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Executive Summary

0.1 INTRODUCTION

The main objective of this study was to facilitate the collection, analysis and compilation of baseline information from 16 pilot WMAs. This information is intended to be the basis for the development of Monitoring Indicators and Monitoring Plans during the implementation of the WMAs. Hereunder we present the methodology used in the baseline survey done in the proposed Idodi-Pawaga, Ukutu-JUKUMU and Twatwatwa pilot WMAs.

0.2 METHODOLOGY

Both primary and secondary data were collected from all villages surrounding the three WMAs.

Socio-Economic Data

Secondary data was collected through extensive literature reviews from documents obtained from different sources, including IRA, MNRT and WD. There were also consultations with key and primary stakeholders (individuals) in the above listed institutions, councilors, and other key players. In Kilosa District we visited the District Wildlife Office for information and logistics. We also searched for additional information from the Internet.

Primary data was collected from Twatwatwa village, spending about three hours of interviews in the village. Discussions and/or meetings were conducted with the village government, focused groups

Data weaknesses and limitation:

The data collected from the villages depended very much on the respondents' recall capability. Most of the villages seem not to have proper record keeping systems that may affect the reliability of the data.

However, secondary data from the literature review helped to reduce the weakness in reliability.

Ecological Data

respond while others were allowed to give their comments on the response given. The consensus of the majority was recorded as the right response.

special informants who seemed to understand the area better and had interest in conservation were selected from the local communities and interviewed. They provided ecological information that either verified information collected from secondary sources, or provided information that was unavailable. Maps for the the areas were obtained from Kilosa Districts' Lands Development and Natural Resources Offices. In most cases there were no extra copies, the maps had to be de-drawn or taken as blueprints. GIS work was done at the Tanzania Wildlife Research Institute. The work involved digitizing specific thematic maps and overlaying selected information to suit the purpose of this study. The package used in this analysis is ArcView. Analysis was done at a limited scale due to limited financial resources.

0.3 SURVEY FINDINGS

Sociological Aspects

Demographic characteristics

Population change in Twatwatwaa is gradual, registering only 19% growth between 1988 and 2002. Much of the change is due to natural growth. The village has been inhabited by pastoralist Maasai from Kiteto since 1960s.

Natural resource use

Fuelwood is the most used resource in the proposed WMA, followed by charcoal, building poles, thatch grass and medicinal plants. Wildlife is widely recognized as an important resource in the proposed WMA; the influence of the work by a Kenyan NGO is evident in this respect.

Institutionsl Set-Up

The standard village government structure comprising three main committees (Planning and Finance; Peace and Security, and Social Services Committees) prevails in the village. Under these committees are various specialized sub-committees. The Natural Resources Sub-Committee operates under the Planning and

Information at household expenditure was not easily available, especially in the form of quantities and money terms; since farmers do not have the tradition of keeping records of their incomes and expenditures. Villagers were, however, able to list areas of income expenditure such as buying domestic goods such as soap, sugar, and cloth, and paying of health services, educational services and farming costs.

Proposed WMA. Parents incur costs on education in terms of school fees, uniforms, books, contributions et cetera. According to the interviews costs per primary school child is about Tshs. 50,000/= per year.

Wat

proposed WMA and this in return may become an incentive for them to cooperate in protecting the WMA against poachers and illegal extraction of natural resources.

Also it is not clear whether the balance is saved or used elsewhere. Nevertheless, it is important for VG to have a culture of doing some savings for the part of the money earned annually to meet emergencies and other developmental issues. Saving could also be used for lending money to villagers in the long term, which could have positive impact on poverty reduction at household level.

Natural resource use patterns

Results from the household interviews and group discussions show that almost 100% of the respondents use natural resource in one way or another. The natural resources used in the village include timber, fish, charcoal, honey, building poles, thatching grass, minerals, medicine, fruits, mushrooms, vegetables and bricks. Attempts to capture natural resources consumption rates failed because natural resources are used mainly at subsistence level. Where it is used for business, people are reluctant to disclose quantities and money incomes due to fear of many things, including arrest by the government and taxation.

Mechanisms for natural resource access

Natural resources for home use, e.g. fuelwood collection, cutting of building poles, thatching grass, wild food et cetera, are extracted without any permit. For petty business related resources, the villagers need to apply through the village governments and pay a fee. For certain types of natural resources, e.g. wild animals or cutting trees for timber the permission has to come from the Director of Wildlife and the District Natural Resource Office, respectively. Despite the existing laws and by-laws for natural resources use, there is substantial illegal extraction of resources in the village, suggesting that either the laws/by-laws are not available or there is no incentive to enforce them.

Markets for village products

Most of the products that go through markets include maize, rice, beans and millets. Also live animals and livestock products such as meat, milk, and skins.

Generally, transport system is very poor in the village. A high proportion of farmers sell their farm products locally either to the traders who come to buy crops or among the farmers themselves. Agricultural products are marketed by private traders and periodic markets (*magulio*). The major complains from farmers is low prices offered by traders relative to the cost of production. During the harvesting periods prices are very low and farmers sell their maize at between Tsh. 6000/= and 10,000/= during harvest and lean seasons, respectively. Nevertheless, due to high demand for cash as well as lack of efficient storage facilities, a high proportion of farmers sell their produce immediately after harvest and as a result, they get very low prices.

The collapse of cooperative unions has left farmers with no representative organization to co-ordinate their production, negotiate prices with buyers and campaign for better support services. Lack of market information is another factor affecting bargaining power by farmers. Most farmers and livestock keepers do not have price information from other sources than the traders themselves. Due to lack of quality price information, farmers have quite often realized that the same traders who bought their produce paid different prices to different farmers for the same quality of produce and at the same time. One important role the government could play in these liberalized markets could be to improve access to price information by farmers so that it discriminates less against small farmers and consumers.

The marketing situation is also not favourable for livestock keepers who complain that prices are so low that they cannot sell their cattle for enough money to buy food. The prices for livestock vary, ranging from

Poverty levels

Wildlife Movements

consu

1.4 *Literature Review*

1.4.1

Table 1: Land Use in Tanzania

Land Use Category	Area (sq.km.)	Percentage
National parks	41,038	4
Game reserves	102,719	11
Forest reserves	126,306	13
Crop cultivation	51,900	5
Pastures	350,000	37
Other land	214,039	23
Lakes	59,000	7
Total	945,000	100

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programme. There have since been very few in- and out-migrations. Interview data show, for example, that of all the 23 respondents interviewed only 18.2% were born from

cows, selling of milk, herding and caring of young animals, and constant repairing of the house structures (especially the *manyatta*).

2.3.3 Dependence ratios

A dependence ratio is the product of the total number of children, the old and the disabled (the dependents) divided by the number of able

abuse of power. Hence, of the 23 respondents interviewed 95.7% reported that meetings were called quite regularly. Meanwhile, 61.9% of the respondents reported that income and expenditure reports were responsibly given by the Village Government.

2.7 Relationship Between Village Governments and CBOs

The Twatwatwa village has one community-

2.10 Emergent Issues: A Discussion

2.10.1 Political constraints

It has been observed in the other reports that representative democracy relies on elected representatives, namely Members of Parliament (MPs), District Councilors, Village Councilors and Village Chairpersons to act on behalf of those who elected them. The general conclusion was that the representative system is not functioning properly. In Twatwatwa the case of the local MP and district councilor was said to be even worse. The villagers felt that both the MP and the Councilor did not engage in regular consultations with their local constituents because they were not pastoralists. The villagers sincerely believed that the district leadership was deliberately acting against them in favour of the agriculturist ethnic groups in the smoldering land use conflict because they were pastoralists.

2.10.2 Institutional constraints

The situation has created palpable animosity against the district leadership and the adjacent agricultural communities. Ulterior motives of politicians who like to retain as much votes as they can, have many times fueled such conflicts, making natural resource use planning at the local level difficult. The institutional framework for this pilot WMA will have to take these feelings on stride and harmonise their conflictual relationships.

2.11 Conclusion and Recommendations

The village is surveyed and has a total area of 30,830 ha. No area is specifically set aside as a potential WMA. Villagers have a notion that they can make the whole village land a WMA. This is contrary to the issued guidelines, which require proper zonation of villages, indicating different land uses. However, given the observed situation in the field, if the community agrees to set aside a pilot WMA, the northern half of the area should be given priority for four main reasons:

- a) The area is largely tsetse infested thus might not be very useful for other economic activities.

- b) Due to tsetse infestation, there are very few settlements and most of them are temporary. It will, therefore, be easy to remove those settlements and promote wildlife conservation and hunting.
- c) The area has a better vegetation cover and is representative of all vegetation communities in the area. It has, therefore, the potential of harbouring all animal species and thus maintaining the animal diversity of the area.
- d) There is sufficient water throughout the year, as the area is bounded by Wami River in the west, Mkata River on the east and a convergence of the two rivers in the north.

5.0 The Way Forward

The main foreseeable problem is lack of co-operation that has at times led to open hostilities with the adjacent agricultural communities. If the village continues to stand alone in this effort there are risks of losing much wildlife due to poaching. There is also a risk of losing many wildlife corridors as a result of expanding agriculture. All of these may in turn jeopardize the ecological value of the area.

In general the establishment of a pilot WMA at Twatwatwa will have also to consider several organizational problems, including:

Inadequate coordination at the district level, leading to the lack of a body of management statistics on the extent and status of various natural resources, including wildlife; a problem that incapacitates proper resource use planning.

The organizational structure of some of the traditional Maasai institutions not reflecting the democratic nature commensurate with community-based organizations, where executive members ought to be accountable to the natural resources committees and/or general assemblies.

The low level of education among community members of the natural resources committee leads to the members' limited capacity to identify problems and evolve appropriate strategies to solve them.

Contrary to the Guidelines, some members of the village government expected also to be members of the village natural resources committee, which could reduce the

3.5 *Access to Markets*

Market accessibility is a problem in Twatwatwa. This is due to the poor transport systems. Few buyers come to buy farm products and due to lack of competition they pay low prices. Twatwatwa production is quite high where 95% of the villagers can produce 100 plus sacks of rice and maize. Nevertheless, the productivity is said to be declining due to drought.

3.6 *Sources of Incomes*

Sources of incomes include village levy, fines, cess from petty business, including *minada*. There is also a big support from donor community e.g. Irish Aid and an NGO from Kenya. In 2002 the village government income was Tshs. 11,700,000. The whole money was spent for dam construction. Out of this, income from natural resources was insignificant, amounting to only Tsh. 70,000/= . This is because the proposed WMA has yet to participate in the quota system.

3.6 *Non-Farm Economic Activities*

There are two shops in the village, which are not enough. At least all villagers sell some milk for cash. Livestock business involves 10 people and women are involved in beads (*shanga*) making, which they feel could secure a good income from tourists.

Natural resources related business includes game hunting.

3.7 *Poverty Levels*

In assessing poverty levels, the Maasai criteria for wealth included cattle of not less than 1,000, 5 modern houses in urban areas, at least four cars, many wives (at least 4) and children (20+). Using these criteria, Twatwatwa village is reported to have 50% poor people. Nevertheless, using standard criteria for poverty assessment, e.g. access to health services, access to clean water, education, life expectancy, under five mortality rates, the poverty levels would seem to be widely spread in the community and are higher than the estimated 50%.

3.8 Consumption Patterns

The foodstuff commonly consumed in the village includes meat, maize, rice, milk, beans and vegetables. The main staple food is maize, rice and milk. A high proportion of the villages has two meals a day with only 5% of the population having three meals a day (i.e. breakfast, lunch and dinner).

3.9 Land Use Patterns

Land use pattern comprises land for residential, farming, grazing, conservation and a cemetery. The land is distributed to villagers by the village government.

3.10 The Three Year Development Plan

The village has a development plan for the following activities in the coming three years:

- Dam construction

- Installation of tape water

- Construction/rehabilitation of cattle dips

- Roofing of a classroom, construction of one house for teachers and to stimulate people on building modern houses.

3.11 Natural Resource Committee

The village Natural Resources Committee was established in 1999. Since its inception it has encountered a number of problems, including inability to curb poaching mainly due to poor communication facilities, poor transport and working facilities.

The Maasai feel that the presence of wildlife in their area has provided an optimal habitat and prey ground within the system, which prevents carnivorous animals to come and attack their livestock.

3.12 Some Conservation Initiatives

In 1997 the village government council decided to set up a special committee of 16 people to conserve/manage the environment of Twatwatwa village and the natural resources therein. The village also drafted a plan/programme, upon which they request for loans/assistance from outside stakeholders. The aims and objectives of this plan are to

3.14 Tourist and Resident Hunting

The sale of quota based hunting rights to tourist hunting companies and/or resident hunting present the most immediate, and supposedly the principal, economic opportunity for the WMA. Hunting has the advantage of generating considerable revenues right from the beginning with little or no investments needed by the AA. The resource is already presented and available for operation. Hunting can generate profits early that communities can and should reinvest into the other economic opportunities. For hunting tourism to be sustainable, consumptive use of wildlife should not jeopardize the biological and ecological basic requirements. This could be achieved through the systems of monitoring the game populations, and must be jointly developed and implemented by the WD and the AAs along with the system of enforcing quotas.

3.15 Sport Hunting

Sport hunting could be potentially another major earner of revenues in the WMA. However, for such activity to be efficient market forces should be allowed for allocation and pricing of hunting blocks.

3.16 Live Animal Capture and Sale

This activity AA could be receiving quota from WD to capture and export live animals. The AA could consider this option along with the hunting and cropping options or some combination with the three. Quotas for capture and sale of non-game animals (reptiles etc) could also be established for WMAs

3.17 Beekeeping

Beekeeping and the value added processing and marketing of honey, wax and other products, presents a clear economic opportunity for most villages in the proposed Twatwatwa WMA, both at village and individual levels. However, it is not clear for the Twatwatwa to be interested in such activity since traditionally they are livestock keepers. Beekeeping business is underdeveloped in Tanzania where less than 4% of the potential volume of honey is produced nationally (MNRT 2000). Therefore, improving processing

Most of the natural resources are extracted free of charge because either by-laws are not developed or they are simply not enforceable. The capacity to keep records for income and expenditure by the village government is very poor.

Hence we would like to recommend as follows:

Intensive studies should be commissioned for ecological and economic potential of the area. Also to identify key stakeholders surrounding the village and on how natural resources management and utilization could equitably be shared among them.

Education also should be extended to teaching people basic principals of project appraisal and book-keeping or general management practices. Field observations show that VG cannot even keep simple records for income and expenditure for the villages. Proper monitoring of the impact of WMAs concept will only be possible if there is proper record keeping in villages. There should be training for VG in record keeping for incomes and expenditures incurred. Also there should be an external board to audit VG incomes and expenditures as provided by the Guidelines.

Conduct awareness raising on WMA and AA concepts for all the communities surrounding the WMA. This should be followed by capacity building for key players in the VG. Educating villagers on the WMA and associated packages is also important for bargaining powe

Since there has been no detailed study on the ecological, sociological and economic

4.2.2 Trends and Use of Wildlife

Trends in wildlife populations

There has never been any deliberate efforts to conduct wildlife censuses in the area. There are therefore no data on the number and distribution of wildlife. Unfortunately, there are no game scouts in the area who could give some indications on the number and distribution of wildlife. However, local communities clearly indicated that the number of wildlife in the area has decreased dramatically due to poaching. Poaching is conducted by nearby communities and poachers from the nearby Morogoro town. There are no well-organized institutional efforts by communities to combat poaching in the area or keep proper records on wildlife trends. It is therefore difficult in this report to give data on the number of wildlife present in the area and the trend compared to previous years.

However, field observations and scanty records available indicate the animal species listed in Table 4.1 exist in the area.

Table 4.1 : Animal Species Found in Twatwatwa Area

English Name	Scientific Name
Elephant	<i>Loxodonta africana</i>
Buffalo	<i>Syncerus caffer caffer</i>
Eland	<i>Taurotragus oryx</i>
Wildebeest	<i>Connochaetes taurinus</i>
Lion	<i>Panthera leo</i>
Leopard	<i>Panthera pardus</i>
Impala	<i>Aepyceros melampus</i>
Hunting dog	<i>Lycaon pictus</i>
Southern redbuck	<i>Redunca arundinum</i>
Warthog	<i>Phacochoenus aethiopicus</i>
Common waterbuck	<i>Kobus eliprinunus</i>
Zebra	<i>Equus bruchelli</i>

Caracal	<i>Felis caracal</i>
Velvet monkey	<i>Cercopithecus aethiops</i>
Yellow baboon	<i>Papio anubis</i>
Africa hare	<i>Lepus capensis</i>
Advaak	<i>Orycteropus affer</i>
Porcupine	<i>Hystrix galeata</i>
Stripped jackal	<i>Canis adustus</i>
Golden jackal	<i>Canis aureus</i>
Crocodile	<i>Crocodilus niloticus</i>
Giraffe	

Dominant species among these have been identified by communities as Thomson gazelles, Elephants, Giraffe, Eland, and baboons. The number of baboons is said to be very high and they are becoming a nuisance to nearby communities. and they are

Table 4.2: Bird Species in the Area

Red-cheeked cordon-bleu	<i>Uraeginthus bengalus</i>
Red-billed firefinch	<i>Lagonosticta senegala</i>
Bronze Mannikin	<i>Lonchura cocullata</i>
Pin tailed whydah	<i>Vidua marcoura</i>
Reichnows weaver	<i>Ploccus baglafecht reichnow</i>
Red billed buffalo weaver	<i>Weaver bubalornis niger</i>
Yellow bishop	<i>Euplectes capensis</i>
Red billed quelea	<i>Quelea-quelea</i>
Superls starling	<i>Spreo superbus</i>
Drongo	<i>Dicrurus adsmimilis</i>

Amphibians and Reptiles

There are no records of small mammals, amphibians and reptiles. Discussions with local communities indicate that the main amphibians present in the area are frogs and toads. Reptiles include crocodiles, snakes, tortoises, chameleons and lizards.

Endemic, Rare, Threatened and Endangered species

Because of the international concern about the trade in several species and their products, the following large mammals found in the area are placed within the CITES appendices.

Appendix 1: African Elephant and Leopard.

Appendix 2: Hippopotamus and Crocodile

None of the reptiles and amphibians are regarded as endangered under the current IUCN classification of conservation status. Tortoises, chameleons, pythons and crocodile are placed on CITES Appendix 2 because they are regarded to be under threat from the live animal export trade. Snakes are also regarded as dangerous and killed when encountered.

Use of Wildlife

The only form of utilization allowed legally is resident hunting. Animal species hunted are buffalo, eland, Thomson gazelles and wildebeest. However, illegal harvesting for meat (both subsistence and commercial), seem to be on the increase.

It has been very difficult to get poaching data in the area. However, the following estimates were given as the number of wild animals poached for the last three years.

Table 3: Number of Wild Animals Poached (2000-2002)

	Wildebeest	Zebra	Gazelles	Eland	Buffalo
2000	8	3	11	4	2
2001	11	4	14	5	4
2002	12	6	16	7	6

4.2.3 The Status of Vegetation Communities and an Assessment of the Suitability of the Habitats for Wildlife

The vegetation of the area ranges from riverine vegetation to a typical semi arid area. This offers a wide range of habitats to different animal species. These vegetation community types offer a suitable habitat for wildlife, as there is sufficient shade and open areas.

The area is dominated by three major vegetation communities namely Woodland, Open grassland and riverine vegetation.

Woodland Vegetation

This vegetation type tend to occupy largely the southern and south-eastern part and central part of the village. They tend to get thicker as one moves to the north. Dominant species include; *Salvadora persica*, *Adansonia digitata*, *Hyphene ventricosa*, *Dalbergia melanoxylon*, *Balanites Aegyptiaca*, *Acacia mellifera*, *Acacia tortilis*, *Commiphora Africana*, *Combretum Pubdida*, *Phenex reclinata*, *Acacia negrescens*, *Acacia nilotica*, and *Acacia geradii*.

Riverine Vegetation

This vegetation community is found along Wami and Mkata rivers. They therefore form the northern, western and eastern boundary of the area. The riverine vegetation and the transition zone with other vegetation communities is dominated by *Tamarindus indica*, *Azelia quazensis*, *Milecea excelsa*, *Burkea Africana*, *Khaya Nyasica* *Acacia xanthophloea*, *Grevia bicolor*, *Kigel*

Ruaha National Park to Udzungwa , Mikumi to and from the area. However, communities could not trace exactly on the map those corridors, which are beyond the vicinity of their area. It has also been mentioned that these corridors are increasingly being blocked by cultivation and settlements.

4.2.6 Status, trends and use of fisheries, forest and beekeeping resources and other biological resources

Status, trends and use of fisheries

Use of fisheries in this particular village is largely non-existent. Though there are fishing potentials in the two rivers, the community which live in this area does not have a tradition of eating fish. There are very few people, mainly from other tribes who do eat fish. Most fishing activities are therefore done by nearby communities who non-Maasai. It has also been found the type of fishing taking place is at the subsistence level, and if there is any commercial fishing is very much localized. Catfish and tilapia are the main species in the area.

Status, trends and use of forest and beekeeping resources

In Twatwatwa village, the use of forest resources is mainly confined to building of bomas and firewood. In the nearby villages such as Mbwade, charcoal making activities are on the rise. Main tree species used for charcoal making include *Acacia gerardii*, *Acacia negrescens*, (miluziluzi, fumbili and mwango)-vernacular names. Illegal harvesting of *Afzelia quazensis* for timber has been mentioned as a big threat to the riverine vegetation community.

There are no significant beekeeping activities taking place in the area.

Other biological resources

There are no other biological resources in the area which are presently being used by communities.

4.2.7 Human-Wildlife Conflicts and Natural Resource Use Conflicts in general

Crop Damage

The local community in Twatwatwa is mainly engaged in pastoralism. They also cultivate home-gardens but they complain that most of their crops are destroyed by baboons and elephants. The main crops grown are maize and rice at a small scale.

Table 4.3: Average Crop Damage by Wildlife

S/N ANIMAL SPECIES

4.3 Emerging Issues

4.3.1 Ecological Viability of the Potential WMA

As indicated previously, the total village area of Twatwatwa is 30830 ha. If a certain area

groups, and the attitude that seems to be developing is that wildlife is for the pastoralists.

managing this area. The following recommendations are therefore important as part of

Conduct a Study to Identify and Map Wildlife Corridors

A broader approach to conservation has to be undertaken if Twatwatwa area is to remain a biodiversity rich area. Among the areas that have to be given priority is the identification and mapping of all wildlife corridors connecting it with other core and dispersal areas. After identifying these corridors, deliberate efforts have to be undertaken to give a legal protection status of these areas. This will require support of the government at all levels.

Ensure Wildlife Conservation Compatible Activities at Mkata Ranch

It may be a bit late to deal with incompatible land use practices in some communities surrounding the area given the land use politics in the area. However, it is strongly recommended that all institutions and communities interested in conservation should influence the government to give strict conditions to the selected investor in Mkata ranch to promote activities that are compatible with wildlife conservation. This is the only option available to improve the range available for wildlife within the vicinity of the area.

Designate a Specific Area as a pilot WMA

As required by the WMA Guidelines, the village has to be zoned and set a specific area for wildlife management. At present the community is thinking of making the whole village a WMA. This is unrealistic and may cause conflicts with other uses.

4.5 Way Forward

The proposed way forward for Twatwatwa community to attain their ambition of establishing a pilot WMA include;

- liaising with the wildlife division to properly understand the procedures required establishing a W

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Ministry of Natural Resources and Tourism. July; 79pp.