present and future wood demand for the village. The strategies used in Kambala village are worth copying to other locations in the WMA.

Mkono wa Mara is attractive because of the presence of the river which is used for both livestock and wildlife. There are also potentials for beekeeping in these villages although this potential has not been fully utilized. The main threat on the villages that are locate along the trunk road like Maseyu and Gwata Ujembe is the charcoal business which causes a

remarkable deforestation. Shifting cultivation is still practiced in the villages and charcoal making is rampant. A villager is required to seek permission from the natural resources committee in order to get access to the natural resources. In Maseyu village for example, the village government charges only 50 Tsh. per bag of charcoal. This rate is very encouraging because the person remains with more than 1,500 Tsh. per bag.

Shifting cultivation is still practiced in many villages of Bagamoyo District. Farms are maintained for up to 5 years or less, then they are abandoned and new farms are cleared. This type of farming practices when combined with charcoal making business accelerates the rate of deforestation.

The procedure for accessing these natural resources is to go through the Natural Resources Committee for permission. In Visakazi, access to the resources is either through acquiring official license to extract natural resources like logging or to get a permit from the natural resources committee in the village. This is only done if the activities to be conducted are meant for business. In Mwidu village, to access the resources a villager is required to pay 50 Tsh. per bag of charcoal. This rate is very encouraging because the person would remain with more than 1,500 Tsh. per bag.

Most of the villages in Mvomero District are located along the Wami River, which forms the boundary of the WMA and the villages. In Kambala village, for example, one has to inform the Natural Resources Committee and get an escort to show the trees to cut. It is recommended to cut tree branches rather than the whole trees. It was surprising to note that there were no established procedures in Kidudwe and Dihinda villages. Everyone was free to do whatever he/she wanted. However, even in these villages, hunting was not permitted.

#### *6.3.4. Taboos and Rituals Related to Natural Resource Conservation:*

There are various areas that are still respected by the local people for undertaking their rituals. These areas are protected by taboos and various beliefs that hinder unsustainable utilization. There are cases of trees, animals and certain practices that could be placed under this category.

The villagers in Kifuletwa village identified *Lipungwi* area which is a forest to be used for rituals, especially when there is limited rainfall and crop failure. There are big stones in this area that are used for the rituals. There is also certain type of rituals like “*Tambiko la Ukaa*”, which need wild meat as a condition. This is just a reflection of the high demand for wild meat in the village. In Tukamisasa, villagers identified the *Pongwe forests* as an area that is used for rituals.

Other areas include *Chaga Mbili*, *Kidung’hwe*, and *Mwanailara*. In Visakazi, there are areas that were used for burials like *Lugome*, nobody is allowed to hunt in those areas. In *Tazi* area there are many honey bees. There is a cave where snakes and animals live. People are required to throw stones in the caves during their ritual activities. In Mbiki area there is a footstep on a big stone (*luwe*) and also there is a stone which looks like a mosque (*Jiwe la Msikiti*). All these sites have important cultural and ritual value to the local communities. The areas in Mwidu village that were used for burials include *Ndoyo* and *Mwidida*. In *Ndoyo* there is a huge Baobab tree, which is used for rituals. In *Mwidida* nobody is allowed to cut trees and



use a pot that has been used for cooking. In Kinzagu and Mindu Tulieni, the *Mindu Dam and the forested hill* are considered to be holy places for rituals (Photo 3). Mindu Dam was constructed in 1954 near a hill that is used for rituals. This area, is however, outside the Wami-Mbiki WMA.

Photo 3: Ritual Place in Kinzagu Village

In Pongwe Kiona village, the *Kwakisina* area is considered to be a ritual place. In Pongwe Msungura, the Msungura Hills (Photo 4) that are located on the edges of the WMA, are used for rituals by the local people. There are other areas that were used for burial services in the past, these are located within the WMA. Kwaruhombo village, the areas mentioned to be of ritual importance include *Kwechim* – a forest area that is used for sacrifices, and the *Kwedichinga* area. In Kwamsanja, the *Tiwana hills* and *Kwamgala Forest* both have traditional ritual importance to the local population.



Photo 4: Ritual Place in Pongwe Msungura Village – The Msungura Hills

In Kidudwe village, for example, local communities were talking about “*Tambiko la Mvua*” which has to be performed in specific locations and at specific times. Areas like *Msitu wa Bisi*, *Bwawa la Mwali* are some of such areas that have significant ritual importance.

In Kanga village the *Kanga Mountain* (Photo 5) was mentioned to be one of the areas used



for rituals. It is believed that the elders of the Ziguas were living around the Kanga Mountain. There are places on the mountain where people are not allowed to encroach for agricultural or for fuelwood collection purposes.

Photo 5: *Kanga Mountain, A place for Rituals in kanga village.*

Similarly, *Mlima Mpagali* in Kunke has some ritual importance. It was narrated that there is a spring that has never went dry. The trees around that trees are being protected and nobody is allowed to cut them down. It is also forbidden to take a shower, to wash clothes, or to put litter near the spring. In Lukenge village, the *Mkongo Forest* is used for rituals,. It was said that there is a special leopard which protect that forest. Again, no tree cutting is allowed in that area. In Kambala, it was reported that traditionally, the Masai don’t eat wild-meat. This means that wildlife in areas dominated by the Maasais are automatically safe and protected.

In Mkono wa Mara, no ritual were reported because most of the traditions died after the villagization exercise where people from different tribes and cultures were put together. In Maseyu and Gwata Ujembe villages, areas like *Madodogwa* (Samakimbi), *Mazizi* (Buyu), and *Mvuhi* were used for rituals in the past. Various trees like *Mikambala* and *Mitondoro*

were used for railway construction and later invaded by the Hehe in 1965 for timber production. These trees are rarely found today. To protect the water sources, there are taboos that limit washing near the wells. In some places people are not allowed to use aluminum pans in the rivers, and women are not allowed to go to the river while they are in period. The scientific justification of these taboos is yet to be established.

#### *6.3.5. Village Governments:*

In all villages the village governments had three main committees, namely: Planning and Finance, Defence and Security, and Social Services committees. However, the number of members in the village government and in the different committees varied from one village to another.

The village government in Kifuletwa village, for example, had 15 members out of which 7 are women. Currently there are 3 committees in the village that have 6 to 12 members. The members of these committees are elected by votes and are supposed to remain in office for a period of five years. Other members of the community participate in the decision making process through the general meeting. Generally the role of the leadership in community development activities is good, their performance in phase one was good. In Tukamisasa, the village government had 18 members, out of whom 3 are women plus the Chairman who is also a woman. Each of the three main committees has 6 members, but there is a dominance of male members in all committees. In Visakazi, the village governments had 19 members out of which 6 are women. The village government in Mwidu village had 17 members, only 4 members were women. Each of the committees has 5 members.

In Kanga village has 24 members out of which 8 are women and 16 are men. The distribution of the Village government members by committee and sex is shown in Table 6.3 below.

Table 6.3: Distribution of Village Committee Members by Gender in Kanga Village

Name of Committee	Committee Members		
	Males	Females	Total
Planning and Finance	6	2	8
Defense and Security	6	2	8
Social Services and Community Development	4	4	8
<b>TOTAL</b>	<b>16</b>	<b>8</b>	<b>24</b>

The village government in Mkono wa Mara had 19 members out of which 11 members (58%) were women, there are 26 members in Maseyu and only 7 members (27%) were women. There are also other sub-committees are instituted under the Wami-Mbiki CBO. These include the development, and natural resources and environment sub-committees. Efforts to ensure equal gender representation in these sub-committees have been made, but there some variations noted from one village to another.

At the village level, there are other subcommittees including the Natural Resources and Environment sub-committees. The leaders to these committees are elected by votes on a 5-year term. Other member of the village participates in decision making through the Village General Assembly. The sub-committee on Natural Resources and Environment has 9 members (7 men and 2 women), and the development sub-committee has 6 members (5 men and 1 woman). There is also a Construction sub-committee that had 10 members (5 men and 5 women) coordinating the TASAF activities in the village. The village governments in Kambala village had 15 members out of which 6 were women. Each committee had 5 members (2 women and 3 men). The same sub-committee were available in the village. In Dihinda, the village governments had 25 members out of which 7 are women with an equal number of committee members per committee.

The major observation is that the structure of the village government is preset. Similarly, the sub-committees which are established at the village level are described in the CBO constitution. The observed difference lies in the gender composition of the sub-committees. In all village, a deliberate attempt has been made to incorporate women in the village leadership and decision making processes.

At the village level, there are also two other sub-committees that are concerned with natural resource management and are constituted in line with the requirements of the Wami-Mbiki CBO. These are Natural Resources and Environment, and Development sub-committees. Often there is also a village or ward reconciliation committee, and Village Land Use Planning Committee to look into land management issues and solve land conflicts. There are about 4 sub-committees in the village. The leaders to these committees are elected by votes on a 5-year term. Other members of the village participate in decision making through the Village General Assembly.

#### *6.3.6. Village Government Office:*

In all villages, the village governments consisted of three main committees, namely planning and finance, defence and security, and social services and community development. However the number of members in each committee varies from one village to another. Similarly the gender representation in the committees also varies significantly. The village government office in Kifuletwa can be described as of poor quality. Though the village environment shows great agricultural potentials for development, there is no indication of high living standards in the village. Photo 6a&b show the housing situation in Pongwe Kiona village. Photo 6a shows house that was described as belonging to a poor family in Pongwe Kiona village. Photo 6b demonstrates that the feature observed in 6a, are actually common to many households in the village.



*Photo 6a: Poor Housing as observed in Pongwe Kiona Village, Bagamoyo District.*



*Photo 6b: Poor Houses as seen in the background around the village center in Pongwe Kiona Village*

Most of the houses in the village are not very different from the one shown above at least with regards to the roofs. These features are not limited to private households, but also to the village government offices.

The village government office in Tukamisasa is a nice one. In Visakazi, the village



government has just completed the construction of their office. The office was constructed using village resources. There is no village government office in Mwidu village. The village is hiring a room in a private house for an office. Recently, the village decided to construct one in 2003.

*Photo 7: Kinzagu Village Office*

In Kinzagu, the village government office was constructed in 1994 after the village received a payment of Tsh. 2 million from the Konoike Construction Company (Photo 7). Mindu



Tulieni has an office which was constructed in 1997 by an interested individual who wanted to establish a Petrol Station in the village (Photo 8). The village office is small in size and is located far from the residential area.

*Photo 8: Mindu Tuliene Village Office*

With regards to the village government offices in Mvomero District, there are variations from one village to another. For example, the village government office in Kanga village was nice but small in size, and the villagers were still constructing a much bigger office. In Kambala village, the village government office was still under construction. Villagers were also working on the completion of a dispensary building and houses for teachers. Construction was also going on in Kidudwe village after demolishing the old office. In Dihinda village there was no village government rather they were using the village godown as a temporary office for the village. A similar observation was found in Mziha village where the office was

an old godown which was constructed by MORECU in 1977. Contrary to the situations observed in other villages, there is a nice village government office in Kunke. The office was built on a self-help basis. Lukenge village has a plan to construct their office in 2004.

In Morogoro District, the village government offices in most villages are not in a good condition. In Maseyu village, for example, the office was a temporary building made of tree poles and mud. In Mkono wa Mara, the office was comparatively good constructed using burnt bricks and corrugated iron sheets. Most of the houses were built on a self-help basis using local resources and labour. This office was constructed on a self-help basis for a cost of Tsh. 50,313. There are some villages that have no office at all, but there are efforts for construct in 2003.

#### *6.3.7. Existing Community Based Organizations:*

In all villages, the main CBO was the Wami-Mbiki CBO. The impact of Wami-Mbiki was much felt because the office is providing a grant of one million every year to all villages that have fulfilled the established conditions for the grant. The Wami-Mbiki is coordinating and providing environmental education and management skills to the villagers and their leaders. Wami-Mbiki CBO has provided seminars to the leaders and members of the Natural Resources Committee. These are educated on their responsibilities with regards to natural resource conservation in the WMA. Wami-Mbiki has also assisted in providing training to the VGSs who are responsible for the day to day patrols in and around the WMA.

Kifuletwa village received a grant from the Wami-Mbiki which was used to construct 3 classrooms, 1 teachers' house and 2 offices. Tukamisasa village has also received a grant from Wami-Mbiki for construction of one classroom. Wami-Mbiki CBO has provided the village with 1.0 million Tsh for the construction of 1 classroom and 1 teachers house in Visakazi it started operating in the village in 1998. In Mindu Tulieni, a construction company, NCC, has promised to plant trees around the Mindu Dam for a cost of Tsh. 800,000. In Kanga village, the money provided by Wami-Mbiki was used to rehabilitate 3 classrooms using equipments worth 200,000 Tsh. In Kambala village, the money was used to rehabilitate 2 classrooms and constructed 35 desks.

In Visakazi, there is the Uzalendo Group which is financed by FINCA<sup>5</sup>. The objectives of FINCA are: to provide loans to the working poor, to assist the poor to initiate village savings initiatives (credit schemes), and to provide training in basic business planning, bookkeeping, financial management and administration. FINCA provides loans to the working poor. The values of loans range between Tshs. 30,000 and 50,000. The loan has to be repaid within a period of 4 months with an interest rate of 5 percent. One of the conditions for obtaining a loan is to be a member of a particular group. Through group discussion, beneficiaries become involved in the planning and implementation of projects. Before beneficiaries are given the loans they required to open a savings account and have at least 10 percent of the loan value.

Other Community Based Organizations include TASAF, DBSPE, and MMEM. There is also TASAF assistance in Tukamisasa for the construction of a dispensary. TASAF has also provided TSh. 15 million grant. MMEM has assisted Tukamisasa village to construct 2 classrooms at a cost of Tsh. 6.2 million. DBSPE assisted Tukamisasa village in the construction of 1 classroom and 1 teachers office for 3.6 million Tsh Mwidu village also received assistance from the DBSPE for constructing 2 classrooms.

In Mvomero villagers, TASAF is operating in the Kanga (construction of a dispensary - TSh. 28 million), The policy of TASAF is to provide about 80% of the total cost of the project and the resp must be provided by the villagers themselves either through cash contribution or in kind. MMEM has assisted villages in the construction of more classrooms in the schools. It operates in Kanga (constructed 3 classrooms, desks and toilets), Kidudwe (2 classrooms constructed), and in Lukenge village (3 new classrooms, rehabilitation of 2 old ones, and construction of school toiles with 8 holes).While MMEM assisted in construction of one classroom, the DBSPE programme facilitated the rehabilitation of three classrooms. DBSPE also operated in Kunke village where 2 classrooms and one teachers' office were rehabilitated.

Kambala village has received assistance from Finland for construction of a Dispensary, and houses of medical personnel. In Kidudwe, assistance has been received from STOAS, (a catholic foundation) to construct a Nursery School.

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<sup>5</sup> Foundation for International Community Assistance (FINCA) is an affiliate NGO with its headquarters in Mwanza. It started its operations in Tanzania in 1998.

In Maseyu, Wami-Mbiki has so far provided 3.0 million Tsh for the construction of classrooms and an office. There are plans to construct a dispensary building in the village. In Mkono wa Mara, no singe sent from Wami-Mbiki has been utilized because the village has failed to fulfil the minimum conditions for the release of the money

#### *6.3.8. Knowledge of the WMA Concept:*

Villagers in Kifuletwa, Kinzagu and Tukamisasa, villagers mentioned their responsibility is to ensure that the Wami-Mbiki and the villagers cooperate in the protection of the natural resources that are within the protected area. Generally there is poor knowledge on the environmental and natural resource conservation. It was reported in Pongwe Kiona that there was a businessman in the village that had a farm cultivating maize, but also he was involved in logging. He managed to manoeuvre to get a lease for his 1,000 acres farms. This land was given to him free of charge by the village with expectation of getting benefits in terms of employment, and improved infrastructure. Surprisingly, this land has been sold to a South African farmer without the knowledge to the villagers. This aspect needs a closer investigation to establish the fate of this village land that has fallen in the hands of private investors. The biggest worry here is the fact that the farm is adjacent to the WMA, hence, will create a loophole for encroachment and poaching. This loophole needs to be sealed. What can be emphasized here is the need for education to the local population not to sell their land without properly written agreements.

In Visakazi village, there three factors which indicated the level of knowledge that the community have. These include sustainable utilization of the existing natural resources including wildlife, benefit sharing, and security of the natural resources. These factors indicate that the villages have a high level of understanding of what they are supposed to do in the WMA. Despite this understanding, Visakazi village is largely dependent on charcoal business as a major source of income. This activity has a major impact on the environment in general, and on the natural forests in particular. In Mwidu, villagers are aware that they have a responsibility of protecting the area from illegal harvesters and poachers.

Awareness of the WMA Concept in Mindu Tulieni has been raised significantly. Villagers have managed to protect their own village environment by enacting by-laws that limit tree cutting and charcoal making in the village area. Villagers used the contribution from wami-

Mbiki to construct classrooms. The villagers are also responsible for the protection of their own forests and the WMA. Though there are VGSs, there they need to train three more in order to manage the patrols in their area.

Almost all villages, the villagers mentioned their responsibilities to include the protection of the existing natural resources (including wildlife) and ensuring sustainable utilization of the resources. Generally, security of the WMA is the number one responsibility of the member villages. Other villagers also mentioned benefit sharing as one of the major aspects of the WMA Concept. The facilitator of Wami-Mbiki has assisted in providing training to the village leadership and village representatives through seminars and workshops. During the period of this study, there were seminars, which were going on at the Mkongo Camp on a rotational basis. Village leaders are given skills on natural resource management and community involvement including the WMA Concept. There are training on how to manage the project, promotional skills, book keeping, and general administration for leaders, VGSs, and other stakeholders. Generally, the level of awareness is very high in the Wami-Mbiki villages as most of them has been in operation for the past nine years through the CBC programme.

In Kambala village, the main responsibilities of the village include to protect the existing natural resources especially forests and wildlife, and also enhancing cooperation with other villages in the Wami-Mbiki association.

In Dihinda, the WMA Concept started to flow from the village level. Village government representatives informed villagers about the CBC idea and the benefits that would be obtained. The benefits include village development, wildlife harvesting, and distribution of profit to all villages. The alternative for these was lack of any benefits and destruction of the wildlife, meat being sold elsewhere, and fish resources being depleted. With regards to land allocation to the WMA, there are complaints from the people who were living in the area identified for the WMA and those who were benefiting from illegal business like lumbering and hunting. Efforts are being made to educate them so that they can support the WMA Concept. No land use planning has been done for all the villages in the Wami-Mbiki WMA.

In addition to the general responsibilities of the member villages, villagers in Kidudwe also mentioned contribution of ideas and community involvement in the planning, implementation

and benefit sharing from the projects. The villagers are considered to be partners in the wildlife management and conservation. Kunke village was very categorical that they were happy for the chance to benefit from the harvesting of wildlife and other resources. Security of the boundaries, advocacy, and environmental conservation were mentioned in Lukenge village as being the main responsibilities of the local communities in the implementation of the WMA Concept.

The main problems that need immediate attention in villages located in Morogoro District (i.e. Maseyu, Gwata-Ujembe, Mkono wa Mara) include bush fires and illegal timber and charcoal making. Though the CBO has already been formed, there are still some boundary conflicts between member villages. Examples of the boundary conflicts include the Maseyu versus Mkono wa Mara, a conflict which has finally been resolved through dialogue and mutual understanding.

#### *6.3.9. Wildlife Related Court Cases:*

There are 2 natural resource cases in the court of law in Kifuletwa. The first case regards wild meat and the second one is related to illegal possession of a gun. There is also a case at the village reconciliation committee, which is related to charcoal making in the protected area. These cases are just few indicators of the presence of non-sustainable utilization of natural resources in the village. In Tukamisasa village, there were reports that some people were sent to court for possessing government trophies and wild meat. Some cases were sent the village reconciliation committee especially in relation to charcoal making, and tree felling. The offenders were fined to pay Tsh 5,000. In Visakazi, only one case related to timber possession has been reported. However, evidence from the village shows a significant rate of encroachment into the protected area for hunting, timber and charcoal making. In Mwidu and Kinzagu villages no court cases were reported. The boundary conflict between the Mwidu village on the one hand and Kaloleni and Visakazi on the other was resolved at the Ward reconciliation committee.

In Mindu Tulieni, no cases have been reported. However, there are people who are still working on timber business, entering the WMA. One case was reported in 1999 for tree felling. The offender was jailed for 3 months. Another case was reported in 2001, and the village won the case.

Although patrols are done regularly using the trained VGSs, and in some areas offenders are being caught, there have been no cases reported in the Court of Law. In villages like Kanga, no case has been sent to the Village/Ward Reconciliation Committee either. The absence of cases does not reflect that there are no offenders in the member villager. It might be true that some of the cases are resolved through a gentleman's agreement at the village level.

The major conflicts observed in the Mvomero villages are based on farm boundaries, and on the distribution modalities of the defunct Dakawa NAFCO Farm. For example, there were boundary conflicts between Dihinda and Kunke villages. The basis for this conflict was the fact that a large proportion of the land in Kunke is put under sugarcane cultivation, hence, leaving no land for food crop cultivation. The conflicts between these villages were resolved through the ward reconciliation committees.

In Kambala, there are conflicts between livestock keepers and cultivators. Sometime livestock enter into farms, hence, stimulating conflicts. However, the village by-laws state clearly that, whoever cultivates outside the areas earmarked for cultivation as indicated in the Village land use plan would not be compensated for crop losses. In this case, most of the cases are closed at the village reconciliation committee.

In Kidudwe, the incidences of breaking the by-laws regarding the protection of natural resources in the WMA are increasing. Although the Chairman of the natural Resources Committee reported that there were many cases at the district level, no evidence of cases were reported at the Ward or village reconciliation committees. Similarly, no cases were reported in Mziha and Lukenge villages.

There are some cases that were reported in Mkono wa Mara. These include one on timber business (2002) and another one on boundary conflicts with Maseyu, which was finally resolved at the Ward Reconciliation Committee. There was also a case in relation to a leased land within the village land. This lease of about 50 hectares of farm was finally revoked. In Maseyu village, no court cases have been reported in the village. However, there are minor cases that are being solved at the village level. To enhance the security, the VGSs and the members of the natural resources committee in Maseyu meet every Wednesday for patrols. At least one saw was arrested and confiscated in Maseyu.

### *6.3.10. Collaboration With Other Stakeholders:*

There is close collaboration between the Wami-Mbiki WMA and all villages. There have been regular training sessions between the AA and the village leaders. Since the establishment of the CBO, there are seminars which are being conducted at the Mkongo Camp involving village leaders, and village representatives. Regular meetings are conducted aiming at educating the local communities on the development of the project and reporting back on the progress of the project. Each member village has two representatives in the CBO General Assembly. The village representatives are supposed to be the link between the villages and the CBO. There have been regular training sessions to the village leaders, especially those in the Natural Resources and Environment Committee. These trainings have been going on since 1998.

In Mwidu village almost eight meetings were conducted in 2002. Kifuletwa village, for example, has received some assistance from the project that enabled them to construct classrooms, teachers' houses and offices. However, poor communication linkage between Kifuletwa and the project headquarters at Mkongo Camp is considered to be a major obstacle. Kifuletwa village has also trained 3 VGSs and leaders have attended seminars. In Tukamisasa, the project staff visited the village almost 6 times in 2002. The village also received some assistance from the project which was used to construct classrooms, teachers' houses and offices. In Mindu Tulieni, a system has been established that the village representatives to the CBO Assembly are required to meet with the village government before going to the Assembly meeting, and after coming back to give feedback. This system ensures that the representative represent the village interests in the CBO.

There is no established timetable for meeting with stakeholders but it was reported that staff from the project and district do come to meet the village government to discuss on issues of conservation of natural resources. Visits by staff from the District Council were irregular unless they are informed of an emergency event. The District Forest Officer (DFO) was reported in Kifuletwa that he regularly visits the Ward Headquarters at Mbewewe. No wildlife officer was reported to have visited the village. In Visakazi, villagers have sent complaints about the problem of vermin but no response yet. Other assistance was received from the DSPE programme.

With regards to the government officials, meetings or visits to the villages are irregular, unless there is a Forest Officer in the village like in Kanga village. The Forest Officer in Kanga is working closely with the villagers and assisting them to improve their lifestyles. However, no beekeeping activities are conducted in the village. Reports from Kambala Mziha, Kunke and Lukenge villages indicated that, none of the government officials visited the village for the purpose of discussion or guiding villager on the best ways of protecting the natural resources to ensure sustainability.

It was reported in Dihinda village that during the mobilization phase, project management collaborated closely with the DC, DED and the DNRO to go around the villages to mobilize the local communities on Community conservation issues. Similarly, staff from the wildlife and natural resources departments visit Dihinda village whenever there is a visit for the mobilization team. This was also the case in Kidudwe village where district staff are reported to assist villagers to solve their problems. They discuss issues related to strengthening of the project and on sustainable conservation and utilization of natural resources.

Though Mkono wa Mara village is collaborating with Wami-Mbiki, solidarity in the village is poor. While other member villages have received one or two instalments of the grant from Wami-Mbiki, Mkono wa Mara has received no money because they have not fulfilled the required basic conditions. There are land use conflicts in the village between livestock keeping and agriculture and wildlife conservation. In Maseyu, there are regular meetings with the CBO administration. It was reported that representative of the wildlife department and Wami-Mbiki visited the Mkono wa Mara almost 3-4 times and held talks with the villagers to discuss the implementation of the Wami-Mbiki WMA. Representatives for the government side were present at the meeting at Bwawani where the member villages discussed the draft constitution for the CBO. They were there to educate the participants on the major issues concerning conservation. However, in some of the village it was clearly mentioned that none of the staff from the wildlife, forestry, and even agriculture were visiting the villages

Each village has two representatives to the CBO who meet regularly to receive progress reports of the project and are supposed to report back to the village. The village leadership and representatives have attended seminars on the collective protection responsibilities in the WMA. Training has also being given to the VGSs.

### 6.3.11. Social Services

Education: There are three primary schools in Kifuletwa village. The first school is located in Kifuletwa sub-village and has Class I-VII. There are 4 classrooms, 7 teachers, and only 1 teachers' houses in the school. The school has around 200 pupils. The second school is located in Changalikwa and has I-VII with 300 pupils. There are 6 classrooms, 8 teachers and 3 teachers' houses. The third school is located in Kikwazo sub-village and has Class I-VII as well. This school has 42 pupils, 2 classrooms, and there are 3 teachers but no single teachers' house. The schools have insufficient number of desks

Tukamisasa village has a primary school, which has 512 pupils (302 boys and 210 girls). There are 6 classrooms, 6 teachers, and only 1 teachers' house. Visakazi village has a nursery, 1 primary and 1 secondary school in the village. Originally the primary school in the village belonged to the Prisons, but it has now been handled to the village. There are no houses for the teachers as teachers were living in the prisons houses.



Kinzagu village has no school. The village has started construction of a school building but has failed to complete it (Photo 9) and there are neither teachers' houses nor teachers.

*Photo 9: Primary School Building in Kinzagu Village (Not Completed).*

Mindu Tulieni has a school which has 7 classrooms. There are six teachers, and only three houses. Some of the teachers have hired houses in Lugoba village. The school has 178 pupils. For the past thirteen years the school has never send a child to secondary school. Makombe village has managed to construct six classrooms through the MMEM program. The MMEM program has actually changed the features of many primary schools as observed in Photo 10 below.



*Photo 10: New Classrooms at Makombe Primary School (MEM Program).*

In Kanga village, there is 1 primary school which has only 4 classrooms and 2 condemned rooms. Renovation of four classrooms and construction of two residential houses and one classroom (Bwage Primary School) in progress.

The overall performance is good and the school construction committee is capable of keeping their record and the remaining materials are well kept (Photo 11).



*Photo 11: Kanga Primary School, Some of the Rehabilitated Buildings.*

Kambala village has 1 primary school which has class I-VII . There are only completed 6 classrooms in the school. Although the school has 9 teachers, there are only 2 teacher's houses. The school has 525 pupils.

Construction of four new classrooms, two teachers' houses, and one staff office is progressing well. One of the houses has reached at the linter stage while the other one is still a foundation. The classrooms are at a roofing stage.

Dihinda village has 1 primary school which has Class I-VII . There are 8 teachers, with 1,118 pupils. This number of teachers is not enough for the 23 streams that are available at the school. The school buildings are in good condition as they have been rehabilitated through various programs over years. Construction of two residential houses for teachers, four classrooms, and one staff office has been completed. Kidudwe village has a school, which has 1,230 pupils. There are 11 classrooms, 6 teachers and only 3 teachers' houses. There are plans to construct a second school. The village has already acquired/identified a plot where the school would be constructed.

Mziha village has an old school that was constructed in 1962. The school has Class I to Class VII and there are 386 pupils. Unfortunately, there are only 3 teachers. Some of the classrooms were demolished during the Elnino' rains. There are only 5 classrooms in the school at the moment. Kunke village has a school that has 12 classrooms, 2 offices and 3 teachers' houses. There are 12 teachers at the moment in the school. Some of the teachers have their own houses in the village. Lukenge village has a primary school with Class I to VII. There are 9 classrooms, 8 teachers, 3 teachers' houses

Most of the villages in Morogoro District have primary schools in their areas. However, Mkono wa Mara has literally is no school. Children walk to the Kingolwira Primary school located some 3 to 4 kms away. The pastoralists in the village have established their own school, but even that one is poor easily accessible for non-pastalist communities. The owners have decided to put a high contributions rate which acts as a barrier to other villager to use the facility. The village is now planning to construct a school in the village. In Maseyu, there is a primary school which has 6 classrooms and there are 8 teachers. The village has also started another school in Mazizi sub-village where there 2 classrooms and 1 teacher. The amount of classrooms available in the village is not adequate.

Health Services: There are no health services provided in Kifuletwa village. However, villagers are currently constructing a dispensary building. In Tukamisasa village, there is no health services provided in the village. However there is a dispensary facility, which is being constructed under the assistance of TASAF. Health services in Visakazi village are provided at the Prisons Dispensary. There are complaints that the medicines are not enough. The village has a plan to construct their own dispensary. They have so far completed the digging of the foundation for the dispensary building. There is no health services provided in Mwidu village. Villagers walk (some 8 kms) to Bwawani to attend health services, or to Ubena Estate (8 kms away). Kinzagu and Mindu Tuliene villagers receive health services in Lugoba village. No mention was made of a plan to construct a dispensary in the village.

There is an old dispensary building in Kanga village. Construction of a new building is also progressing well under the assistance of TASAF. There is a dispensary in the Kambala village. The services are provided by 2 RMAs and 2 nurses. The problem facing the facility is inadequacy of medicines. There is another dispensary in Dihinda village. However, the

provision of health services at this facility is overwhelmed by an influx of many people from within and outside the village. Expansion of dispensary is a necessary option to cope with the existing population. In Kidudwe apart from the Primary Health Care Center which is services by a Health Attendant, there no health services provided. Villagers travel to Turiani, some 12 kilometers away, to receive health services. Mziha village has a dispensary which is managed by 2 RMAs and 3 Nurses. The dispensary was constructed in 1977. It is facing overcrowding and shortage of medicines. There are no health facilities in Kunke. Villagers travel to Bwagara or Tuliani about 8 kilometres away to receive health services. Lukenge village has no health facility at the moment. However, the village is constructing a dispensary building. Currently, villagers depend on Bwagala Hospitas (Tuliani) for health service provision. This hospital is about 20 kilometers away.

All member villages in Morogoro District have no health services provided within the villages. Villagers in Mkono wa Mara have to go to the Kingolwira Prison Dispensary for treatment. There are plans to build a dispensary in the village. For Maseyu and Gwata Ujembe villages, health services are received from Mikese or Bwawani, respectively.

Water Sources: The village has 2 dams in Kifuletwa that were constructed in 1994 and 1999, respectively. However, the villagers depend on traditional shallow wells as a source for water for domestic purposes. In Tukamisasa, there is one dam constructed in 1994. Many villagers rely on traditional wells. However water supply is not sufficient to meet the village demand.

The water situation in Visakazi is pathetic. Though there is the Ngerengere River passing through the village, Visakazi is still facing severe water problems. Water from the river is severely polluted by urban sewage, as it passes through the center of Morogoro town. The water from the river is a major source of water borne diseases like cholera, typhoid and diarrhea in the village. Most villagers rely on shallow wells owned by the prisons, and many others depend on traditional wells which also do not guarantee the safety of the water. In Mwidu village most villagers rely on traditional wells.

Kinzagu village has a Dam which was constructed in 1954. However, this Dam is now being used by the Construction Companies which have established Quarries in Kinzagu. The village is still fetching water from the Dam using buckets and carrying water back

home on their heads. Efforts need to be made to request the Construction Companies which are benefiting from the resources available in Kinzagu, to assist at least to establish a water network in the village and pump the water to reach the various parts of the village. At least NOREMCO has shown interest in this direction. Mindu Tulieni and Makombe villages also depend on the same dam for their water. Mindu Tulieni has a piped water system which distributes water to many parts of the village. There is a water tank in the village and villagers do contribute Tsh. 20 per twenty liters of water they use. This system has managed to keep the system sustainable and operational, as compared to the other neighboring villages.

There are about 6 shallow wells in Kanga village. Each well is managed by a WUA, which comprise of about 100 users. Kambala village has a borehole which was constructed by the government in 1970. There is also a piped water network. There is also a big storage tank (Photo 12). Water is sold to all users at a price of Tsh. 20 per 20 litres bucket. Dihinda



village rely on locally constructed wells. There is one shallow well in the village but it is out of order.

*Photo 12: Water Tank in Kambala Village*

In Kidudwe village, there are 9 shallow wells fitted with pumps. Only one is not working. However, the actual requirement of shallow wells is high, and there is a deficit of 23 wells. Many villagers rely on unprotected traditional wells. The villagers in

Kidudwe village rely on poorly protected traditional sources of water, which do not ensure safe and clean water (Photo 13).



*Photo 13: Traditional Well in Kidudwe.*

Mziha village has no reliable water sources apart from the Mziha river. There is every indication that the river water are polluted as indicated in Photo 14 which shows a toilet facility built just adjacent to the riverbank.



*Photo 14: Toilet Constructs Adjacent to the River Bank – Mziha Village .*

There are 5 wells fitted with pumps in Kunke village, but 2 of the pumps are not working. Some of the villagers rely on traditional wells to get their water. In 1995/96, Lukenge village received a generator from DHV to be used for pumping water for village use. The generator was out of order after 2 years of operation. The generator was repaired but worked for only 3 months and was out of order again. The water pump was sent to Tuliani for repair, but worked for only 3 months and was out of order again. With no pump, it is difficult for the villages to get water from the river. One of the threats of going down the river bottom to fetch water is the presence of crocodiles.

There are no improved water systems in the villages. Almost all villages depend on traditional wells, and the river. In Maseyu, there is a dam that was constructed by the Jensen Contractors.

*Other Services:* Currently Kifuletwa village has two milling machines, and there are mosques and churches in various villages. There are milling machines and few shops in most of the villages. Other services available include mosques and churches, markets,

kiosks, and tea rooms. Maseyu village have no milling machine and lacks modern farm implements.

#### 6.1.3.12. Community Solidarity

Community solidarity in Kifuletwa villages is high as demonstrated by the villager's commitment to construct a dispensary and 3 primary schools to solve their health problems. For example, the village authority decided to split the Tsh 1,000,000/= given by Wami-Mbiki so that each of the three schools available in the village gets a share. Basing on the spirit of solidarity, Kifuletwa Primary school was given Tsh. 330,000 (village contribution Tsh. 116,800); Changalikea Primary School received Tsh. 330,000 (village contribution Tsh. 70,000); and Kikwazu Primary School got Tsh. 342,200 (villagers contribution Tsh. 108,500). The contribution from Wami-Mbiki was either in cash or in terms of materials. The village contribution included payment to the masons and laborers, water, sand and stones, and timber. There is still more room for improvement in future. However, there were villagers who complained about favoritism, especially in identifying people to join the VGS's training.

In Tukamisasa, the performance of the leadership in community development activities is good so far in terms of encouraging, mobilizing the community to participate on their development activities. However, the status of the ongoing projects including the school project was not good as some of the material were stolen.

Community solidarity in Mwidu village is high. There is fully participation ion self help projects. However, the building materials that were supplied by Wami-Mbiki were stolen under dubious circumstances, no reasons have been given and nobody has been caught.

In Kinzagu village, it seems there is a problematic leadership. There were complaints fund miss-management and villagers were demanding explanations. The funds which were paid to the village were distributed among the members of the Natural Resources Committee. A decision was made later that all those who received the money were required to refund the village, but that decision has not been fully implemented.

Solidarity in Mindu Tuliene is very high. The village has development prospects. They have made significant efforts to protect their natural environment although they are facing a lot of

opposition from outsiders who want to utilize the tree resources, especially for charcoal making and agricultural expansion purposes.

Community solidarity is high in Kanga village. The role of the leadership in community development activities is good so far in terms of encouraging, mobilizing the community to participate on their development activities. In Kambala, there is evidence of community commitment to natural resource conservation which has been put into practice in the whole village. In Dihinda, community solidarity is high. Village leaders are elected by votes and they stay in office for 5 years if no problems. Other members of the community contribute to decision-making processes through the general meetings (3 times annual). The role of the leadership in community development activities is good and their performance in project implementation is good.

In Kidudwe village, community solidarity is still low. The majority of the villagers are not responsive; they need some sort of a push. In Mziha village, there is enough cooperation among the villagers. However, it was reported that there are no procedures for allocating land or controlling farm expansion, especially on steep slopes and along the riverbanks. Reports from Kunke village indicate that there are some villagers who are not cooperative. These include hunters and diggerers. However, the majority of the villagers are cooperative. The difficulty cases are referred to the ward level for reconciliation. In Lukenge village, there is good cooperation between the villagers and their leaders.

Community awareness and solidarity in Mkono wa Mara is poor. There is also poor participation in self-help activities. That's why the village has not been able to access the funds that are given by the Wami-Mbiki to every village for development projects. There is no village development plan. The poor collaboration in Mkono wa Mara village is probably caused by poor leadership. Contrary to that situation, community awareness and solidarity in Maseyu village are high. The participation of villagers in the construction of classrooms, dispensary buildings, and teachers, houses demonstrates the people's willingness to participate in self-help projects for their own development.

## **6.4. Economic Aspects**

### **6.4.1. Economic Services**

Before we dwell on economic activities it is important to look at the economic services, which are available in the villages within the pilot WMAs. Social services have been discussed in the previous section (6.1.3). Seven villages are serviced by seasonal roads, while five have all-weather roads and four lie along or close to a tarmac road. Seven villages reported having no bus services, six had daily bus service and two had irregular bus service. Most of the roads leading to villages are old tracks, which have been left to deteriorate due to lack of repair. For example the road from Madizini to Mziha is on a major road that is supposed to be maintained by TAN-ROADS but nothing has been done for a long time. This raises the cost of production for farmers, in terms of brings in produced inputs while lowering the price of farm products.

In terms of livestock infrastructure there are two dams in Kifuletwa village that were constructed in 1994 and 1999. But, there are no livestock most of the villages except at Kambala, where there are several water troughs where livestock go a drink water. At Mindutulieni there are seven water trough but they are all not working. There are also two water charco dams. Though there are many livestock in Mkono wa Mara village, there is no livestock infrastructures. This situation was also noted in Maseyu village.

The mean distance to the nearest business center was 12 kilometers and the maximum was 30 km. The mean bus fare was Shs 507 ranging from Shs 1000 – 150. Bicycles are the most important means of transport. In all villages, on average 59% of the villagers own bicycles with a maximum of 85% at Lukenge and a minimum of 5% at Pongwe Msungura. The mean bus fare rate was 507 Shs. Ranging from Shs 1,000 - 150 depending on distance. Bicycle rental rates were 775 Shs on average for self drive service. The range was Shs 1,500 – 500. If the owner drives then the average price was 1,000 Shs in all villages where this information was provided. At Kambala and Mindutulieni villagers there are residents who own motorcycles. Maasi predominantly settles both villages. Other services, which were mentioned as being available within villages include (with number of villages being indicated in brackets) Telephone (2), Cellular Phones (10), Electricity (1) and television (1).

Livestock Infrastructure: There are two dams in Kifuletwa village that were constructed in 1994 and 1999. There is no livestock facility in Tukamisasa. There is one dam in the Mwidu village. Mindu Tulieni has four dips but only one is in a working condition. There are also seven water troughs, but all of them are in bad condition. Though there are many livestock in Mkono wa Mara village, there is no livestock infrastructures. This situation was also noted in Maseyu village. It was also noted that there are no livestock facilities or infrastructure in Kanga village. In Kambala village, there are several water troughs where livestock drink water.

Transportation: There are 3 service roads in Kifuletwa but all of them are in bad condition. There are certain periods of the years where it is impossible to access the village. In Tukamisasa, the poor communication between the village and the project headquarters at Mkongo is a big problem. Visakazi, Mwidu, and Kaloleni, village is located along the trunk road from Morogoro to Dar es Salaam. For these villages transport is not a problem of much concern. With the exception of Mkono wa Mara, all member village in Morogoro District are located along the Dar es Salaam-Morogoro trunk road. For this village transport is not a problem of much concern. In Mkono wa Mara, there is a minibus that shuttles between the village and Morogoro. Also the main trunk is within the walking distance. This means that the village is also easily accessible.

Poor communication network is a big problem in Kanga village. The link between the village and the project headquarters is also a big problem. Kambala village is not far from the main road, hence, transport is not a big problem. However, there is a problem of linking the village with the WMA headquarters at Mkongo Camp because the Wami River separates the two. There are many bicycles in the village. Dihinda village is accessible though the roads are not very good. There are shuttle min-buses to Madizinni, where one could get bus connections to Morogoro and other areas. Transport to Mziha is depends on the passability of the road from Madizing to Handeni.

#### 6.4.2. Economic Activities

Based on the Focus group discussion, general information regarding the status of the potential economic indicators was established. On average the villages have 459 households with a maximum of 1,320 at Kidudwe village and a minimum of 187 households at Makombe. The

number of villagers was 2088 on average with 4,499 being the maximum at Mziha and the minimum was at Pongwe-Msungura where there were 865 villagers. Out of the 22 villages, which were visited only 10 were able to provide information on the workforce; commonly referred to in villages as the number of able bodies person. In the remaining villages only the record of tax payers (all male) was at hand or none at all. This often occurred where the villager Executive Office (VEO) was new. In some villages the turn over rate of VEOs is quite high. The mean for the work force was 886 people with a range of 2400 to 320 at Mziha and Pongwe-Msungura respectively. In seven villages where information regarding the gender breakdown of the work force was provided, indicated that women out numbered men, being 414 on average compared to 370 for men.

Information was sought on economic activities and their relative importance. The analysis revealed that farming was the most important economic activity being undertaken by 95% percent of village residents on average and by all villagers in most cases. Charcoal making involving 47% of the villagers on average came second. It was closely followed by livestock production and business (16% each), employment (15%) and timber production (9%). Artisan work, beekeeping and fishing were only mentioned in one village each, because these activities involve using the natural resource within the designated WMA, which has been closed since 1997.

Results from the household survey indicate 93% of the respondents had farms and farming, which includes food and cash crops as well as vegetables was mentioned as the main economic activity during the rainy and dry season by 80% and 38% of the respondents respectively. Most households engage in vegetable production along rivers and streams mostly during the dry season, when 15% of the respondents listed it as a third priority, after small business (36%) and food crop production (30%). The area under production of different crops is given under Table 6.4. Other crops, which had 0.25 to 2 acres, are sorghum, simsim, potatoes and tobacco and onions.

Table 6.4: Average Area Under Different Crops

Crop	Short Rains (Acres)			Long rains (Acres)		
	Mean	Maximum	Minimum	Mean	Maximum	Minimum
Maize	1.90	75	0.50	2.20	13.0	13.00
Beans	0.75	1	0.50	1.20	2.5	2.50
Cassava	0.75	2	0.25	0.95	4.0	0.25
Rice	-	-	-	2.40	9.0	0.25
Green vegetables	0.70	2	0.25	0.71	1.4	0.25
Tomatoes	0.67	1	0.50	3.00	3.0	3.00

Other activities that were mentioned by respondents from the household survey include wage employment (3%), sale of handcraft (0.6%), livestock keeping (2.2%). About 39% of the respondents earn Shs 100,000 or less. Another 35% earn between Shs 100,001 and 500,000 while 27% earn more than Shs 500,000 from the productive activities they engage in. The results indicate that in addition to their own productive activities, about 29% of the respondents received any money or income from relatives or friend from outside the village. On average they receive about Shs 42, 375 per annum, ranging from Shs 1,000 to 300,000. Meanwhile, the mean value of sales from agricultural production is about Shs 383,350 per annum with a range of Shs 1,000 – 500,000.

Majority of the respondents rely on their own savings to finance economic activities. Only 33% of the respondents reported to have borrowed money from family members (33%), friends (45%), banks (12%), neighbors (5%) and moneylenders (3%). Most of the loans were short term, being repaid in less than three months (73%) or between 3 - 6 months (14 %) or 7 – 12 months. Only 5% of the loans were repaid in more than twelve months.

Charcoal making was ranked higher in villages within Morogoro and Bagamoyo district, which lie along or not far from the highway to Zambia or Moshi. At Kinzagu village for example, it was reported that 90% of the villagers were somehow involved in the charcoal business. But, at Kambala and Mindutulieni charcoal making was not listed as an economic activity. Maasai predominantly settle in both villages. These villages, especially at Kambala, have preserved their natural habitat by instituting a strict code of conduct for villagers on cutting trees. Outsiders have been kept out through heavy punitive action. Although the

political will for conservation was equally high at Mindutulieni, the level of enforcement was not as successful, probably because of the more heterogeneous composition of the village residents, and the degree of hostility from neighboring Makombe village due to a long standing boundary conflicts and access to land in general. It was noted however that while the cutting of trees is closely monitored within Mindutulieni, some Maasai hire non-Maasai people to make charcoal for them in other villages. The Maasai of both Mindutulien and Kambala impose another externality on neighboring villages as they take their animals there for grazing during some period in a year, while conserving pastures and trees in their own village.

Charcoal making is done on land that falls outside the pilot WMA boundary, but is within the open land of the village. In most cases this area is perceived to be still abundant. Some of the villagers however are concerned about the sustainability of charcoal making as an economic activity. It was pointed out at Diozile village for example that since the Maasai at Mindutulieni have demonstrated that the forests and natural vegetation in general can regenerate, it is conceivable that they could sub-divide their open land and implement a rotational harvesting program say of five years. This would reduce the risk of villagers encroaching on the WMA once their open land gets depleted of trees for charcoal making. It would be worthwhile to assist selected villages to experiment with this approach to community-based conservation (CBC). Christophersen and Jambiya (2000) had a similar suggestion, proposing a rotation of 6 – 16 years.

The volume of charcoal off take is alarming. It was for example reported at Diozile village that on average 4 – 7 lorries per week leave the village to markets in Dar es Salam, Morogoro and other urban centers. Each Lorry contains 80 – 100 bags of about 60 kg each. This is equivalent to 42 tons of charcoal per week. Research has established that using existing technologies one ton of charcoal requires 12 tons of wood. Improved technoligis may reduce this requirement to 9 tons. This means the off-take of trees from Diozile village for charcoal making alone is up to 504 tons per week. This situation is similar in another 12 villages of Wami-mbiki, which lie on the southern and eastern side of the pilot WMA.

Livestock production came third in order of importance. The two Maasai village (Kambal) and Mindu Tulieni) have large herds of cattle where the richer residents have more than 500 heads of cattle and they constitute 10% and 6% of the villages in Kambala and Mindu Tulieni

respectively. At Mkono wa Mara there is a sub-villages (Sangasanga) which is predominantly settled by Maasai. The sub-village runs its own affairs including a primary school at which they imposed high contribution rates, such that farmers can generally not afford. Under the household survey, 63% of the respondents reported to have livestock, which cattle, goats, sheep, pigs, donkeys, chicken and other poultry as well as rabbits. Although the value of different types of livestock was reported, what is more useful for the purpose of this study are the numbers, which will provide an indication of the potential impact of livestock on the natural resource in general and the WMA in particular.

In most of the villages teachers and medical staff were the only people mentioned on the employment list. Employment was ranked as important in four villages including Kidudwe and Kunke where about 20% of the households were reported to have at least one member employed on temporary or permanent terms at Mtibwa Sugar Company. At Visakazi village in Bagamoyo about 30% of the households were said to have some form of employment, mostly at the nearby prison. Although Mkono wa Mara is also next to Kinguruwila prison, the level of employment by villagers at the prison was said to be limited to only a few individuals. Other villagers worked at Diamon, a tobacco processing plant that is located within Kinguruwila ward.

In Lugoba division, Bagamoyo district, there are seven companies operating gravel crushing for road and real estate construction near Kinzagu village. This provides limited employment to nearby villages. Wami Mbiki was listed as important employer in four out of the 22 villages, which were visited. Most of them are hired as Village Game Scouts. They have been trained to work at the WMA headquarters, (Mkongo Camp), during some periods of the year, on a rotation basis. There are government employees at the Ward and Division levels including; technical staff for Agriculture, Forestry, Game departments.

In terms of ranking business was not listed as an important income generally activity even though it involved about 6% of the villagers on average, with a high of 10% at Kambala village and low of 1% at Pongwe-Kiona village. The most common business includes shops, kiosks and smaller business referred to as *genge*. However, some of the kiosk and *genge*, are seasonal operating mostly immediately after harvest. The other business included milling machines, which were listed in 17 - 22 villages followed by food vendors (11) bicycle repair

shops (9), masons (8) tailors and liquor clubs (7) carpenters (6), mini-pharmacy shops (4). Radio repair, butcher and a regular markets (*gulia*) were mentioned in one village each.

When asked to mention the most common items, which are bought from these shops, food items came first or they were the only items listed in some village. Information about prices was fairly uniform across villages. Table 6.5 presents a list of ten of the most commonly stated items, and their prices. The only non-food products, which were listed as commonly demanded at the local shops/kiosks, include hand hoes, cigarettes, medicine, batteries and sisal rope for construction.

Table 6.5: Price of Most Demanded Consumer Goods

Rank	Item	Unit	Price			
			Mean	Max	Min	Mode
1.	Sugar	Kg	600	660	500	600
2.	Maize flower	Kg	245	280	200	250
3.	Wheat flour	Kg	353	400	300	340
4.	Soap	Bar	529	600	500	500
5.	Bears	Kg	529	600	500	500
6.	Kerosene	Lt	630	800	500	600
7.	Rice	Kg	399	400	300	340
8.	Sardines	Kg	1,049	1200	800	1,000
9.	Cooking oil	Lt	1,025	1400	700	1,000
10.	Soft drinks	Bottle	217	250	200	200

Non-food items were not listed because more villages bought them from regular markets (*gulia*) or nearby urban centers. Nevertheless, the larger shops were also stocked with such items including clothes, bicycle spare parts and a wide assortment of other products. In general Villagers in Mvomero district tend to rely less on food purchase from shops than villagers in Bagamoyo and Morogoro district.

Not many traders were willing to divulge information about the performance of their business. Some were only able to provide information about the value of daily sales. In most villages sales were better after harvest, when the mean daily value of sales was about 61,429 Shs, ranging from 100,000 – 25,000 Tshs. During the farming season sales were lower, the mean being about 23,864 Shs with a maximum of 45,000 Shs and a minimum of 3,500 Shs. However, in villages where residents often depended on buying food (mostly in Bagamoyo), the value of sales was reported to be higher during the rainy season, when families faced food

shortage. When asked to apportion their annual income on various expenditure categories food came first, followed by medical expenses, entertainment, transport, education, and clothes as indicated in Table 6.6.

*Table 6.6: Income Distribution for Basic Needs*

Rank	Expenditure Item	Percent of Income			
		Mean	Maximum	Minimum	Mode
1.	Food	56	80	15	50
2.	Medication	21	40	6	10
3.	Transport	15	23	5	5
4.	Entertainment	15	15	2	5
5.	Education	14	40	2	10
6.	Clothes	13	20	5	10

#### 6.4.3. Consumption, Production and Productivity

The consumption pattern of households varies among villages. Those in Mvomero district normally had a good supply of food. Majority of villagers reported having three meals per day during most of the year or at least two meals per day during lean months between December and April. In Bagamoyo most villages, except for Kwamsanja and Kwaruhombo, the rest of the villages reported food shortage for a significant number of households, which reported having 2 – 3 meals per day immediately after harvest (July - September) and one or two meals per day thereafter up to April or June.

The consumption pattern was closely related to the wealth rank of a household. Having an adequate supply of food was mentioned as an important characteristic of households in the high and middle wealth rank, while food shortage was very characteristic of households in the low wealth rank. Table 6.7 provides key parameters that characterize each wealth rank.

Table 6.7: Common Characteristics of wealth Ranks

Wealth Rank	Wealth			Common characteristic (in order of priority)
	Mean	Max.	Min.	
High	9	30	0	i) Having adequate food (3 meals/day) ii) Having a good house made of concrete or burnt bricks) with a corrugated iron roof and big windows. iii) Owning a large farm (in Mvomero, having at least 20 acres of sugarcane) iv) Owning a business (milling machine or shop) v) Having transportation (vehicle or motorcycle) vi) Having good bed(s) with mattress
Middle	52	75	28	i) House of good quality made of mud or raw bricks thatched by grass or coconut leaves ( <i>Makuti</i> ) ii) House made of mud wall and corrugated iron roof iii) Having three meals/day iv) Having a bed made of rope with or without a mattress v) Owning a bicycle
Low	39	70	5	i) Having a poor quality house some made of grass walls and thatch (full suit) ii) Having inadequate food iii) Being a casual laborer

Other characteristics that were listed in one to two villages include; having good clothes, earning at least Shs 500,000 per year mostly from sugar cane production, owning a tractor owning at least 50 heads of cattle, educating children up to secondary school and having a big initiation celebration.

For the middle wealth rank the other characteristics include:

- Owning a kiosk or *genge*
- Having regular clothes
- Having chicken
- Having sugar farm of less than 20 acres
- Having 15 – 100 heads of cattle
- Realizing average production
- Being able to handle medical expenses
- Educating children up to primary school
- Working hard
- Having a normal initiation celebration.

For the low wealth rank, the other characteristics included:

- Having poor quality clothes
- Having few rooms in the house
- Being in poor health
- Not having a farm
- Having many children
- Having 1 – 15 heads of cattle.

Results from the household survey indicate that 79% of the respondents had houses that were made of mud and poles, 14% had burnt bricks and only 3.5% had cement blocks. The most common roofing material was grass or palm leaves (56%), followed by corrugated iron sheets (43%). The floor was often made of earth or clay (84%) while 16% of the respondents had a floor made of cement and sand. The houses had 3.5 rooms on average, ranging from 1 to 14 rooms.

The position of a household within a particular wealth rank depends on the productivity of the economic activities they undertake. Table 6.8 and 6.9 provide information on the percentage of households that engage in various agricultural production activities, which as stated earlier is the most important economic activity involving 95% of the households on average. Yield levels based on the household survey are presented in Table 6.10.

*Table 6.8: Involvement in Economic Activities*

Crop/Activity	Percent of households Involved			
	Mean	Maximum	Minimum	Mode
Maize	97	100	50	100
Cowpeas	99	100	90	100
Rice	78	100	20	100
Sorghum	61	100	30	80
Beans	58	100	15	-
Sugarcane	35	50	25	25
Simsim	27	40	9	30
Cotton	4	10	1	-

Activities are listed by order of percentage and frequency using a weighted score.

Table 6.9: Productivity of crops/ activities and Lower Range

Sn	Crop Activity	Unit	Productivity			
			Mean at High Productivity	Mean at Low Productivity	Maximum	Minimum
1.	Maize	Bags/acre	9	4	20	1
2.	Sorghum	Bags/acre	6	3	9	42
3.	Dried cassava	Bags/acre	7	6	7	5
4.	Simsim	Bags/acre	3	10?	13	1
5.	Cowpeas	Bags/acre	4	2	6	1
6.	Paddy/Rice	Bags/acre	12	6	18	3
8.	Beans	Bags/acre	4	2	5	2
9.	Finger millet	Bags/acre	7	7	7	7
10.	Cotton	Kg/acre	775	600	800	550
11.	Orange	Value/acre	200,000	80,000	200,000	80,000
	Sugarcane	Tons/acre	35	10	35	10
12.	Sugarcane	Value/acre	413,500	425,000	300,000	300,000
13.	Heifer	Years to first calving	4	3.5	4	3.5
13.	Livestock	Calving/year	1	1	1	1

Table 6.10: Yield of Selected Crops based on Household Survey

Crop	Units	Yield	
		Short Rains	Long Rains
Maize	Bags/acre	0.32	4.88
Beans	Bags/acre	4.44	4.41
Rice	Bags/acre	-	8.2
Cassava	Bags/acre	-	9.76
Green Vegetables	Bags/acre	32.4	39.6

Farmers produce these products for consumption and for sale. Thus, the availability of markets is very crucial. Except for sugarcane, which is bought by Mtibwa sugar Company, traders buy at the farm gate. However in ten of the nineteen villages, which responded to this question villagers complained that the price offered by the traders was too low. At Kwamsanja village respondents complained that there was no market for cotton. At Mziha the market was insecure due to a poor road.

Low productivity was attributed to very little use of improved seed and fertilizer as well as poor farm husbandry in general. Vermin was also a common problem in all villages. It was reported that on average about 25% of the crop could be lost due to vermin. The loss could be as high as 50 at Muziha village. The most common vermin are wild pigs, monkeys, and bushbuck.

#### 6.4.4. Utilization of Natural Resources

Villagers use various resources for household requirements as well as for sale. Ranked highest in terms of frequency were firewood, thatching grass, charcoal, poles and rope for construction, medicine and timber. Others, which were listed with high frequency, include honey, grass for mats and baskets, mushrooms, wild vegetables and fruits. Fish, water and pastures were mentioned in one village each. Out of these resources charcoal and timber sought a permit in most villages. In the case of timber and charcoal for commercial use, a permit must be obtained from the district. Then, depending on the village, permission may also be required from the village government. There was a general complaint that often, people from outside the village come with permits from the district to cut timber or make charcoal from within village boundaries.

At Kinzagu village no permit is required for all natural resource while at Visakazi village a permit is necessary only for commercial use. In four villages (Kidudwe, Kambala, Kunke and Diozile) a village government permit is require for poles while in three villages (Kidudwe, Kanga and Mziha) a permit is required for grass to make mats ad baskets. However the grass are found within the pilot WMA, which has been closed from consumptive use of any kind. It was felt that permits should be granted for collecting the grass since this does not interfere with the wildlife. It was observed that mats and baskets were nevertheless being made somehow, probably using grass from other less preferred areas or may be from sneaking into the pilot WMA. The natural resources business, which were listed (with figures in brackets indicating frequency) are charcoal (13), timber (8), beekeeping (5), water charcoal (3) pastures, (3) fishing and fish farming (2). The rest, including grass for baskets, sand quarry, gravel quarry and sale of live snakes were mentioned in one village each.

The most frequently mentioned value of the natural resource was direct use (14) followed by ecological value (4), bequeathal (3) and existence value (2). Aesthetic value and potential for tourism were mentioned in one village each. It was also stated that one of the motivation for accepting the pilot WMA was because previously only outsiders benefited from the natural resource.

When asked to state potential economic opportunities within their WMA, historic eco-tourism ranked higher at a frequency of ten. Others with their frequency indicated in brackets include timber, (4), photographic tourism (3) beekeeping (3) and having a game butchers shop (1). In relation to tourism, a number of potential sites within the WMA were mentioned. These include a stone that resembles an Islamic religious symbol (*Kibra*), a site where lions normally calve, a place where there is a human footprint on a stone, the observation point at Mkongo, and scenic mountains of Nguru, and Kanga as well as swamps on the north eastern side of the WMA. The road from Mziha through Madizini is also a potential tourist attraction since it is the route, which was used by Dr. Livingstone during the 19<sup>th</sup> century. Local communities would benefit from the tourist industry by constructing hotels and restaurants. They would also make pottery calving, mats, baskets and straw for hats.

From the household survey, respondents proposed the following activities; game meat business (13%), handicrafts (8%), tourists (5%). Respondents also stated that villagers would continue with other productive activities including farming and wage employment. The economic activities as proposed by the focus groups and respondents of the household survey are consistent with activities that were proposed by a team of consultants who explored the viability of various economic opportunities in the Wami-Mbiki Wildlife Management Area (Christophersen & Jambiya, 2000). Using the Net Present Value (NPV) and the Internal Rate of Return (IRR) they concluded that several options were viable as economic opportunities for the WMA, including;

- Trophy (or safari) and resident hunting.
- Photo tourism of animals and riverine along Wami river.
- Beekeeping and value added processing.
- Natural forest management (NFM) for urbarn fuel markets and wood products.

The study concluded further that, (i) devolving the management of wildlife to the local communities under WMA designation will increase the economic wellbeing of all stakeholders viz. the Central government, District Councils and Local communities (ii) Although the economic opportunities are highly feasible, external support from the donor and the government will be required during the initial period (4 –5 years), until the investment breaks even. (iii) All economic opportunities should be subjected to financial and economic

scrutiny by the Local Government Authorities of Bagamoyo and Morogoro Districts (at the time) and the NGO stakeholder before being accepted or supported.

Only two of the village (Kambala and Mindutulieni) reported having a title deed. However the title and use plan and title deed for Mindutulieni were disputed by neighboring Makombe village on the basis that the plan was made for the purpose of tsetse control. Nonetheless, almost all the villages reported having areas generally allocated to different use, including: crops, livestock, residential, open area and land that is reserved for conservation land. The latter often referred to as land that had been contributed by the villages to Wami-Mbiki. Twelve of the village reported having some community-based conservation (CBC), but it is only at Kambala and Mindutulieni where such efforts have been clearly articulated.

Five of the village reported that the land frontier was closed, most of them in Mvomero district. These are Kidudwe, Mlumbilo, Dihinda, Lukenge and Kunke. The most common means of accessing land was through customary tenure, which was reported in all villagers. The next was allocation by the village government. This applied mostly for people from outside the village who come to settle or request for temporary use. Borrowing was common in villages where the land frontier was still open. In villages where the frontier was closed, allocation by the village government was not an option. Instead, a market for land was emerging through renting and buying. Renting was done on a seasonal basis whereby the user could not plant permanent crops. The rental price was Shs 10,000 in all the villages, while the price for buying was Shs 20,000 – 80,000. Land that had been in use was more expensive. The upper range from 50,000 and above represented sugar fields that were already planted.

#### 6.4.5. Village Government Income, Expenditures and Development Plans.

The main sources of income of the village governments (with their frequency in brackets) include personal tax (10), grants from the pilot WMA facilitator (7) contribution from other projects (4), tax on charcoal and timber (3) and collections from villagers (2) bicycle tax and dues from gravel quarry were mentioned one each. Tax on natural resources contributed about 30% of the village revenue on average, and it was reported to account for as much as 95% to the village government revenue at Mwidu village. It was difficult to obtain information on the village financial records since, in most cases data were incomplete or not

available. This was partly because Village Executive Office (VEOs) were newly appointed or had not completed a year at their respective village due to their high turnover rate. Although respondents from the household survey reported to have attended 3.8 village meetings on average, in most cases these meetings are general and they do not represent the Annual General Meeting (which is required by law).

Table 6.11 below provides some data on the level of income from seven villages. Income from projects and donors was also provided for specific projects Wamis-Mbiki for example provides one million Shillings to each village, which meets their criteria, which include clearing previous debits for seed that was provided on credit in 1977.

*Table 6.11: Sources of Village Government Income*

Source	Amount (Shs)		
	Mean	Maximum	Minimum
Personal tax (20%)	103,371	183	-
Collection from villagers	278,071	339,00	122,100
Stone quarry	219,000	231,000	213,000
User free for water dam	2,400,000	2,400,000	2,400,000
Others	102,251	204,500	-
<b>TOTAL</b>	<b>708,923</b>	<b>2,631,000</b>	<b>70,000</b>

A few villages have not been able to benefit from this grant, mostly due to poor leadership. Other organizations, such as MMEM, TASAF, STOAS and UMATI (CSDP) have provided funds to villages for various projects. However these sources are not sustainable since they only last for the life of a project and are sometimes unreliable.

Information on expenditure was equally scanty, being provided by only six villagers. The most common expenditure items was office travel and transport, followed by office repair and construction, hospitality to visitors, stationery and other office expenses. Mwidu village was renting a room for the village office. Main expenditure items by the village government are summarized in Table 6.12.

Table 6.12: Village Government Main Expenditure Items

Expenditure Item	Amount (Shs)		
	Mean	Maximum	Minimum
Office travel and transport	37,000	34,000	
Office construction and repair	107,700	330,000	-
Hospitality	25,000	50,000	-
Stationery	24,000	41,000	7,000
Others	422,200	422,000	422,000

Twenty of the villages, which were contacted, reported having village development plans. The most common item was rehabilitation or building schools (10) and constructing dispensary (10) these were followed by building or rehabilitating village offices (5), building teachers' house (5) building a nursery school (2) and building toilets for a primary school (1). At Visakazi village the development plan involved a poverty reduction strategy. Under the strategy, each village is required to have one acre of simsim, food cross and local chicken in order to reduce poverty by the year 2005.

#### 6.4.6. Development of the WMA

In all the villages there was a high level of awareness regarding the process, which has been used in forming the pilot WMA and subsequent community mobilization, which was done in 1997. There has since then been regular follow-up by Wami-Mbiki staff. The villagers reported the following steps.

- Mobilization to join Wami-Mbiki.
- Contributing land to Wami-mbiki.
- Agreeing on boundaries between the villages and the WMA, as well as well as between villages.
- Reallocating villagers who are living in designated WMA areas
- Forming environmental committees
- Providing security to the WMA against illegal users
- Selecting village game scouts
- Attending training

- Forming the Community Based Organization (CBO)
- Developing and approval of the CBO construction

It was felt by the focus group members that their villages have already benefited from Wami-Mbiki, especially through the one million shillings annual grants, which has been provided by the facilitator for school or dispensary construction. Others included the seed loan, which was provided by the facilitator in 1997, during the *El-nino* rains, regeneration of the natural resource including trees and animals and training that has been received. It was also reported that through Wami-Mbiki it has been easier to resolve boundary conflicts between villages.

About 99.5% of the respondents from the household survey were positive about the idea of establishing the pilot WMA. Respondents of the household survey expressed the view that Wami-mbiki was a means for facilitating participation in resource conservation. It also enables them to share benefit from resource conservation. Those who were opposed to the idea expressed the view that boundaries of the WAM should be clear.

Only four villages reported having experienced any problems in the course of forming the organizational and developing an operational set up of the pilot WMA. Some of the villages have had boundary problems with neighbors, but all had been solved. Other problems included poachers and illegal timber harvesting, not having access to game meat, timber and grass for mats and baskets. There is also a lingering attitude that the WMA belongs to the facilitator (*Mzungu*)

At Mziha village they had difficulty to remove twenty families that were still living within the pilot WMA. However the Division secretary has moved in to assist in resolving the problem. Another general problem was the weakness or corruption of some village leaders who pay a blind eye to timber sawyers, who entered the conserved area through their village. For this reason the village chairman at Mkono wa Mara was overthrown. Related to this problem is the refusal of Kibindu village in Bagamoyo district, to join the Wami-mbiki. This provides an opening through, which illegal users can enter with little or no control from the village government in that area.

Respondents from the household survey gave a number of suggestions for improving the performance of the pilot WMA, they include;

- Increasing number of village game scouts for the protected area
- Increasing the participation of villages in WMA activities
- Changing the leadership of the WMA
- Educating villagers about the WMA
- And creating employment

#### ***6.1.5. Ecological Aspects***

In the Wami-Mbiki WMA, the survey was undertaken within the core conservation zone plus 22 out of the 24 villages that form the CBO. The transects were run in two different roads- one was the main access road to Mkongo Headquarters of the Wami-Mbiki WMA; while the other was the road which is commonly used for game viewing starting from Mkongo and running on a south-easterly direction towards Mkono wa Mara village. The counts and assessments were conducted in four different days i.e. on the 4<sup>th</sup>, 5<sup>th</sup>, 6<sup>th</sup> and 16<sup>th</sup> February 2003.

Table 6.13 shows the counts that were done along the access road to Mkongo Headquarters. However, these data were opportunistic in that they were not planned but took advantage to assess both wildlife and habitat during the passage to and from Mkongo.

Thus, one can say for certain that there were only two days of planned animal census using road transects. The work started at 7.00 A.M. and lasted up to 11.00 A.M. on the 6<sup>th</sup> and 12.30 noon on the 16<sup>th</sup> February 2003. The transects were conducted using station wagon vehicles except for that of the 16<sup>th</sup> February 2003 whereby the census team traveled in a Toyota Land Cruiser pick-up vehicle. Each of the surveys/census teams had four observers plus a driver of the vehicle. The Ecologist briefed the observers on how to do game census in a vehicle. Caution had to be taken when an animal or a group of animals was sighted to speak in a low voice or just to point to the direction of the sighting and at the time instructing the driver to stop. The animals were then counted, species identified and sex structure determined. The work began by recording the date, the time of the day and the speedometer reading of the vehicle.

Table 6.13: Animal Census Trends in the Wami-Mbiki Pilot WMA during Oct 1997 - Nov. 2002

No.	SPECIES	Oct.97	Oct. 99	Oct. 2000	Oct. 2001	Nov. 2002
1	Buffalo	75	200	200	250	280
2	Elephant	150	400	300	816	500
3	Impala	3,500	8,000	8,000	9,422	13,405
4	L. Hartebeest	800	900	1,000	2,420	4,410
5	Greater Kudu	170	300	1,100	1,348	826
6	Giraffe	70	100	100	168	1,035
7	Zebra	100	300	440	372	814
8	Waterbuck	140	175	600	942	763
9	Eland	12	80	80	100	200
10	Sable Antelope	80	80	80	156	300
11	Southern Reedbuck	300	500	1,300	1,434	1,076
12	Bushbuck	130	300	400	823	607
13	Stein buck	900	1,000	5,800	2,110	1,665
14	Common Duiker					
15	Red Duiker					
16	Hippopotamus	60	100	150	180	
17	Warthog	700	800	2,150	1,424	2,877
18	Bush pig					144
19	Lion		20	25	30	50
20	Leopard		50	50	60	100
21	Hyena		25	30	40	50
22	Wild dog		50		50	80
<b>Total</b>		<b>7,187</b>	<b>13,380</b>	<b>21,805</b>	<b>22,145</b>	<b>29,292</b>

Source: Wami-Mbiki Head Office

At the end of each transect, the total distance covered was recorded. The estimated visibility distance for medium sized animal species, such as the Impala, Kongoni, Greater Kudu, Southern Reedbuck, Eland, Sable Antelop, Bushbuck and Warthog, was 200 meters on each side of the road. The transect line therefore could be assumed to represent a total count area strip equal to the Transect (Length multiplied by Width). In this regard, the sampled areas for days 6<sup>th</sup> and 16<sup>th</sup> February 2003 were as follows:

- a). 45km x .4km=18.0 sq. km
- b). 63km x .4km=25.2 sq. km

The density of each animal species that were seen during the census could easily be calculated by dividing the total number counted by the sampled strip area. If we add the two strip areas (18.0+25.2 = 43.2 Sq. km). The total sampled area during animal count exercise in the Wami – Mbiki Pilot WMA is therefore only 43.2 sq. km. Out of the entire area of about 2500 sq.km. or a mere 1.7%.

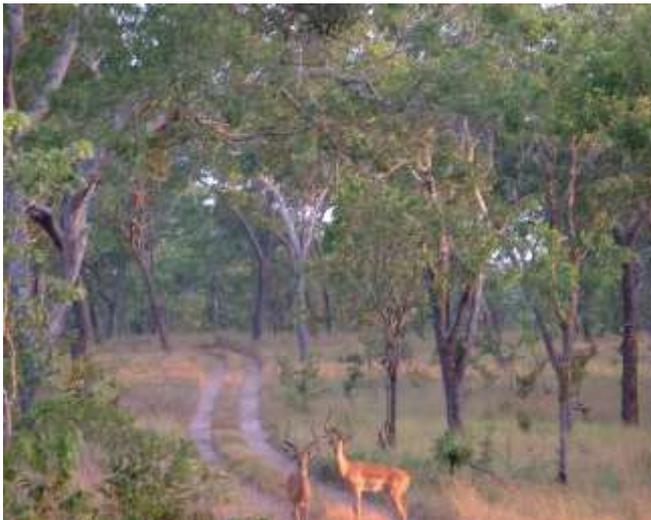
If we were to calculate the density for each species sighted along the thin strip with a total area of 43.2 sq. km; we could project the figures to the whole area of the Wami – Mbiki WMA. However, we may end up with some highly biased results because animals are distributed in small clusters only in areas close to the Wami River in the heart of th WMA.

Let us use the Impala as an example to demonstrate on what might have happened if the densities were to be calculated and applied to the whole area without taking the precaution that animals are not sufficiently randomly distributed in the Wami – Mbiki WMA.

- Total numbers counted in transect one (6.2.03). were 126 impala
- Total numbers counted in transect two (16.2.03) were 382 impala.
- Adding the numbers in the two transects gives: 508 impalas.

The density of impala in the area where census took place (i.e. 43.2 sq. km.) Is, therefore, 11.7 impala per square kilometer. Projecting this density to the whole area of Wami – Mbiki

WMA, will give a total population of 29,398 impala.



*Photo 15: Impala (Aepyceros melampus) is the most abundant species in Wami - Mbiki WMA*

Photo 15 and 16 demonstrate the typical habitat and wildlife found in the Wami-Mbiki WMA. The game count exercise gives an indication that the Impala (*Aepyceros melampus*) is the most abundant species in Wami - Mbiki WMA. As observed in Photo 16, female Kudu are also found in the Miombo wooded grassland



*Photo 16: Female Kudu in a typical Miombo wooded grassland*

The act of banning the hunting of any wildlife in the whole area of Wami-Mbiki in 1997 to date has had major impacts in the recovery of wildlife populations in that area. There is visible increase in numbers of various animal species found in the core zone of Wami-Mbiki Pilot WMA. The positive results are an outcome of concerted effort of putting into place an effective management system involving all stakeholders and covering elements of control, protection, awareness raising and administration.

With funding and technical assistance from DANIDA, resource management capacity had been built through the formation of a CBC which latter on was transformed into a CBO. The driving force behind the success was the expectation of the villagers to be allowed to own, manage and utilize wildlife and other natural resources found in that part of their village land which they had set aside for wildlife conservation purposes. This was enough incentive for the villagers in the 24 villages forming the Wami-Mbiki CBO to support and therefore take active role in pursuing the new landuse plan which incorporates the conservation of wildlife.

The Pilot Wami-Mbiki WMA has not witnessed only the recovery of wildlife populations, but it has also seen tremendous improvement of its flora. Wild fires have been suppressed to give room for the woody vegetation to recover and soils to stabilize.

The WMAs Regulations of December 2002 have brought into operation a long awaited opening for the integration, involvement and participation of rural communities in the management, ownership and utilization of wildlife resources in the country. The objective is to engage meaningfully and practically the majority of Tanzanians living in rural areas in managing and benefiting from the country's rich biodiversity.

The Wami-Mbiki area extending from the Coast to Morogoro Regions is little known by ordinary people save for hunters and forest resource users for traditional fishing, collection of medicinal plants, and during recent decades, charcoal and timber extraction. The area is relatively remote in that there are no major development activities and as such has a minimum of road tracks used by that special group of people exploiting the natural resources base of the area.

Wami-Mbiki was and continues to be an important hunting ground for both its resident local communities and for the urban hunters from Morogoro, Dar es Salaam, Kibaha, Bagamoyo

and Turiani (Madizini). This rather small enclave harbors a wealth of wildlife due to its remoteness, diverse habitats, and the presence of permanent water of the Wami River. Blessed with species diversity ranging from cane rats to Elephants, Wami-Mbiki Pilot WMA can be described as being a rich wildlife refuge outside the known PA network.

During the survey, a total fifteen species of large mammals were identified, some of which showed to be abundant while others were common to rare.

Table 6.14 gives a summary of species composition, sex and age structures of wildlife in that were recorded in the Wami-Mbiki WMA. It also gives highlights of the habitat in which these species were found.

*Table 6.14: Species Composition, Sex and Age Structures of Wildlife, Wami-Mbiki*

S/No.	Species	Total observed	Males	Females	Young and Juveniles	Habitat or comment
1.	Impala	618	132	321	65	<i>Miombo Woodland</i>
2.	Lichtstein Hartebeest	54	13	24	7	<i>Miombo Woodland</i>
3.	Waterbuck	53	4	41	8	<i>Miombo Woodland</i>
4.	Bush Duiker	4	2	2	-	<i>Miombo Woodland</i>
5.	Warthog	15	1	5	9	<i>Miombo Woodland</i>
6.	Southern Reedbuck	1	1	-	-	<i>Miombo Woodland</i>
7.	Steinbuck	1	1	-	-	<i>Miombo Woodland</i>
8.	Bushpig	1	-	-	-	<i>Miombo Woodland</i>
9.	Zebra	5	-	-	-	<i>Miombo Woodland</i>
10.	Hyena	1	-	-	-	<i>Miombo Woodland</i>

Besides the above species which were seen and counted directly, yet others were counted by using indices: lions, elephant, buffalo, giraffe, civet and gallago

## 7. EMERGING ISSUES

The following are major issues emerging from the field survey and analysis relevant to the Ecology part of the study.

- a) The watershed area of both the Wami and Mbiki Rivers need to be protected. There is some unplanned cultivation and settlements encroaching the wetlands and important catchment forests in both Mvomero and Morogoro Districts. Encroachment was also

noted in the river valleys and some virgin forest land on the Bagamoyo District side of the Wami River distributaries.

- b) Preparation of village land use plans is needed for all the villages forming the Wami-Mbiki CBO.
- c) Capacity building at the village level and also at the CBO level to enhance the administration of the WMAs.
- d) Good governance through streamlining and proper definition of areas of responsibility, accountability and decision making structures in favour of the communities. Presently the Regulations and Guidelines give authority and mandate to the Director of Wildlife over the WMAs. This may not enhance true devolution of power to the local communities as originally intended.
- e) Benefits accruing from the WMA economic activities should go to the community based organization (CBO) since it is the one that is active on the ground. The Government should get its share through normal taxes paid by the communities.
- f) Put in place a plan that will allow for sustainable use of natural resources. Determine population levels for hunted game animals; set realistic hunting quotas and supervise hunting activities to adhere to set quotas.
- g) Monitor regeneration of degraded vegetation especially timber species which had been heavily exploited by putting in place a recovery programme to improve species diversity.
- h) Building capacity of villagers and therefore the CBO to enable for effective control of illegal activities.
- i) Control the exploitation of woody plants for production of charcoal and timber.

## **8. THE WAY FORWARD**

The intention of establishing the pilot WMAs is to ensure that local communities benefit directly from the natural resources around them, which they should actively participate in managing sustainably. The study shows that the local communities and their leaders at various levels are willing and ready to take up their new role as co-owners of the wildlife resources, which were previously perceived as being under the exclusive jurisdiction of the government. In order to realize the objectives of establishing these pilot WMA, each WMA

must strive to complete setting up the institutional set up to facilitate the operationalization of the WMA. According to the guidelines, which have been issued by the Ministry of Natural Resources and Tourism, they require that each pilot WMA should complete a series of steps for it to become operational. The table below summarizes key steps and the status of accomplishment within each pilot WMA, which gives an idea of what remains to be done and therefore provides a roadmap on the way forwards towards becoming an operational WMA. These involve designation of the WMA area and formation of the CBO, which will often be the designated Authorized Association. Although these steps may take place concurrently, they are presented in Table 8.1 separately for clarity.

Table 8.1: Level of Development of Pilot WMA

Activity	Level of Attainment		
	Wami-Mbiki	Uyumbu	Ipole
<b>A. Designation of WMA</b>			
1. Consultation with village members, approved by village assembly to designate part of the village land for CBC as WMA	✓	✓	✓
2. Application made by village(s) to Director WD for designating part of village(s) land as WMA along with: <ul style="list-style-type: none"> <li>• Certified copy of Village Assembly minutes endorsing designation</li> <li>• Dully completed information data sheet as completed by District Council</li> <li>• A certified copy of registration of CBO</li> <li>• A Land use plan approved by Village Assembly</li> </ul>	✗  ✓  ✗  ✓  ✗	✗  ✗  ✗  ✓  ✓	✗  ✗  ✗  ✓  ✓
OR Minister designates Pilot WMA	✓	✓	✓
3. Director WD approves or rejects application for WMA	✗	✗	✗
4. Director WD assigns reasons for rejecting application to become WMA	✗	✗	✗
5. Director WD forwards to Minister (within 14 days) successful application of WMA for publication in Gazette	✗	✗	✗
6. Minister issues certificate of authorization	✗	✗	✗

7. Designated WMA gazetted according to regulations	×	×	×
<b>B. Formation of CBO and Designation as Authorized Association (AA)</b>			
8. Formation of CBO, dully registered in accordance with Societies ordinance	✓	×	✓
4. Developing and approval of constitution for CBO according to schedule one of WMA regulations	✓	×	×
3. Status of meeting requirements for application of AA	✓	×	×
• Minutes of village assembly approving formation of WMA	✓	×	×
• Complete WMA data sheet as provided under schedule 2 of regulations and in accordance with regulation 11	×	×	×
• Registration of CBO having a copy of the certificate of registration	✓	×	×
• A copy of the constitution of the CBO	✓	×	×
• Land use plan of the village, as approved by village assembly of respective villages	×	✓	✓
• A sketch map of proposed WMA in relation to village land use plan	×	✓	✓
• Boundary description of proposed WMA, its size and name	✓	✓	✓
• A copy of the General Management Plan (GMP) according to Schedule 7 or a Resource Management Plan (RMP) according to schedule 8	×	×	×
5. Application for Authorized Association status lodged to Director WD	×	×	×
8. Director WD accept or rejects application of CBO to become AA	×	×	×
9. Director Assigns reasons for rejecting application to unsuccessful CBO within 14 working days	×	×	×
10. Director WD forwards successful application to Minister for declaration of AA	×	×	×
11. Appeal by unsuccessful CBO lodged to Minister within 30 working days	×	×	×
12. Successful AA enters into contract with investor for using WMA	×	×	×

resources in accordance with GMP			
13. Investor works in close collaboration with AA to use and manage pilot WMA resources sustainably according to GMP	✓	✗	✗
14. Appoint and train Village game scouts	✓	✓	✓
15. Form village environmental committee	✓	✓	✓
14. WD monitors performance of AA and WMA according to social, economic and ecological criteria	✗	✗	✗

Key: ✓ = Step has been done or attained  
✗ = Step has not been done or attained

It is obvious from Table 7.1 that each of the pilot WMA has accomplished some steps towards becoming an operational WMA, but Wami-Mbiki has reached the most advanced stage in terms of forming the Authorized Association. However, it does not a General Management plan. This activity is scheduled for this year (2003). It should be given high priority so that the process of lodging application for the AA is done completed June or July at the latest. This will allow the WMA to undertake hunting activities if they are chosen among economic activities that will be pursued by the pilot WMA. The AA for Wami-Mbiki should also be considering the options, which have been proposed for economic activities. Based on recommendations by villagers from this survey, and a previous study on Economic Opportunities for Wami-Mbiki, these include;

- Trophy and resident hunting
- Photo tourism of animals and riverine along Wami river
- Individual beekeeping
- Collection center
- Natural forest management (NFM)

Based on the need expressed by villagers on the need for them to be allowed some consumptive use of game meat from time to time, grass for mats, baskets and other goods as well as timber, consideration for providing this under the GMP should be considered. Where the desired use is incompatible with the proposed economic activity, the issue should be discussed with village members of the WMA so that they understand the ecological and

economic rationale for the chosen use plan and where feasible, alternatives should be provided for the villagers.

Another important aspects for Wami-Mbiki on the way forward is to consolidate the fragile institutional set up of the CBO, which forms the AA. As a matter of priority, efforts should be made to encourage and entice Kibindu village in Bagamoyo district to join the WMA in order to close the gap, which could provide an opportunity for illegal users within the designated WMA area. Related to the institutional set up of Wami-Mbiki is the loose and sometimes uncertain relationship and ownership rights of various key stakeholders of the natural resource, including the District Councils, the Villages, the AA, the Army, which uses part of the designated WMA area for military purposes. The conflicting interests and claims of all these stakeholders need to be resolved as a matter of priority. It was proposed during discussion with the District Commissioner for Morogoro District that a forum involving all stakeholders should be convened before to resolve pending ownership perceptions and use rights before the pilot WMA develops their GMP, latter this year.

Currently, Village Game Scouts at Wami-Mbiki are paid an attractive incentive package for the opportunity cost of the time they spend performing activities on behalf of the WMA. While this is positive for morale and enhancing rural incomes, the rates should be examined so that when the facilitator eventually withdraws, the AA will be capable of paying and able to maintain a reasonable size of village game scouts.

## **9. LIST OF DOCUMENTS**

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## 9. APPENDICIES

### *Appendix 1: Participation in the Focused Group Discussions*

#### WAMI – MBIKI PILOT WMA

NO.	NAME	MSEYU	NO.	NAME	MSEYU 5/2/03
1	Seif A. Bakari	Village Chairman	2	Yohana R. Malinda	Village Secretary
3	Omari J. Kidamare	Member	4	Jonas A. Zongo	Member
5	Mjana Heli Swalehe	Member	6	Omari Juma	Member
7.	Amadi Zongo	Member	8	Ally Omari Mahinda	Member
9.	Mohamed Rajabu	Member	10	Rajabu Mohamed	Member
11.	Mohamed Said	Member	12	Juma Omari	Member
13.	Iddi ally	Member			

NO.	NAME	MWIDU	NO.	NAME	MWIDU 6/02/03
1	Mohamed Chapala	Village Chairman	2	Saidi Yusufu	Village Secretary
3.	Saidi Mohamed	Member	4.	Hassani Bakari	Member
5.	Rajabu dibundile	Member	6.	Mohamed Shabani	Member
7.	Tomasi Rajabu	Member	8.	Kachulu	Member
9.	Selemani Rajabu	Member	10.	Hamisi Hassani	Member
11.	Iddi Mnyanga	Member	12	Sijali Taimu	Member
12.	Zena alfani	Member	14	Hadija Salumu	Member
15	Ramadhani massawe	Member	16	Alfred Massawe	Member
17.	Jeska Daudi	Member	18	Halima George	Member
19	Joseph Jeuri	Member	20	Pili Salehe	Member
21	Rajabu Selemani	Member			

NO.	NAME	VISAKAZI	NO.	NAME	VISAKAZI 6/2/03
1.	Michael O. Mzeru	Village Chairman	2.	A. Mgama	VEO
3.	Selemani Juma	Member	4.	George	Member
				Mwnagalabuka	
5	Stivin Ndalo	Member	6	Athumani Hamisi	Member
7	Shabani Rashidi	Member	8	Hoseni Omari	Member
9	Ramadhani Abdalah	Member	10.	Michael	Member
11.	Paul Michael	Member	12	Salum shaban	Member
13.	R, Mgama	Member	14	Joshua Paul	Member
15.	Ramadhani Saidi	Member	16	Pascal Hosea	Member
17.	Andrew Meela	Member	18	Godwin Mzeru	Member
19.	Ftuma Juma	Member			

NO.	NAME	KIDUDWE	NO.	NAME	KIDUDWE 7/2/03
1	Michael Mnjeja	Member	2.	Francis martin	Member
3.	Yahya S. Mohamed	Member	4.	Husseni O. Chelena	Member
5.	Zaina Dikaume	Member	6.	Ally Sanga	Member
7.	Rashidi Iddi Maya	Member			

NO.	NAME	KANGA	NO.	NAME	KANGA 8/2/03
1.	Ibrahim H. Mballazi	VEO	2.	Haji M.	Village Chairman
3.	Maganga R. Mbega	Member	4.	Salimu M. Mdeni	Member
5.	Rashidi amadi	Member	6.	Hemedi Bakari	Member
7.	Hatibu H. Mohamed	Member	8.	Mohamed Issa	Member

9.	Kayembe	Member	10.	Mariam S. Kilimo	Member
11.	Asha R. Ramadhani	Member	12.	Fatina Mbaliazi	Member
13.	Hassani Mhando	Member	14.	Ally Ramadhani	Member
15.	Athumani S. Kabago	Member	16.	Hamisi M. Mnimbo	Hamlet Chairman
17.	Fatuma Mballazi	Member	18.	Hadija Ally	Member
19.	Seifu Musa	Member	20.	Athumani Shabani	Member
21.	Zuberi Suleimani	Member	22.	Toba M. Mwenkale	Village chairman School committee
23.	Halima N. Mramba	Hamlet Chairman	24.	Mwajuma N. Msimba	Member
25.	Asha M. mballazi	Treasurer	26.	Mwajuma M. Haji	Member
27.	Shabani S. Maganga	Member			

<b>NO.</b>	<b>NAME</b>	<b>MZIHA</b>	<b>NO.</b>	<b>NAME</b>	<b>MZIHA 8/2/03</b>
1.	Ramadhani Saidi	Member	2.	Ramadhani Athumani	Member
3.	Saida Juma	Member	4.	Said Abdallah	Member
5.	Salum Mohamed	Member	6.	Rashid Said	Member
7.	Mwanahawa Msongo	Member	8.	Asha Mohamed	Member
9.	Juma Athumani	Member	10.	Said Juma	Member
11.	Mhando Salum	Member			

<b>NO.</b>	<b>NAME</b>	<b>KAMBALA</b>	<b>NO.</b>	<b>NAME</b>	<b>KAMBALA 9/2/03</b>
1	Kisaili Kanduru	Member	2.	Daudi Jackson	Member
3.	Kashu Moreto	Member	4.	Omari Rijiwa	Member
5.	Sanguneti papai	Member	6.	Massoni Rijiwa	Member
7.	Mbogo Lekake	Member	8.	Masingisa Mhode	Member
9.	Nakuru Saningo	Member	10.	Papalangi Paulo	Member
11.	Pololeti Rijiwa	Member	12	Ikoyo Sipa	Member
13.	Mamay Oleku	Member	14	Emmanjel Abraham	Member
15	Ngayai lekikwa	Member	16	Samwel Oleku	Member
17	Marogo Senyagwa	Member	18	Sephu Lekake	Member
19	Majuka Koira	Member			

<b>NO.</b>	<b>NAME</b>	<b>KIZANGU</b>	<b>NO.</b>	<b>NAME</b>	<b>KIZANGU 11/2/03</b>
1	Mrisho Derena	Member	2	Zengo Hasani	Member
2	Palikepu Muhina	Member	4	Abu Hamisi	Member
5	Ashura Abdala	Member	6	Hadija Ally	Member
7	Fatuma Athumani	Member	8	Hadija Rashidi	Member
9	Mohamedi Ally	Member	10	O. Mkoba	Member
11	Ramadhani Rajabu	Member	12	Athumani Sumita	Member
13	Zena Hoseni	Member	14	Zaina Selemani	Member
15	Hadija Rajabu	Member	16	Abduli Mulisho	Member
17	Mwanahawa R. Onkoba	Member	18	Sadiki Juma	Member
19	Ramadhani ally	Member	20	Mwajuma Yusufu	Member
21	Adamu Rashini	Member	22	Amina ?Athumani	Member
23	Zena Camwewe	Member	24	Mwanahawa Salum	Member
25	Rashidi Ramadhani	Member	26	Obrahimu Salum	Member
27	George Tumai	Member	28	Adam Rashi	Member
29	Adamu Juma	Member	30	Amina Rashidi	Member
31	Zainanbu Ramadhani	Member	32	Seif Tumai	Member

NO.	NAME	MAKOBE	NO.	NAME	MAKOBE 12/2/03
1	Shabani A.	Member	2	Ramadhani	Member
3	Musa Halfani	Member	4	Asha Omari	Member
5	Eliza Antoni	Member	6	Pili Shabani	Member
7	Zahara Mtumwa	Member	8	Rashidi Salum	Member
9	Moshi Omari	Member	10	Masudi Omari	Member
11	Maiko Abiasi	Member	12	Hadija Issa	Member
13	Patis Ruwi	Member	14	Bori Abdala	Member
15	Rajabu hamisi	Member	16	Adama Hosseki	Member
17	Juma Kiyaka	Member	18	Juma habiba	Member
19	Tumai Oda	Member	20	Gideon R. Mwenenyi	Member

NO.	NAME	DIOZILE	NO.	NAME	DIOZILE 12/2/03
1	Amri Kenya	Village Chairman	2	Salaum Daudi	Village Secretary
3	Mohamedi Msham	Head Teacher	4	Ramadhani nassoro	Hamlet Chairman
5	Seleman Kasamba	Member	6	Hassan Rajabu	Member
7	Salum Rashid	Member	8	Simba H. Simba	Member
9	Severin Amri	Member	10	Zungu Hussein	Member
11	Omari Nasoro	Member	12	Sudi Diwani	Member
13	Abedi Kisokari	Member	14	Aurensia Duliasi	Member
15	Asha Abdala	Member	16	Hassan Kadege	Member
17	Ally iddi	Member	18	Saidi kadege	Member
19	Eliasi John	Member			

NO.	NAME	MINDU-TULIENI	NO.	NAME	MINDU TULIENI 12/2/03
1	Onesmo Ngulele	Village Chairman	2	Gasto Keke	Village Secretary
3	Ibrahimu Katei	Member	4	Folike Mtumia	Member
5	Petro Stoko	Member	6	Luka Adrea	Member
7	Hasani Saidi	Member	8	Anton Lengesmeti	Member
9	Emanuel Katei	Member	10	Kimasi Stoko	Member
11	Ali Omari	Member	12	Ali Omari	Member
13	Sadiki Abdala	Member	14	Sadiki Abdla	Member
15	Imani Zakaria	Member	16	Shuaka Tateki	Member
17	Lemenga Sanya	Member	18	Martha Petro	Member
19	Rahel Petro	Member	20	Andrea Shabani	Member
21	Rebela Niniyai	Member	22	Kesia Niniyai	Member
23	Neema Rashidi	Member	24	Rehema Ikoyo	Member
25	Naisoi Paulo	Member	26	Paskali Msinaya	Member
27	Samato Lelingo	Member	28	Lundama Mkango	Member
29	Omari Ally	Member	30	Devota Ikoyo	Member

NO.	NAME	KWAMSANJA	NO.	NAME	KWAMSANJA13/2/03
1	Athumani Omari	Village Chairman	2	Mohamedi Athumani	Member
3	Amoina Mohamedi	Member	4	Athumani Baja	Member
5	Juma Ramadahni	Member	6	Zahoro O. Msami	Member
7	Hasani Saidi Abdul	Member	8	Hamina Mfaume	Member
9	Mashaka	Member	10	Salehe ismail	Member

11	Mohamed Mussa Mfaume	Member	12	Saidi O. Kingodoro	Member
13	Malizia Athumani	Member	14	Asia ally	Member
15	Ahamadi issa	Member	16	Rashidi ?ahamadi	Member
17	Mwanahamisi Adamu	Member	18	Selemani Athumani	Member
19	Daudi Shabni	Member	20	Juma	Member
21	Mwantumu Selemani	Member	22	Mke wa Mdungwa	Member
23	Hoseni Hassani	Member	24	Mohamedi Ali	Member
25	Ahamadi Mrisho	Member	26	Saidi Mohamedi	Member
27	Mbwana Juma	Member	28	Ramadhani Adam	Member
29	Abdala Athumani	Member	30	Musuli Ahamadi	Member
31	Bakari Sefu	Member	32	Sitini Ismail	Member
33	Juma Mnipu	Member	34	Mwantumu Selemani	Member
35	Mwantumu Selemani	Member	36	Mbwana Juma	Member
37	Mbwana Juma	Member	38	Saidi Selemani	Member
39	Hassani ismaili Msami	Member			Member

<b>NO.</b>	<b>NAME</b>	<b>KWARUHOMBO</b>	<b>NO.</b>	<b>NAME</b>	<b>KWARUHOMBO13/2/03</b>
1	Ibadi Kilimo	Village Chairman	2	Iddi Kipara	Ward Secretary
3	Kassim Mchanka	Member	4	Rashidi ally	Member
5	Muharami iddi	Member	6	Iddi B. Mwelomwe	Member
7	Selemani I. Mchankha	Member	8	Abdul Kigonile	Member
9	Abeda Y. Ndulele	Member	10	Juma Mahamba	Member
11	Adam Mahimbo	Member	12	Omari issa	Member
13	Juma Ally Gombo	Member	14	Juma Abasi	Member
15	Neema Rajabu	Member	16	Husna Gurumo	Member
17	Abeda Seif	Member	18	Sohofu Hasani	Member
19	Halima Ndulele	Member	20	Maulidi Mrisho	Village Game Scout

<b>NO.</b>	<b>NAME</b>	<b>KIFULETWA</b>	<b>NO.</b>	<b>NAME</b>	<b>KIFULETWA 13/2/03</b>
1	Gumbo Songoda	Member	2	Ahamadi Juma	Member
3	Alfani Ally	Member	4	Heli Ngomero	Member
5	Zaituni Mhina	Member	6	Hassani Rashidi	Member
7	Ally jabu	Member	8	Iddi Mohamedi	Member
9	Juma Mringo	Member	10	Hasani Juma	Member
11	Zaina Hoseni	Member	12	Almasi Hoseni	Member
13	Hamisi Juma	Member	14	Mbwelwa Ramadhani	Member
15	Saidi Omari Mkaje	Member	16	Mchuka masimba	Member
17	Athumani A. Kidogo	Member	18	Athumani Bakari	Member
19	Shabani Juma	Member	20	Jumanne Omari	Member
21	Msasu Mkafu	Member	22	Majuto ally	Member
23	Asani Athumani	Member	24	Yusufu Athumani	Member
25	Mharama Yusuph	Member	26	Mahaju athumani	Member
27	Saidi Rashidi	Member	28	Mademo Shabani	Member

29	Kassim Saidi	Member	30	A. Mohamedi	Member
31	Juma ahamadi	Member	32	Msali Mohamedi	Member
33	Msafiri Mohamedi	Member	34	Mengi Rajabu	Member
35	Mbelwa Rashidi	Member	36	Mkumbukwa Athumani	Member
37	Yusuph Kidoga	Member	38	Athumani Saidi	Member
39	Shaibu Hossemi	Member	40	Shukuru Saidi	Member
41	Mohamed Juma	Member	42	Mateso Rajabu	Member
43	Mezea ismail	Member	44	Ibadi Y. Kidoga	Member
45	Musa Rashidi	Member	46	Mwaliko Athomani	Member
47	Juma Omari	Member	48	Idi Hossemi	Member
49	Hossemi Shabani	Member	50	Juma Yusuph	Member
51	Juma ibrahim	Member	52	Shukuru Haji	Member
53	Selemani J. Gude	Member	54	Mgaza Hamada	Member
55	Heli S. Ngomero	Member	56	Omari Jumanne	Member
57	Zakaria Bakari	Member	58	Mama Kingazi	Member
59	Zuhura Mohamedi	Member	60	Hatibu Salehe	Member
61	Ally Sefu	Member	62	Haji Ji. Ngude	Member
63	Athumani issa	Member	64	Kessi Rashidi	Member
65	Amina Abdallah	Member	66	Mwalimu Hatibu	Member
67	Asha Daudi	Member	68	Semeni Juma	Member
69	Adamu Sadiki	Member	70	Pomari Rashidi	Member
71	Kasimu Shabni	Member	72	Juma Bulhani	Member
73	Ramadhani Haji	Member	74	Mwanaisha Yusuph	Member
75	Mwajabu omari	Member	76	Maneno Juma	Member
77	Ramadhani ally	Member	78	Ahamdi kaseke	Member
79	Hossemi Hassani	Member	80	Shabani Juma Jeshi	Member
81	Shabani Juma Jeshi	Member	82	Hassani Juma	Member
83	Suedi ibrahimu	Member	84	Nassoro Bakari	Member
85	Shabani Juma	Member	86	Rashidi Mohambedi	Member
87	Alfani Mrisho	Member	88	Mkombozi kassimu	Member

<b>NO.</b>	<b>NAME</b>	<b>PONGWE MSUNGURA</b>	<b>NO.</b>	<b>NAME</b>	<b>PONGWE MSUNGURA 14/2/03</b>
1	Iddi Omari Bingo	Member	2	Omari ally Bakari	Member
3	Bakari Selemani Bakari	Member	4	Adam Halfani 'goko	Member
5	Iddi Rajabu Mkumbukwa	Member	6	Masudi Omari Kumrwa	Member
7	Masozzi Hasani Sefu	Member	8	Shukuru Sefu Allu	Member
9	Sjhabani Athumani Rajabu	Member	10	Bakari Rashidi Ngwngwe	Member
11	Jabiri Nasoro Lugari	Member	12	Shida Mohamedi Rashidi	Member
13	Maua Shida Mohamedi	Member	14	Sijali Shaban Ngwengwe	Member
15	Rukia Shida	Member	16	Razaro Hermani	Member

17	Mohamedi Fatuma Saidi Ibrahimu	Member	18	Ngwengwe Ramadhani ally Mkumbukwa	Member
19	Masprp Ligari	Member	20	Kidwa Ismail Maine	Member

NO.	NAME	MSUNGURA	NO.	NAME	MSUNGURA 14/2/03
21	Kakei Chuma	Member	22	Hamza Ramadhani Ally	Member
23	Saoimoni Selemani Ngwengwe	Member	24	Zena Ramadhani Saidi	Member
25	Kipongwe Ismaili Ramadhani	Member	26	Shida Hoseni Nasoro	Member
27	Maua Edita alilseni	Member	28	Zena Hasani Salahe	Member
29	Omari Ramadhani Ally	Member	30	Shida Ngwengwe Soni	Member
31	Iddi Abasi Mponera	Member	32	Shela Ally Omari	Member
33	Ally Saidi Mwingwa	Member	34	Omari ally omari	Member
35	Mwajuma Saidi Ramadhani	Member	36	Ismaili Saidi Bakari	Member
37	Abdala Ramadhani Ally	Member			

NO.	NAME	PONGWE-KIONA	NO.	NAME	PONGWE-KIONA 14/2/03
1	Ramadhani Kibwana	Member	2	Ramadhani Shabani	Member
3	Abdla Omari	Member	4	Gumbo Hassani	Member
5	Mohamedi Rashid	Member	6	Timla Sungwini	Member
7	Subira Mihambo	Member	8	Nuyerere Muhando	Member
9	Hamisi Ramadhani	Member	10	Omari Saidi	Member
11	Kilimo Aweso	Member	12	Mbelwa Ramadhani	Member
13	Ally Muhando	Member	14	Juma Waziri	Member
15	Yusufu Hatibu	Member	16	Mohamedi Omari	Member
17	Hamisi Ramadhani	Member	18	Durnia Omari	Member
19	Hamisi Seluhumbu	Member	20	Juma Selemani	Member
21	Mkomeni Sakwanda	Member	22	Hamisa Mbwana	Member
23	Ramadhani Abdala	Member	24	Mbelwa	Member
25	Mahsaka Kweya	Member	26	Kiduma Hatibu	Member
27	Muhina Mrisho	Member	28	Situmai Awezo	Member
29	Msegedo Rashidi	Member	30	Sofia Mengi	Member
31	Moshi Ally	Member	32	Mwepango Salehe	Member
33	Fikiri Lukubele	Member	34	Juma mgaza	Member
35	Maneno Juma	Member	36	Ramadhani Ibrahimu	Member
37	Ramadhani Rajabu	Member	38	Kasimu Mrisho	Member
39	Mplowa Yahaya	Member	40	Muluma Mjaidi	Member

<b>NO.</b>	<b>NAME</b>	<b>TUKAMISASA</b>	<b>NO.</b>	<b>NAME</b>	<b>TUKAMISASA</b>
1	Mwajuma M. Shari	Village Chairman	2	Siasa S. Lutengwe	Village Secretary
3	Julius P. Kifulago	Member	4	Zena Hoseni	Member
5	Asha Omari	Member	6	Musa Iddi	Member
7	Mohamedi shari	Member	8	Malungo Maliago	Member
9	Omari Salehe	Member	10	Heseni Selemani	Member
11	Juma Saidi	Member	12	Peter Lusinde	Member
13	Abubakari Malano	Member	14	Ally Mlinda	Member
15	Hashim Makasi	Member	16	Salumu Rashidi	Member
17	Selemani Seleman	Member	18	Kasmas Chomoa	Member
19	Mazia John	Member			

**Appendix2:: Consultants Meeting With Donors and Facilitators of Pilot  
WMAs in Tanzania**

<b>No.</b>	<b>Name of those attended</b>	<b>Institution</b>
1	Dr. H. Spsve;;e	WWF (TPO)
2	Mr. C. Malima	WWF (TPO)
3	Mr. Daniel Moore	USAID (NRM)
4	Mr. Asukile Kajuni	USAID (NRM)
5	Dr. Rolf Baldus	GTZ
6	Dr. Luduring Siege	GTZ (SCP)
7	Mr. Asgar Peterson	DANIDA (WAMI-MBIKI PROJECT)
8	Dr. Marcus Borner	FZS
9	Mr. Lesion Ole kwai	FZS
10	Ms. Rosemary Mpendazoa	BELGIUM EMBASSY
11	Prof Raphale Mwalyosi	UDSM (IRA)
12	Prof. H. Madulu	UDSM (IRA)
13	Mr. Lota Melamari	FORMER DG TANAPA
14	Dr. kassim Kulindwa	UDSM (ERB)
15.	Dr. Agness Mwakajo	UDSM (IRA)

### Appendix 3: Game Census Results

#### Female Kudu in a typical Miombo wooded grassland, Mbiki Pilot WMA (6<sup>th</sup> Feb 2003, - Line Transect length: 45KM)

Serial #	Species	Total observed	Males`	Females`	Young and Juveniles	Habitat or comment
<i>Distance of 17KM covered since the start. Vegetation predominantly Miombo Woodland.</i>						
1.	Impala	1	1	-	-	Miombo Woodland
2.	Impala	10	10	-	-	Miombo Woodland
3.	Impala	13	1	9	3	Miombo Woodland
4.	Impala	2	2	-	-	Miombo Woodland
5.	Bush Duiker	1	<i>Not Sexed</i>			Miombo Woodland
6.	Leinchestein Hartebeest	12	3	7	2	Miombo Woodland
7.	Impala	1	1	-	-	Miombo Woodland
8.	Leinchestein Hartebeest	2	-	1	1	Wooded Grassland
9.	Impala	1	1	-	-	Wooded Grassland
10.	Warthog	3	-	1	2	Wooded Grassland
11.	Impala	18	18	-	-	Wooded Grassland
12.	Yellow Baboon	>30	<i>Not Sexed</i>			Wooded Grassland
<i>The Vegetation changed to short grasslands with a Combretum/ Miombo arboreal cover.</i>						
13.	Impala	1	1	-	-	<i>Themeda triandra</i>
14.	Impala	7	1	6	-	<i>Themeda triandra</i>
15.	Steinbuck	1	<i>Not Sexed</i>			-
16.	Leinchestein Hartebeest	8	2	6	-	Wooded Grassland
17.	Impala	2	-	1	1	Wooded Grassland
18.	Impala	51	9	42	-	Wooded Grassland
19.	Impala	28	28	-	-	Wooded Grassland
20.	Leinchestein Hartebeest	1	1	-	-	Wooded Grassland
21.	Leinchestein Hartebeest	1	1	-	-	Wooded Grassland
22.	Impala	1	1	-	-	Riverine Vegetation
23.	Waterbuck	17	1	13	3	Riverine Vegetation
<b>BIRDS</b>						
24.	C. Francolins	1	-	-	-	Wooded Grassland
25.	Turaco	1	-	-	-	Miombo woodland

### Appendix 4: Wami – Mbiki Line Transect Counts (16<sup>th</sup> Feb 2003)

Line Transect length: 63KM

Serial #	Species	Total observed	Males`	Females`	Young and Juveniles	Habitat or comment
1.	Impala	1	1	-	-	Miombo Woodland
2.	Impala	3	3	-	-	Miombo Woodland
3.	Impala	1	1	-	-	Miombo Woodland
4.	Waterbuck	34	1	28	5	Miombo Woodland
5.	Waterbuck	2	2	-	-	Miombo Woodland
6.	Impala	13	-	13	-	Miombo Woodland
7.	Impala	4	-	4	-	Acacia/Palm [kibaoni hilly ridge]
8.	L. Hartebeest	1	1	-	-	“ “ “
9.	Warthog	6	-	2	4	“ “ “
10.	Impala	2	-	-	-	“ “ “
11.	Impala	3	-	-	-	“ “ “
12.	Impala	36	-	-	-	“ “ “
13.	Impala	40	-	-	-	“ “ “
14.	Impala	1	-	-	-	“ “ “
15.	Impala	4	-	-	-	“ “ “
16.	Baboon	15	4	7	4	Miombo Woodland
17.	Hyaena	1	Not Sexed		-	Miombo Woodland
18.	Bush Duiker	1	1	-	-	Miombo Woodland
19.	Impala	18	3	11	4	Miombo Woodland
20.	L. Hartebeest	8	2	5	1	Miombo Woodland
21.	Warthog	3	1	1	1	Miombo Woodland
22.	Impala	26	1	20	5	Miombo Woodland
23.	L. Hartebeest	1	1	-	-	Miombo Woodland
24.	Impala	1	1	-	-	Miombo Woodland
25.	L. Hartebeest	5	1	3	1	Miombo Woodland
26.	Impala	2	2	-	-	Miombo Woodland
27.	Impala	9	2	5	2	Miombo Woodland
28.	Impala	22	1	21	-	Miombo Woodland
29.	L. Hartebeest	2	-	2	-	Miombo Woodland
30.	L. Hartebeest	1	1	-	-	Miombo Woodland
31.	Bush Duiker	2	1	1	-	Miombo Woodland
32.	Impala	47	3	35	9	Miombo Woodland
33.	Warthog	13	-	1	2	Miombo Woodland
34.	Zebra	5	Not Sexed		-	Miombo Woodland
35.	Impala	>150	Not Sexed		-	Miombo Woodland
36.	Reedbuck [southern]	1	1	-	-	Miombo woodland
37.	Bushpig	1	Not Sexed		-	Miombo Woodland
38.	L. Hartebeest	12	2	8	2	Miombo Woodland

## **Appendix 5: Summary of Animal Census Results as per Species.**

### **1. Impala**

<b>Serial #</b>	<b>Species</b>	<b>Total observed</b>	<b>Males`</b>	<b>Females`</b>	<b>Young and Juveniles</b>	<b>Habitat or comment</b>
1.	Transect One	136	54	69	13	<i>Miombo Woodland</i>
2.	Transect Two	382	-	-	-	<i>Miombo Woodland</i>
3.	Grand Total	618	-	-	-	<i>Miombo Woodland</i>

### **2. Lichtenstein Hartebeest**

<b>Serial #</b>	<b>Species</b>	<b>Total observed</b>	<b>Males`</b>	<b>Females`</b>	<b>Young and Juveniles</b>	<b>Habitat or comment</b>
1.	Transect One	24	7	14	3	<i>Miombo Woodland</i>
2.	Transect Two	30	6	10	4	<i>Miombo Woodland</i>
3.	Grand Total	54	13	24	7	<i>Miombo Woodland</i>

### **3. Waterbuck**

<b>Serial #</b>	<b>Species</b>	<b>Total observed</b>	<b>Males`</b>	<b>Females`</b>	<b>Young and Juveniles</b>	<b>Habitat or comment</b>
1.	Transect One	17	1	13	3	<i>Miombo Woodland</i>
2.	Transect Two	36	3	28	5	<i>Miombo Woodland</i>
3.	Grand Total	53	4	41	8	<i>Miombo Woodland</i>

### **4. Bush Duiker**

<b>Serial #</b>	<b>Species</b>	<b>Total observed</b>	<b>Males`</b>	<b>Females`</b>	<b>Young and Juveniles</b>	<b>Habitat or comment</b>
1.	Transect One	1	-	1	-	<i>Miombo Woodland</i>
2.	Transect Two	3	2	1	-	<i>Miombo Woodland</i>
3.	Grand Total	4	2	2	-	<i>Miombo Woodland</i>

### **5. Warthog**

<b>Serial #</b>	<b>Species</b>	<b>Total observed</b>	<b>Males`</b>	<b>Females`</b>	<b>Young and Juveniles</b>	<b>Habitat or comment</b>
1.	Transect One	3	-	1	2	<i>Miombo Woodland</i>
2.	Transect Two	12	1	4	7	<i>Miombo Woodland</i>
3.	Grand Total	15	1	5	9	<i>Miombo Woodland</i>

### **6. Southern Reedbuck**

<b>Serial #</b>	<b>Species</b>	<b>Total observed</b>	<b>Males`</b>	<b>Females`</b>	<b>Young and Juveniles</b>	<b>Habitat or comment</b>
1.	Transect One	-	-	-	-	<i>Miombo Woodland</i>
2.	Transect Two	1	1	-	-	<i>Miombo Woodland</i>
3.	Grand Total	1	1	-	-	<i>Miombo Woodland</i>

**7. Steinbuck**

<b>Serial #</b>	<b>Species</b>	<b>Total observed</b>	<b>Males`</b>	<b>Females`</b>	<b>Young and Juveniles</b>	<b>Habitat or comment</b>
1.	Transect One	1	-	-	-	<i>Miombo Woodland</i>
2.	Transect Two	-	-	-	-	<i>Miombo Woodland</i>
3.	Grand Total	1	-	-	-	<i>Miombo Woodland</i>

**8. Bush Pig**

<b>Serial #</b>	<b>Species</b>	<b>Total observed</b>	<b>Males`</b>	<b>Females`</b>	<b>Young and Juveniles</b>	<b>Habitat or comment</b>
1.	Transect One	-	-	-	-	<i>Miombo Woodland</i>
2.	Transect Two	1	-	-	-	<i>Miombo Woodland</i>
3.	Grand Total	1	-	-	-	<i>Miombo Woodland</i>

**9. Zebra**

<b>Serial #</b>	<b>Species</b>	<b>Total observed</b>	<b>Males`</b>	<b>Females`</b>	<b>Young and Juveniles</b>	<b>Habitat or comment</b>
1.	Transect One	-	-	-	-	<i>Miombo Woodland</i>
2.	Transect Two	5	-	-	-	<i>Miombo Woodland</i>
3.	Grand Total	5	-	-	-	<i>Miombo Woodland</i>

**Appendix 6: Wami-Mbiki Pilot WMA: Animal Census Trends  
(Oct 1997 - Nov. 2002)**

No.	SPECIES	Oct.97	Oct. 99	Oct. 2000	Oct. 2001	Nov. 2002
1	Buffalo	75	200	200	250	280
2	Elephant	150	400	300	816	500
3	Impala	3,500	8,000	8,000	9,422	13,405
4	L. Hartebeest	800	900	1,000	2,420	4,410
5	Greater Kudu	170	300	1,100	1,348	826
6	Giraffe	70	100	100	168	1,035
7	Zebra	100	300	440	372	814
8	Waterbuck	140	175	600	942	763
9	Eland	12	80	80	100	200
10	Sable Antelope	80	80	80	156	300
11	Southern Reedbuck	300	500	1,300	1,434	1,076
12	Bushbuck	130	300	400	823	607
13	Stein buck	900	1,000	5,800	2,110	1,665
14	Common Duiker					
15	Red Duiker					
16	Hippopotamus	60	100	150	180	
17	Warthog	700	800	2,150	1,424	2,877
18	Bush pig					144
19	Lion		20	25	30	50
20	Leopard		50	50	60	100
21	Hyena		25	30	40	50
22	Wild dog		50		50	80
<b>Total</b>		<b>7,187</b>	<b>13,380</b>	<b>21,805</b>	<b>22,145</b>	<b>29,292</b>

## *Appendix 7: Itinerary of Work*

### REPORT ON THE CONSULTANCY FOR PILOT WILDLIFE MANAGEMENT AREAS BASELINE DATA SURVEY.

#### WESTERN WORKING GROUP (WAMI-MBIKI, UYUMBU & IPOLE)

- Team Members:**
- Lota Melamari (Ecologist) - Team Leader,
  - Dr. A. Isinika (Economist), and
  - Prof. H. Madulu (Sociologist).

DATE	PLACE	ACTIVITY
24 <sup>th</sup> January, 2003	TCMP Offices Dar es Salaam	Meeting with donors and facilitators of the WMs process in Tanzania.
30 <sup>th</sup> January, 2003	WWF – TPO Dar es Salaam	Signing of work contracts by Consultants with WWF- TPO
1 <sup>st</sup> February , 2003	Dar es Salaam	Preparations for field work including some payments
3 <sup>rd</sup> February, 2003	Travel	Western Group Team members travel to Morogoro
4 <sup>th</sup> February, 2003	Mkongo	Arrival at Wami- Mbiki Pilot WMA. Discussion with Project Management Team.
5 <sup>th</sup> February, 2003	Mkongo	Held focused group discussions (FGD) with two villages (Mlumbiro, Dihinda – both of Mvomero District)
5 <sup>th</sup> February, 2003	Villages	Discussions with Mkono wa Mara Maseyu and Visakazi villages.
4 <sup>th</sup> and 5 <sup>th</sup> February, 2003	Wami - Mbiki	Wildlife count along the access road from DSM – Morogoro highway to Mkongo Headquarters of Wami – Mbiki.
6 <sup>th</sup> February, 2003	Wami - Mbiki	Animal census using motorize road line transects (game and patrol work road from Mkongo to Mkono wa Mara) 7:00 – 11:00 A.M  Afternoon FGD with Mwidu Kunke and Lukenge Villages.
7 <sup>th</sup> February, 2003	Villages	Focused group discussion Kidudwe and Mwidu
8 <sup>th</sup> February, 2003	Villages	GGD Kanga, Mziha
9 <sup>th</sup> February, 2003	Villages	FGD Kambala
10 <sup>th</sup> February, 2003	Turiani/Mdazini  Morogoro	Consultation with DC Mvomero District.  RNRO Morogoro Region DNRO Morogoro Region  Afternoon travel to DSM enroute to Bagamoyo District
11 <sup>th</sup> February, 2003	Bagamoyo	2003 Morning hours spent visiting Bagamoyo District Officials and discussing with them about Wami- Mbiki WMA, DC, DED and DNRO afternoon moved to Lugoba Division , Bagamoyo District FGD with Kinzagu Village members.
12 <sup>th</sup> February, 2003	Villages	Kifuleta, Mindu Tulieni and Makombe Village

DATE	PLACE	ACTIVITY
		members.
13 <sup>th</sup> February, 2003	Villages	Kwa Ruhombo, and Kwa Msanja Village members.
14 <sup>th</sup> February, 2003	Villages	Pongwe Kiona, and Pongwe Msungura Village members.
15 <sup>th</sup> February, 2003	Mkongo	Tuka Misasa Village and travel to Mkongo, the Headquarters of Wami – Mbiki WMA.
16 <sup>th</sup> February, 2003	Mkongo	Game census in the morning Afternoon travel to DAR ES SALAAM
17 <sup>th</sup> and 20 <sup>th</sup> February, 2003		Literature review
13 <sup>th</sup> March, 2003		Travel to Morogoro
14 <sup>th</sup> March, 2003	Morogoro	In the morning hours courtesy call to DC Morogoro.  Travel to Turiani/Mdazini. Courtesy call to the General Manager, Mtibwa Sugar Estate Ltd.
17 <sup>th</sup> March, 2003	Morogoro	Courtesy calls to DED Morogoro RC – Morogoro. Return to Dar es Salaam. Meeting with Africare in Dar es Salaam.
18 <sup>th</sup> March, 2003	Dar es Salaam	Morning with DANIDA Afternoon with USAID.
19 <sup>th</sup> March, 2003		Consultants return to their places of residence to embark on report writing.

## **Appendix 8: Interview Checklist**

### **PILOT WILDLIFE MANAGEMENT AREAS BASELINE SURVEY INTERVIEW CHECKLIST**

#### **SOCIAL ASPECTS**

Based on the list of social indicators above, hereunder is the interview guide that was used to guide discussion with village government officials, NGOs, and other relevant stakeholders. The consultants, through discussion, gathered the information. Probing was often done to clarify issues or to seek for more informations

1.	Name of the village, ward, division, and WMA (VG).	
2.	The ethnic groups permanently living in this village (VG Staff).	
3.	Are some residents' permanently/temporarily moving to other areas? If yes, where do they go mainly and why? (VG, FGD District and Central government staff working in the area).	
4.	Are some residents moving into this area? If yes, why do they move in and where do they come from? (Same as above).	
5.	What are the personal characteristics of those who move out and in? (Same as above)	
6.	Which natural resources do village residents have access to? (FGD)	
7.	Of these, which are used for ritual purposes?	
8.	What are the taboos associated with natural resource use?	
9.	What are the mechanisms of accessing these resources? (FGD)	
10.	What is the composition of the village government in terms of age and sex? (VG)	
11.	What is the quality of the village government offices (take note by observations)? Did the village residents alone build them? Was there external assistance? (VG, Observation)	
12.	Which Community Based Organizations exist and for what purpose? (VG, FGD)	
13.	Do village residents know about WMAs and what is their role in them? (GFD)	
14.	Any training received by officials? (VG).	
15.	Have there been court cases involving village residents against natural resources or individuals against the village government? (VG, Wildlife	

	officials, FDG).	
16.	How many cases are “ <i>Mabaraza ya Usuluhishi ya Kata</i> ” resolve per year and of what nature? (VG, Ward Council, Members or the Ward reconciliation committee).	
17.	How often does the lead Authorised Association meet with other stakeholders and what are the issues discussed? (VG).	
18.	Do you regularly meet with Wildlife staff? What issues do you discuss? (VG).	
19.	Number and type of educational facilities, enrolment by gender, drop out rates School staff).	
20.	Which medical facilities are present in the village? (Medical staff).	
21.	Water supply by type and quality (Community development staff) VG, Observation)	
22.	The extent to which the villages have a sense of community (solidarity), as indicated by participation in community activities, stability of the village government, voter complaints, party affiliation, etc. (Community development staff, Communities).	
<b>ECONOMIC ASPECTS</b>		
1.	What occupation exist in the village (farming, livestock, fishing etc.) (VG), Give proportion of villagers in each occupation	
2.	What is the labour power available in the village (Number or proportion of able bodied villagers) VG	
3.	What are the main natural resources uses in the village (what type, game, wood, fuel, thatch grass, poles, timber etc.) (VG)	
4.	What is the status of natural resources access by villagers? (Use right to resources) (VG, FGD)	
5.	What is the average price of game meat in the village? (VG, FGD)	
6.	Availability of social and economic services (transport by road, water etc., water services, energy, medical services, education, shops etc.) (Mention type and number where applicable (VG, FGD)	
7.	What are the cost/price associated with accessing various basic needs in the village? (e.g. food stuff, medical services, transport, water , energy, education etc. ) (VG, FGD, Other stakeholders)	
8.	What types of business exist in this village? (e.g. shops, kiosk, butcher, tailors, blacksmith, mechanical shops such as garage etc.)	
9.	How many people are engaged in this business?	
10.	What are the main types of goods sold in this village? (food stuff, construction material, clothes, tools and	

	equipment, kerosene, electronic goods etc) (FGD)	
11.	What are the natural resources base business (Mention then)	
12.	What are the five major income generating activities existing in the village today? (VG)	
13.	What are the potential economic opportunities in the village if the WMA starts operation?	
14.	What is the main annual village government income (VG)	
15.	What is the annual village government expenditure? (VG)	
16.	What are the sources of the village government income (VG, FGD)	
17.	What is the proportion of natural resources sources in the village government income (VG)	
18.	How many people are employed who currently live in this village? (Salaried) (VG, FGD)	
19.	What is the consumption pattern of people in this village? (What is the staple food in the village? How many meals do families have per day? (VG, FGD)	
20.	What is the wealth status of villagers (Give rough estimate of proportions of poor, middle and rich categories. Also get criteria for categorization stated by villagers e.g. number of cows, size of cultivated farm, business ownership of assets etc.) (VG, FGD)	
21.	How is the availability and access to markets? (Do traders come to buy goods in the village or do village traders take goods to outside markets? Do buyers offer good prices? Are their enough traders to exhaust the volume of good available in the village? (FGD, Trader, business)	
22.	How is the current productivity of economic activities (VG, FGD) <ul style="list-style-type: none"> <li>- How much is harvested per acre/year for each crop type</li> <li>- How many visitors/tourists per season</li> <li>- How much milk/cow/day</li> <li>- How much fish is caught per day per person</li> </ul>	
23.	What is the profitability of business activities (Traders, FGD) <ul style="list-style-type: none"> <li>- What is the volume of sales/month</li> <li>- What is the profit margin on average</li> <li>- Are you able to re-invest some of the proceeds</li> </ul>	
24.	What are the main land use patterns in the village? (VG)	
25.	What are the land tenure regimes in the village? (VG) <ul style="list-style-type: none"> <li>- Customary ownership</li> <li>- Village government allocation</li> </ul>	

	<ul style="list-style-type: none"> <li>- Private property (market transaction)</li> <li>- Use right (rent, borrow etc.)</li> </ul>	
26.	<p>What are the natural resources values in this village? (VG, FGD)</p> <ul style="list-style-type: none"> <li>- Direct use values (market values)</li> <li>- Indirect use values (ecological functions)</li> <li>- Existence values (State of being there – accustomed to its presence)</li> <li>- Aesthetic value (tourism etc)</li> <li>- Bequeath value</li> </ul>	
27.	Does the village have development plans? (VG)	
28.	What are the projects involved in the village development plan?	
29.	<p>How far has the village gone in preparation for the WMA? (VG, FGD)</p> <ul style="list-style-type: none"> <li>- What are the problems encountered?</li> <li>- What are the achievements attained thus far?</li> </ul>	
30.	<p>Does the village have any CBC activities (VG, FGD)</p> <ul style="list-style-type: none"> <li>- What are they?</li> <li>- What achievements have been registered?</li> <li>- What problems has the village encountered in implementing CBC?</li> <li>- Does CBC generate income for the community? How much per year?</li> <li>- How is the distribution of benefits from the CBC to the; <ul style="list-style-type: none"> <li>o Village government?</li> <li>o Villagers?</li> </ul> </li> </ul>	
<b>ECOLOGICAL ASPECTS</b>		
1.	How many animal species are in the WMA and can you mention the names of these species	
2.	Of these, which ones are endemic, endangered, threatened or exotic species?	
3.	What are the estimated populations sizes or number of animals of each species?	
4.	Can you give the animal population trends for each species for the last five years?	
5.	Give the distribution of different animal species in the WMA according to different seasons and can you indicate this on the WMA map?	
6.	Are there animal movements or migrations in the WMA and what species are involved and at what seasons	
7.	Are there special routes or corridors the animals follow during their seasonal movements or migrations and can you indicate them on the WMA map?	
8.	What is the total area of the WMA and do you consider it as an ecosystem?	

9.	Do you have a general management plan (GMP) of the WMA?	
10.	How many habitat types make the WMA and can you mention the animals species found in each habitat type?	
11.	How many plant species are in the WMA and which species do you consider to be endemic, threatened, or exotic in the area?	
12.	Can you identify the dominant plant species composition of each habitat type in the WMA indicating at least the proportion of each species?	
13.	What are different types of water sources for wild animals and how are they distributed over the area?	
14.	Are these water sources permanent or seasonal? And do you consider them adequate?	
15.	What are some of the disturbances to the WMA, which are caused by human activities such agriculture, fires, and cutting trees for firewood or charcoal making?	
16.	What is the size of the area of the WMA that has been affected by these disturbances?	
17.	What other perturbations, for example floods that occur or have occurred in the past within the WMA, and what area has been affected?	
18.	What animal species are hunted in the WMA and for what purpose	
19.	What is the hunting quota allocated for each species and the average percent utilization of this quota?	
20.	Are there uses of other of other natural resources for example beekeeping or fishing or mining in the WMA? What is the extent of the activity	
21.	Is there any crop raiding by animals in the area, what crops are raided and by which animals?	
22.	Can you estimate the area of farmed land that is raided by wild animals and the value of the crops lost through loss due to vermin	
23.	Do animals attack human beings and livestock? If so, what animals are responsible and what is the extent of attack per year	
24.	Are there diseases, which are transmitted between wild animals, livestock and people (zoonotic)? If so, what are these diseases and which animals are involved? And to what extent?	

**Appendix 9: Household Questionnaire**

**UNITED REPUBLIC OF TANZANIA  
MINISTRY OF NATURAL RESOURCES AND TOURISM  
WILDLIFE DIVISION**

**BASELINE SURVEY FOR PILOT WILDLIFE MANAGEMENT AREAS  
HOUSEHOLD QUESTIONNAIRE**

Questionnaire No. \_\_\_\_\_

Village _____	Ward _____	Division _____
District _____	Region _____	
Name of Enumerator: _____		
Date: _____		
Checked by: _____		

**SECTION A: DEMOGRAPHIC INFORMATION**

1. Age \_\_\_\_\_
2. Sex  
     \_\_\_\_\_ 01 male  
     \_\_\_\_\_ 02 female
3. How many persons are there in your household (i.e. persons that leave here with you and share this house/room)
4. Size of household  
     \_\_\_\_\_ Adult (15+) \_\_\_\_\_ male \_\_\_\_\_ females  
     \_\_\_\_\_ Children (0-14) \_\_\_\_\_ male \_\_\_\_\_ females  
     \_\_\_\_\_ Older (61+) \_\_\_\_\_ male \_\_\_\_\_ females  
     \_\_\_\_\_ Number of Household members
5. Education of the household head  
     01 \_\_\_\_\_ None  
     02 \_\_\_\_\_ Primary incomplete  
     03 \_\_\_\_\_ Primary complete  
     04 \_\_\_\_\_ Secondary incomplete  
     05 \_\_\_\_\_ Secondary complete  
     06 \_\_\_\_\_ Diploma  
     07 \_\_\_\_\_ Vocational training  
     08 \_\_\_\_\_ University

6. Occupation of head of household
  - 01 \_\_\_\_\_ Farmers
  - 02 \_\_\_\_\_ Fisher folk
  - 03 \_\_\_\_\_ Employed/have permanent work
  - 04 \_\_\_\_\_ retired
  - 05 \_\_\_\_\_ unemployed
  - 06 \_\_\_\_\_ casual worker
  - 07 \_\_\_\_\_ livestock keeper
  - 08 \_\_\_\_\_ Other
  
7. Where were you born?
  - 01 Same village
  - 02 Same ward different village
  - 03 Same district different ward
  - 04 Same region different district
  - 05 Other regions
  
8. If not born in this village when did you start living in this village?  
\_\_\_\_\_
  
9. Which factors influenced your movement to this village?
  - 01 \_\_\_\_\_
  - 02 \_\_\_\_\_
  - 03 \_\_\_\_\_
  
10. Are there people from your household who have moved out of this village?
  - 01 Yes
  - 02 No
  
11. What is the age and sex characteristics of those who moved out?

NO.	Age	Sex	Reasons for moving
1.			
2.			
3.			
4.			

12. Which factors influenced your movement from that village?
  - 01 \_\_\_\_\_
  - 02 \_\_\_\_\_
  - 03 \_\_\_\_\_
  
13. Are there people from your household moved in to village?
  - 01 Yes
  - 02 No

14. What is the age and sex characteristic of those who moved in?

NO.	Age	Sex	Reasons for moving
1.			
2.			
3.			
4.			

## SECTION B: WATER SOURCES SITUATION

15. Water source table

	1.5 Which source of water do you use? <i>(Check all that apply)</i>		15.3 Amount that you pay per unit  Pay nothing (0) Tshs/m3 or Tshs/20L bucket (please specify)	15.4 Amount of time your household spends collecting water  Minutes/day (including walking and waiting time)
	15.1 Wet season	15.2 Dry season		
1) Private connection to piped water in house			Tshs/m3	
2) Yard tap (shared connection)				
3) Own source (specify) (well, borehole)				
4) Village well			Tshs/bucket	
5) Water Vendors (specify)----- (Tanker, handcart, other)				
6) Rivers and streams				
7) Spring				
8) Other; specify _____				
TOTAL	100%			

## 16. Source satisfaction table

	16.1 [Enumerator: Check all sources used in 10.1 and indicate here with an "X"]	How long do you have to queue waiting to get water? (01)<15 min. (02)<30 min (03)<1 hour (99)>1 hour		16.4. Availability from this source is ...? (01) Poor (02) Fair (03) Good
		16..2 Wet season	16..3 Dry season	
1) Private connection to piped water in house				
2) Yard tap (shared connection)				
3) Own source (specify) (well, borehole)				
4) Village well				
5) Water Vendors (specify)____(tanker, handcart, other)				
6) Rivers and streams				
7) Spring				
8) Other; specify_____				

17. What is the primary method you use to treat your water? [do not prompt]

- \_\_\_\_\_ (00) None  
 \_\_\_\_\_ (01) Boiling  
 \_\_\_\_\_ (02) Filtering  
 \_\_\_\_\_ (03) Settling  
 \_\_\_\_\_ (04) Chemical treatment  
 \_\_\_\_\_ (05) Other, specify\_\_\_\_\_

### SECTION C: SANITATION SITUATION

18. What types of toilet systems does this household usually use?

- \_\_\_\_\_ (00) No facility  
 \_\_\_\_\_ (01) Pit Latrine  
 \_\_\_\_\_ (02) Filtering  
 \_\_\_\_\_ (03) Pour Flush toilet  
 \_\_\_\_\_ (04) Public Latrine  
 \_\_\_\_\_ (05) Other

#### Solid Waste

19. What is the most commonly used mode of disposing refuse from this household?

- How does your household dispose off most of its refuse?  
 \_\_\_\_\_ (01) dumping in your neighborhood  
 \_\_\_\_\_ (02) burning in your compound  
 \_\_\_\_\_ (03) burying in your compound

- \_\_\_\_\_ (04) indiscriminate disposal (throwing away anyhow?)
- \_\_\_\_\_ (05) local collection system
- \_\_\_\_\_ (06) organized community collection system

**SECTION D: Natural Resources Use Benefit (Energy, wildlife, forest products)**

20. What sources (s) of energy do you use for cooking? Check all that apply

- \_\_\_\_\_ (01) Firewood
- \_\_\_\_\_ (02) Charcoal
- \_\_\_\_\_ (03) Biogas Stove
- \_\_\_\_\_ (04) Kerosene Stove
- \_\_\_\_\_ (05) Electric hot plate or cooker
- \_\_\_\_\_ (06) Other, Specify \_\_\_\_\_

21. What natural resource products to you use in your household?

- \_\_\_\_\_ (01) building poles
- \_\_\_\_\_ (02) thatching grass
- \_\_\_\_\_ (03) game meat
- \_\_\_\_\_ (04) medicinal plants
- \_\_\_\_\_ (05) Pottery soil
- \_\_\_\_\_ (06) grazing grass
- \_\_\_\_\_ (07) Other, Specify \_\_\_\_\_

22. How frequently do you use these resources?

Code	Resource use	Daily	Weekly	Monthly	Annually
01	Building poles				
02	Thatching grass				
03	Game meat				
04	Medicinal plants				
05	Pottery soil				
06	Grazing grass				
07	Other, Specify				

23. What is the availability of these resources currently

Code	Resources use	Low	Medium	Plenty
01	Building poles			
02	Thatching grass			
03	Game meat			
04	Medicinal plants			
05	Pottery soil			
06	Grazing grass			
07	Other, Specify			

## SECTION C: ECONOMIC PROFILE

### Productive Activities and Markets

24. What productive activities do you engage in during the dry season (rank 3 by Importance)

- \_\_\_\_\_ (01) Cash crop farming
- \_\_\_\_\_ (02) Food crop production (maize, paddy, cassava, etc)
- \_\_\_\_\_ (03) Small business (food vending,)
- \_\_\_\_\_ (04) Wage employment (casual labour)
- \_\_\_\_\_ (05) Vegetable farming
- \_\_\_\_\_ (06) handcrafts for sale
- \_\_\_\_\_ (07) Water vending
- \_\_\_\_\_ (08) game meat business
- \_\_\_\_\_ (09) tourist

25. What productive activities do you engage in during the wet/rainy season

- \_\_\_\_\_ (01) Cash crop farming
- \_\_\_\_\_ (02) Food crop production (maize, paddy, cassava, etc)
- \_\_\_\_\_ (03) Small business (food-vending,)
- \_\_\_\_\_ (04) Wage employment (casual labour)
- \_\_\_\_\_ (05) Vegetable farming
- \_\_\_\_\_ (06) handcrafts for sale
- \_\_\_\_\_ (07) Water vending
- \_\_\_\_\_ (08) Game meat business
- \_\_\_\_\_ (09) Tourist guide)

26. What are the potential productive activities do you anticipate resulting from the establishment of the new WMA?

- \_\_\_\_\_ (01) Cash crop farming
- \_\_\_\_\_ (02) Food crop production (maize, paddy, cassava, etc)
- \_\_\_\_\_ (03) Small business (food-vending,)
- \_\_\_\_\_ (04) Wage employment (casual labour)
- \_\_\_\_\_ (05) Vegetable farming
- \_\_\_\_\_ (06) handcrafts for sale
- \_\_\_\_\_ (07) Water vending
- \_\_\_\_\_ (08) Game meat business
- \_\_\_\_\_ (09) Tourist guide)

27. How much did you earn last season from your economic activities?

- \_\_\_\_\_ (01) less than 10,000
- \_\_\_\_\_ (02) Between 10,001 and 20,000
- \_\_\_\_\_ (03) Between 20,001 and 30,000
- \_\_\_\_\_ (04) Between 30, 001 and 60,000

- \_\_\_\_\_ (05) Between 60,001 and 100,000  
 \_\_\_\_\_ (06) Between 100,001 and 150,000  
 \_\_\_\_\_ (07) Between 150,001 and 200,000  
 \_\_\_\_\_ (08) Between 200,001 and 300,000  
 \_\_\_\_\_ (09) Between 300,0001 and 500,000  
 \_\_\_\_\_ (99) Above 500.000

28. Remittance How much money do you receive as gifts or assistance from your children and others?

- \_\_\_\_\_ (01) less than 10,000  
 \_\_\_\_\_ (02) Between 10,001 and 20,000  
 \_\_\_\_\_ (03) Between 20,001 and 30,000  
 \_\_\_\_\_ (04) Between 30, 001 and 60,000  
 \_\_\_\_\_ (05) Between 60,001 and 100,000  
 \_\_\_\_\_ (06) Between 100,001 and 150,000  
 \_\_\_\_\_ (07) Between 150,001 and 200,000  
 \_\_\_\_\_ (08) Between 200,001 and 300,000  
 \_\_\_\_\_ (09) Between 300,0001 and 500,000  
 \_\_\_\_\_ (99) Above 500.000

### Income and Expenditures

29. How many members of your household currently earn some income (from a job and/or business and/or part-time work)?

30. Do you receive money in terms of gifts or otherwise from other sources (including relatives or friends living outside the village)?

- \_\_\_\_\_ (00) Yes  
 \_\_\_\_\_ (01) No

31. [If yes] how much money (cash) do you receive per year?

32. Does your household receive any other income (agricultural sales, own business, rental, seasonal income sales of property, etc.)?

Amount per year \_\_\_\_\_ Tshs don't know (99)

33. How many of the following assets are owned by your household?

	Assets	Number	Estimated value Tshs
01	House		
02	Cart		
03	Hoes		
04	Motorcycle		
05	Boat		
06	Bicycle		
07	Ploughs		
08	Tractor		
09	Sewing machine		

10	Land (acres)		
11	Refrigerator		
12	Generator		
13	Trolley		
14	Kerosene stove		
15	Radio		
16	Water tank		
17	Furniture (tables, chairs, beds)		
18	Improved charcoal stove		
19	Fire arm		
20	Vehicle		

34. Do you have any livestock?  
       \_\_\_\_\_ (01)      Yes  
       \_\_\_\_\_ (00)      No

35. Livestock type, number and value

	Animals	Number	Estimated Current Value T (Tshs) (mean value)
1	Cattle		
2	Sheep		
3	Goats		
4	Pigs		
5	Rabbits		
6	Chicken and other poultry		
7	Donkey		

36. Do you have a farm?  
       \_\_\_\_\_ (00)      Yes  
       \_\_\_\_\_ (01)      No

37. If yes, indicate the quantities of the crops harvested

	Crop	Acreage		No. of units harvest	
		Short rains	Long rains	Short rains	Long rains
1	Green Vegetables				
2	Tomatoes				
3	Maize				
4	Beans				
5	Onions				
6	Cassava				
7.	Rice				
8	Others				

**HOUSING and ownership**

38. How many rooms does your household have?

\_\_\_\_\_ No. Of rooms

39. What material(s) were used to build this house? *Check only one primary material for Walls, Floors and Roof.*

- |        |       |      |                                   |
|--------|-------|------|-----------------------------------|
| Walls: | _____ | (01) | Cement                            |
|        | _____ | (02) | Burnt bricks                      |
|        | _____ | (03) | Mud and poles                     |
|        | _____ | (04) | Sheet metal                       |
|        | _____ | (05) | Wood                              |
|        | _____ | (06) | Thatch                            |
|        | _____ | (07) | Mud bricks                        |
|        | _____ | (08) | Lime and stone                    |
| Floor: | _____ | (01) | Cement and sand                   |
|        | _____ | (02) | Earth/Clay                        |
|        | _____ | (03) | Other                             |
| Roof:  | _____ | (01) | thatching grass/palm thatch       |
|        | _____ | (02) | mud poles and grass               |
|        | _____ | (03) | Mud and straw                     |
|        | _____ | (04) | Corrugated iron sheets (aluminum) |
|        | _____ | (05) | tiles                             |

40. Have you ever-borrowed money

- (01) Yes  
(02) No

41. Where or from whom do you borrow the money? *Check only 1 important source:*

- |       |      |                      |
|-------|------|----------------------|
| _____ | (01) | Family member        |
| _____ | (02) | Friend               |
| _____ | (03) | Money Lender         |
| _____ | (04) | Bank                 |
| _____ | (05) | other, specify _____ |
| _____ | (99) | don't Know/Not sure  |

42. How long would it take you to return the borrowed money?

- |       |      |                     |
|-------|------|---------------------|
| _____ | (01) | Less than 3 months  |
| _____ | (02) | 3-6 months          |
| _____ | (03) | 7-12 months         |
| _____ | (04) | 13-18 months        |
| _____ | (05) | More than 18 months |
| _____ | (99) | Don't Know/Not sure |

**SECTON D: SOCIAL DIMENSION**

43. What do you understand by WMA? (Check relevant aspect mentioned)
- a \_\_\_\_\_(01) Participation
  - b \_\_\_\_\_(02) Benefit sharing
  - c \_\_\_\_\_(03) Resource conservation
  - d \_\_\_\_\_(04) Follow WMA guidelines and regulations
44. Do you like the idea of WMA? \_\_\_\_\_(01) Yes \_\_\_\_\_ (02) No
45. If No, why \_\_\_\_\_
46. What are your opinions for improvement \_\_\_\_\_
47. How many times have you been involved in a village collective activity last year? \_\_\_\_
48. How many village meetings have been called for the past one year \_\_\_\_\_
49. Does the leadership present the annual income & expenditure report? \_\_\_\_ (01) Yes- (02) No.
50. Does the leadership act responsibly and in justice? \_\_\_\_\_(01) Yes \_\_\_\_\_(02) No.

**UNITED REPUBLIC OF TANZANIA**  
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**Volume 2: Wami-Mbiki Report**

**Draft**

**By**

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