

**Environmental Management and Biodiversity Conservation of Forests,  
Woodlands, and Wetlands of the Rufiji Delta and Floodplain**

**Report of the Rufiji District Stakeholders  
Environmental Management Planning  
Workshop  
Held at Utete, Rufiji 29-30 June 2000**

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<sup>1</sup> The Rufiji District Council implements Rufiji Environment Management Project with technical assistance from IUCN – The World Conservation Union, and funding from the Royal Netherlands Embassy.

## **Rufiji Environment Management Project - REMP**

**Project Goal:** To promote the long-term conservation through 'wise use' of the lower Rufiji forests, woodlands and wetlands, such that biodiversity is conserved, critical ecological functions are maintained, renewable natural resources are used sustainably and the livelihoods of the area's inhabitants are secured and enhanced.

### **Objectives**

- To promote the integration of environmental conservation and sustainable development through environmental planning within the Rufiji Delta and Floodplain.
- To promote the sustainable use of natural resources and enhance the livelihoods of local communities by implementing sustainable pilot development activities based on wise use principles.
- To promote awareness of the values of forests, woodlands and wetlands and the importance of wise use at village, district, regional and central government levels, and to influence national policies on natural resource management.

### **Project Area**

The project area is within Rufiji District in the ecosystems affected by the flooding of the river (floodplain and delta), downstream of the Selous Game Reserve and also including several upland forests of special importance.

### **Project Implementation**

The project is run from the district Headquarters in Utete by the Rufiji District Administration through a district Environmental Management Team coordinated by the District Executive Director. The Project Manager is employed by the project and two Technical Advisers are employed by IUCN.

Project partners, particularly NEMC, the Coast Region, RUBADA, The Royal Netherlands Embassy and the Ministry of Natural Resources and Tourism, collaborate formally through their participation in the Project Steering Committee and also informally.

### **Project Outputs**

At the end of the first five –year phase (1998-2003) of the project the expected outputs are:

An Environmental Management Plan: an integrated plan for the management of the ecosystems (forests, woodlands and wetlands) and natural resources of the project area that has been tested and revised so that it can be assured of success - especially through development hand-in-hand with the District council and the people of Rufiji.

Village (or community) Natural Resource Management Plans: These will be produced in pilot villages to facilitate village planning for natural resource management. The project will support the implementation of these plans by researching the legislation, providing training and some support for zoning, mapping and gazettement of reserves.

Established Wise Use Activities: These will consist of the successful sustainable development activities that are being tried and tested with pilot village and communities and are shown to be sustainable

Key forests will be conserved: Forests in Rufiji District that have shown high levels of plant biodiversity, endemism or other valuable biodiversity characteristics will be conserved by gazettement, forest management for conservation, and /or awareness-raising with their traditional owners.

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# 1 Background to the Workshop

**Mr. Francis Karanja – Programme Officer, REMP**

The Rufiji District of central coastal Tanzania is the site of the largest tidal (mangrove) forest on the eastern coast of Africa. These mangroves support an extensive inter-tidal fishery, provide nursery grounds for nationally important prawn industry, and have considerable importance locally and regionally. Rufiji district also harbours many other forest and woodland associations – many of which are influenced by the floods from the Rufiji River which provide surface and sub-surface waters to the riparian forests, swamp forests, fringing woodlands, thickets and wetlands on and adjacent to its lower floodplain. Over 150,000 people inhabit the Rufiji Delta and Floodplain, the majority of whom subsist on fishing, cultivation, and extraction of forest, woodland, and wetland products. There are some very valuable dry coastal forests in Rufiji District in the uplands away from the delta and floodplain that certainly contain biodiversity of local, national and probably international importance – such as Kichi Hills forest and the Nyamuete-Namakutwa, and Mchungu Forest Reserves.

Over the last decade, however, the Rufiji forests, woodlands and wetlands have come under increasing pressures from a wide variety of factors, including population growth, unsustainable harvesting of both timber and fish resources, the conversion of mangrove areas to cultivation and the use of riparian forest and woodlands for fuel. In the past a proposal was put forth to develop a large semi-intensive prawn farm, that would greatly threaten the integrity of the mangrove forest ecosystem. The mangroves, Floodplain, forests and freshwater wetlands are also threatened by developments within the district like improvement of the road network, including a bridge over the Rufiji River, mining exploration activities, as well as by upstream development activities that include the construction of hydroelectric dams and water extraction schemes. Management interventions to address these pressures have been hampered by a lack of ecological and socio-economic information, inadequate inclusion of all stakeholders, inadequate data on the extent and scale of land-use changes, and insufficient capacity for long-term integrated planning and management at the district level. It was against this background that IUCN in collaboration with the Rufiji District Council, and other stakeholders at both regional and national levels developed the current project phase I of the Rufiji Environmental Management Project. The Rufiji District Council implements the project, with technical assistance from IUCN. The Netherlands government provides the project funding.

The goal of the Rufiji Environment Management Project is to promote the long-term conservation through wise use of the lower Rufiji River forests, woodlands and wetlands, such that biodiversity is conserved, critical ecological functions are maintained, renewable natural resources are used sustainably, and the livelihoods of the area's inhabitants are secured and enhanced. Two of the principal objectives and activities of this phase of the project focus on the Environmental Management Plan development and implementation process. These are:

- To establish a framework for harmonising conservation objectives and human development needs, through preparation of an Environmental Management Plan for the low-lying areas (and other important areas for biodiversity) of the Rufiji District – with emphasis on forests and their attendant woodlands and wetlands as well as involvement of ALL stakeholders in the planning process,
- Test and then implement the Environmental Management Plan for the Rufiji District with the involvement of the district authorities and communities and simultaneously assist pilot villages to develop and implement community environmental management plans for the natural resources of particular areas.
- To date the project has been on the ground for close to two years. During this period, the emphasis has been to undertake various ecological and socio-economic assessments, so as to improve understanding of their conditions. As part of the natural resource assessments several studies have been commissioned ranging from aerial surveys and GIS work, biodiversity inventories, assessment of the current status of timber resources in the wooded areas, to wetland dynamics.

- For the socio-economic conditions assessment, the project has already studied the four pilot villages, and presently we are in the process of assessing ten further villages.

There are other projects within the Rufiji district that we are collaborating with and which, are also contributing to the management of natural resources within the district. Thus, presently there exists sufficient information to facilitate formulation of a draft Environmental Management Plan.

Of great interest/concern to the project is the Environmental Management Plan development process, which must be carried out in a participatory manner, to ensure sustainability in future. This will require working very closely with all the stakeholders at village, Ward, District, Regional and National level. Towards this end, the following stakeholder groups were invited to this first environmental management planning workshop to deliberate on the issues that require to be taken into consideration during the elaboration of the Rufiji District Environment Management Plan (EMP); Rufiji district staff, Rufiji district council members, Divisional staff, Ward staff, local communities members representatives, other projects/institutions in Rufiji district, various natural resources user groups, and non governmental organisations (NGOs).

In the intervening period, REMP has been consolidating the available information both from its own studies and previous studies and analysing the information to feed into the environmental management planning process. It is envisaged that a second stakeholders' workshop that will involve stakeholder groups as identified in this workshop, will be organised soon.

This workshop has achieved two main objectives. First identification of relevant stakeholders at local, district, regional and national levels, in addition to charting out a flexible planning process that should be followed. Second it has produced pertinent natural resources management issues that require consideration in the designing of an environmental management plan for the Rufiji district. Therefore, these workshop proceedings will form an important building block in the EMP process. It is expected that the next workshop will be able to identify further issues to be addressed in the EMP process, and provide useful insights into others that might have been overlooked during this first workshop. It is evident that a management system for the natural resources in Rufiji district is necessary, and one of the objectives of the forthcoming workshop should be to discuss the objectives of the management process, both long-term and operational.

## 2 Opening

**Mr. Issa Lembuya (Rufiji District Commissioner)** read on his behalf by the District Administrative Secretary.

The workshop was opened by the District Commissioner, who reminded the workshop participants that the Rufiji Environment Management Project was a joint activity between various stakeholders with the Rufiji District Council as the key implementing agency in collaboration with other parties at regional and national levels, and receiving technical assistance from the IUCN – The World Conservation Union. He reiterated that the project is in its first phase, and several phases are foreseen, that will build on the activities being initiated presently. Of great significance to the inhabitants of the Rufiji district, is the project's approach of endeavouring at balancing conservation and development needs, with ultimate goal of improving their living standards.

Though the district is endowed with rich natural resources ranging from forests such as Kichi Hills, Namakutwa-Nyamute, Mchungu; wetland resources in the floodplain and the delta with diverse fisheries resources and mangroves, pressures from burgeoning population, logging, agriculture, unsustainable fisheries activities, water abstractions, and destruction of mangroves are on the increase, necessitating designing of an environmental management plan. The DC emphasized that developing practical strategies that utilization and conservation of natural resources is one of the ways forward. He commended the Rufiji Environment Management Project activities in the four pilot villages of Jaja, MbunjuMvuleni, MtanzaMsona and Twasalie, and recommended that in the long run such participatory natural resources management approaches be adapted for the rest of the project area.

Involvement of all the relevant stakeholders, basing the selection and development of biodiversity conservation strategies on sound technical information being collected through the various ongoing studies on both natural resource and socio-economic parameters, and close collaboration with other projects and institutions are all-important ingredients for the elaboration of the Environment Management Plan.

The DC wished the workshop participants a productive meeting, advising them that if the envisaged planning is conducted appropriately it will not only ensure that the present generations continue benefiting from the services and goods from their natural resources, but also the future generations.

### **Welcome by the Rufiji District Council**

#### **Mr. Chande-District Land, Natural Resources and Environment Officer**

Mr. Chande welcomed the workshop participants on behalf of the Rufiji District Council. Mr Chande reminded the workshop participants of the project's expected outputs chief among them the District Environmental Management Plan, others being Village Environmental Management Plans, establishment of wise use activities, conservation of key forests, and enhanced capacity in Rufiji District to plan for natural resources use on an ecosystem basis.

### **The Proposed Environmental Management Planning Process**

He further stated the envisaged environmental planning process by the District which should be as participatory as possible, to ensure that all the stakeholders understand and contribute to its design, implementation and periodic updating.

### **Present situation**

In the past two years the project has been concentrating on generating and consolidating information covering various aspects such as ecological, social, and economic aspects in the context of existing legislation. In the coming months this information will be reviewed and analysed to underscore the positive and negative factors of resource uses and their impacts. Most of the technical information

generated in the last two years has been through various consultancies commissioned by the project. Please refer to the attached sheet on the various consultancies effected to-date and the remaining ones. In addition to the consultancies, the project has also gathered substantial information through the District staff. These range from the ongoing fisheries survey, surveying of the logging patterns, inventory of livestock, the village environment management planning process that has furnished the project with very crucial information on the status of natural resources and socio-economic parameters in the respective pilot villages. Lastly, other projects within and outside the project area have shared their information with Rufiji Environment Management Project, some of which will be relevant in design of the EMP. Presently, the Rufiji Environment Management Project is preparing a bibliographical synthesis of all previous studies (ecological, hydrological, socio-economic) including upstream and downstream developments.

The EMT has embarked on the process of designing the Environmental Management Plan for the Rufiji Floodplain and the Delta. Central to the whole process is ensuring responsible participation of, and feedback from the stakeholders. Due to the need for wider consultation with all the stakeholders at all levels (village, Ward, Divisional, District, Regional and National), we feel that the process be finished within the next 6 months).

The sections below broadly describe the envisaged environment management plan designing process

1. **Review and analysis of available information:** The emphasis will be to analyse all the available information, identify ongoing activities by different stakeholders, and undertake an overview of existing and ongoing process with the project area, Rufiji District and the Rufiji River Basin area.
2. **Involvement the stakeholders** (local) within the Rufiji District in the management planning process. The stakeholders will largely be drawn from the villages, Ward, Rufiji District Council, various natural resources user-groups (ranging from fishermen, loggers, saw millers, oil exploration companies, etc.), Rufiji District staff, Non-Governmental Organizations, conservation and development projects to mention a few. Consultation at this stage will involve a consultative workshop to discuss the myriad of natural resources management issues and their management options. After the workshop, there will be efforts geared towards following-up on the management issues raised either at village, ward levels of whatever is appropriate and with particular natural resource users, other projects, the District Council etc. Involvement of the local communities at lower levels (villages and wards) has been ongoing in majority of the villages within the project area, but with more emphasis in the four pilot villages.
3. **Involvement of District, Regional and Central Governments:** The project has been collaborating with several institutions and departments at the national and regional level. This range from the Forestry and bee-keeping division, NEMC, National Land Use –Planning Commission, Institute of Resources Assessment, University of Dar es Salaam; national NGOs such Wildlife Conservation Society of Tanzania (WCST), WWF; and other projects in the Rufiji River Basin. A second consultative planning workshop will be organized tentatively in November 2000. The purpose of this particular workshop will be to discuss and improve on the management issues and management options that will be raised during the first District Stakeholders workshop. It is envisaged that this workshop will also identify broad strategies that should be employed to promote integrated natural resources management and reduce potential for land use conflict.
4. **Technical Workshops:** to fill in identified gaps: Activities 1, 2, & 3 will certainly identify gaps related to various facets of the project. Based on this, technical workshops<sup>2</sup> will be organized. For instance establishment of environmental impact assessment procedures which could be spearheaded by NEMC, designing a land use and development zoning scheme which could be

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<sup>2</sup> The examples given here are purely illustrative and the actual workshops organized will depend on the identified gaps based on the available information and stakeholders' needs.

spearheaded by the National Land Use Planning Commission, Upstream-downstream linkages with the aim of identifying management options for the wider catchment management etc.

5. **Development of a draft Environment Management Plan:** Steps 1-4 will generate enough information to enable the District Environment Management Team (EMT) to develop a draft environment management plan for the Rufiji Floodplain and the Delta. Any new information that will be generated between now and then will be incorporated into the plan. The plan will then be circulated to the identified stakeholders for their comments and advice on improvement. The EMT plans to have the draft EMP ready by December
6. **Consultative meeting to discuss the EMP:** The comments received from stakeholders will be compiled, analysed, and discussed during this workshop. Based on these comments the draft EMP will be revised accordingly and circulated to relevant stakeholders by December 2000.
7. **Pilot and test** the environment management plan during the next project phase (3years)
8. **Update** the EMP based on lessons learnt

The workshop participants adopted this as a logical sequence for the development of the District Environment Management Plan.

## 2.1 Other Natural Resources Management Plans Development Processes

The EMT invited several other projects from both within and without the Rufiji District to share their experiences on how they developed, and have been implementing their natural resources management plans. It was felt necessary that the workshop participants understand the meaning and implications of having an environmental management plan in place. Towards this end, the EMT invited the District Natural Resources Officer from the Kilosa district who has in the past spearheaded a planning process that is being envisaged in the Rufiji District. The presentations from three projects within the Rufiji district and one from Kilosa district provided insights to the workshop participants on how this has been carried out in different areas and for different natural resources. This is especially important on the projects with management plans found within the Rufiji district, as all these existing management plans have to be harmonised into one overall Environment Management Plan for the district.

### **Kilosa District Development Programme Three year District Plan (1998/2000)**

#### **Mr. Musa Zungiza (District Natural Resources Officer – Kilosa District)**

Mr. Zungiza stated that the process employed or chosen to develop the District three-year plan was the European Union's Project cycle management participatory planning methodology including the Logical Framework Analysis Technique. In total, 257 problems were identified and formulated. These were based on the experiences of the local inhabitants (villagers) experience of Kilosa Council staff, Programme advisers, output of various consultancies and PRA exercises. The problems were then grouped under relevant headings/sectors and reformulated into objectives. Charting of objectives into related areas of intervention was done. These were then given a priority ranking in terms of their perceived importance through a scoping exercise. Over 60 people ranging from professionals, advisers, representatives of local communities, pastoralist, Members of Parliament, Councillors, NGO's and religious leaders participated in problem identification and prioritisation. Still the plan will incorporate additional results, activities, assumptions and pre-conditions.

With time the following weaknesses of the plan have been identified: ambitious outputs; unachievable indicators e.g. reduce of wild fires by 60% in years; reduce illegal tree cutting by a certain percentage while there are no data and no inventory done (baseline information lacking); inter-sectoral coordination *per se* is not there though some staff from one Department work with another Department during implementation of activities; and lastly inter-agency coordination for better utilization of resources is not well pronounced.



In his concluding remarks Mr. Zungiza further stated the need of involving relevant stakeholders especially the local community members who usually have a larger stake in natural resources and would be greatly affected (negatively) by large-scale developmental undertakings. Lack of accurate information on the status of the natural resources can also hamper the planning process.

### **The National Mangrove Management Plan** **Mr. Gasper Levira**

Mr. Levira informed the workshop participants on how the National Mangrove Management plan, and about the project implementing the plan which is in its second phase that will come to an end in 2004. The National Mangrove Management plan was developed after an aerial photography and comprehensive ground-truthing exercises which led to the categorisation of four management zones. These management zones are: forests receiving total protection, forests which will be put under production, degraded areas that will not be utilised to allow recovery and rehabilitation, and areas which will be set aside for development of different types.

He stated that the national mangroves management planning process was a classical example where good technical information is not integrated with social-economic aspirations of the local communities which have been the weakness of the plan. He gave an example of the delta which is very extensive and the project personnel do not have the resources for regular patrolling. If the local communities and other stakeholders had been involved right from the beginning the project would have better results to show for the last 4-5 years it has been operational. Recognizing these shortcomings, the Mangrove Management Project has recognised the need to involve local communities, and is piloting various collaborative management approaches already initiated in Tanga area. In the Rufiji Delta, MMP is working closely with REMP in the joint pilot villages of Jaja and Twasalie and eight other villages. In conclusion, Mr. Levira stated that over-emphasis of one or some aspect(s) would undermine the others, and that a proper balance of both technical information and socio-economic information is necessary.

### **WWF Involvement on Biodiversity Conservation in Tanzania** **Mr. Cyprian Malima**

Mr. Malima informed the workshop participants that WWF's work is driven by a passion for the natural world, grounded in science, and shaped by an understanding that addressing human needs is critical to successful long-term conservation. To meet this challenge, WWF employ methods that are as varied as the challenge demands-from creating and strengthening parks and protected areas to weaving conservation into the fabric of local economic development, from protecting endangered species to influencing global environmental policies.

Since the WWF office opened, its programme has grown from five to 15 active projects. He further stated that the lowland coastal forests such as the ones found in the Rufiji district harbour unique and diverse flora and fauna which provide a variety of forest products for local communities. Coastal forests are under threat from human activities such as shifting cultivation, fuel wood collection, pole cutting, charcoal production, timber extraction, bush fires, and mining. WWF has been striving at ensuring conservation and local community development through sustainable use of marine resources. Activities focus on working with Mafia communities to improve management practices and decision-making links, strengthening participation of the Mafia community, consolidating infrastructure and staff, and providing a day-to-day management framework for the Park.

In collaboration with GTZ/SCP, two villages (Ngarambe and Tapika) in Rufiji District have been included in the Community Based Conservation programme of the WWF Conservation and Management of Selous Game Reserve Project. These villages through their elected Natural Resources Committee and selected Village Game Scouts now manage natural resources occurring in their areas of jurisdiction. Village game scouts conduct patrols and supervise hunting of bush meat in the respective wildlife management areas. Revenue accrued from wildlife use is used to cover for some village development project such as rehabilitation of primary school head teacher's house and classrooms, etc. From WWF experiences in the conservation of biodiversity, Mr. Malima recommended that the

planning process of environmental conservation have to take on board involvement of all stakeholders and development of local communities.

### **The Selous Game Reserve Management Planning Process and Lessons Learnt from Involvement of Pilot Villages**

**Mr. Rudolf Hahn**

Mr. Hahn stated that the development process of Selous Game Reserve management system covers a time-span of 10 years. The framework of the Community Based Conservation CBC/SCP takes several steps and is long process. The practical experience shows that it is an illusion to pick out one single village from an eco-system and try to implement with this village sustainable natural resources management. In reality communities or resource user groups use the resources from one common ecosystem. He gave the example of meat poachers who don't poach meat in the area of their own village; they will poach wherever wild animals are an easy prey for them. Therefore, if one village would establish a Wildlife Management Area (WMA) alone, it would have permanent problems with poachers from neighbour villages. Also economically it's difficult to deal with only one village of one eco-system. It starts already with a village boundary survey, - all neighbouring villages will have to sign the memo of understanding concerning the borders of one particular village. It continues with the utilization; for example the WMA of one village might be too small to be a viable hunting block, or does not have access to water (which means animals are only seasonal in this area). In order to get the maximum profit from the area joint management with several villages will be necessary. And you will have to prove that conservation is more profitable than other land uses.

These remarks are of course regarding wildlife management and are not fully elaborated. With fisheries or forestry it will be different again. After dividing your entire project area, which is quite heterogeneous, in eco-systems with similarities concerning potentials and utilization, you will realize that those villages having a share with Selous Game Reserve border have the similar high potentials and also problems. He suggested applying for all these villages the possibility to establish WMA's in order to conserve the natural resources. In the delta, if not already done, you should try to establish at least one viable full-protected area, where eco-tourism could pay for the cost of protection and the benefit of the local population.

### **The REMP's Village Environmental Management Planning Process**

**Ms. Pili Mwambeso**

Ms. Mwambeso highlighted the process that was used in the selection of the 4 pilot villages of Jaja, Twasalie, MbunjuMvuleni and MtanzaMsona, and the progress these villages have made in elaborating their respective village environmental management plans.

She reported that stage I (establishing baseline information) involved learning by the REMP from the villages on how they use land, natural resources and conducting social economic studies to gain information on number of households, natural resources which they own, use of natural resources in respective villages, boundaries of the respective villages, major economic activities and the number of the people who are able to work. Stage II involved problems identification and election of an environmental management team to spearhead the planning process. Stage III focused on developing objectives for the Village Environment Management Plan (VEMP) for countering the identified problems, with Stage IV identifying the different strategies to be employed. The planning team then developed the VEMP, which has to be approved at Village, Ward, and District level. The last stage is VEMP implementation and updating.

### 3 Stakeholders Analysis

Facilitated by the Workshop Moderator in the plenary.

From the presentation on the natural resources management planning process one of the key issue that came out strongly was the stakeholders – their identification and responsible involvement in the elaboration and implementation of any management plan whether for a single ecosystem, a specific area, and whether by government or non-governmental organisations. Stakeholder groups may include; Local user community – forest adjacent communities, Local communities having an indirect interest in the management of the resource – relying on some functions of the natural resources, for instance, the water provision, remote user communities who come from a distance to use the resources, for instance tourists who frequently visit the Rufiji, government agencies (local, central, parastatals, national institutions mandated with natural resources management in the country), and environmental and conservation organisations; local, national, regional, and international.

The following stakeholder groups were identified in the plenary, and recommended to be involved in the development of the development of an environmental management plan for the Rufiji district.

#### Local natural resources user groups

Natural resources user group	Natural resources type	Location
Fisher-folk	Fish – both shell and fin, hippopotamus, prawns, etc	Oceans, rivers, ponds and lakes
Ukindu ( <i>Phoenix reclinata</i> ) dealers	Leaves of <i>Phoenix reclinata</i>	Mainly in the Delta
Hunters (Hunting Association)	Wild Animals, Birds,	Delta, Floodplain, Uplands,
Timber harvesters/loggers	Trees, poles	Delta, Floodplain, Upland forests such as Kichi Hills, Ngulakula etc.
Mangrove cutters/harvesters	Mangrove poles	Delta
Carpenters	Timber	In town centres
Mining corporations	Oil and gas	Delta, and uplands at Kisangire, Songo Songo Island
Prawns dealers/buyers	Prawns	Delta
Tour operators	Tourism - wildlife	Camps/lodges located within the Selous Game Reserve
Honey harvesters	Trees for making hives,	Delta, Floodplain, Uplands
Charcoal makers/dealers	Trees – making charcoal	Widespread in the whole district
Mining workers	Stones, sand,	River Rufiji, Uplands
Farmers and cattle herders	Land, forests, water, fodder,	Delta, Floodplain, Uplands
Witch Doctors	Trees, grasses, water, honey, wild animals, birds	Delta, Floodplain, Uplands
Builders	Land soil, tree, water, stones	Delta, Floodplain, Uplands

#### Government Departments and institutions mandated with natural resources management responsibilities and at District, Regional and National levels

- Natural resources management departments: Agriculture and livestock, Lands, Water, Fisheries, Forestry, Game at both District and Regional levels,

- Rufiji District Council's Environment and Construction Committee (consisting of elected councillors)
- Ministry of natural resources and tourism at national level
- Ministry of Agriculture,
- Ministry of Energy (Minerals section)
- National Environmental Management Council (NEMC)
- National Land Use Planning Commission (NLUPC)
- Rufiji Basin Development Authority (RUBADA)
- River Basin Water Office (RBWO)
- Rufiji Basin Management and Smallholder Irrigation Improvement Project (RBMSIIP)
- Ministry of Finance - Planning Commission
- Tanzania Petroleum Development Corporation
- District Civil Engineering Department (Roads and bridge construction) and road improvement projects both at village and district levels.
- Ministry of Local Government and Regional Administration

#### **Non – Governmental Organisations**

- Rufidelta
- Mloka Mkongo Development Agency
- Wildlife Conservation Society of Tanzania (WCST)

#### **Other Natural Resources Management Projects within Rufiji district and environs**

- Rufiji Bee-keeping project (RUBEP)
- Mangrove Management Project (MMP)
- WWF's Coastal Forests Conservation and Wildlife Management Projects
- GTZ Selous Conservation Programme – Community Based Conservation project in Tapika and Ngarambe
- Mafia Island Marine National Park
- Tanzania Coastal Management Project (TCMP)

#### **Business-oriented firms (from outside Rufiji district)**

- African Fishing Company (AFC) – Prawn Farming in the Delta
- SONGAS (Gas mining at Songo Songo Island)
- Hotel and Tour operators
- Hunting Association
- Trawler operators and fisheries resources dealers (e.g. TANPESCA)

It was recommended that the above stakeholder groups should be involved in the management planning process. Involvement of such groups should be seen as an added advantage for they will be able to provide their expertise such as on legal and policy issues which might be lacking in the district.

## **4 Group Discussions**

The participants were divided into four groups to discuss the various issues affect sustainable management of the specific natural resources. The groups were based on the main natural resources/land uses with Rufiji district. These are forestry, fisheries, agriculture, and wildlife (including hunting and tourism). The participants were requested to join groups they felt they could contribute most based on their expertise/usage. Each group was requested to list activities within the respective natural resource sector, and specify which area it occurred, and discuss and list the management issues that need to be addressed in the environmental management to be developed in future. These are some of the management issues that the management plan development process will try to address. The results of those group activities are highlighted below:

Each group was provided with a land use/cover for the district to graphically demonstrate the areas affected by their activities/interventions. Each group was then required to list all the management issues in usage such as rights, licensing, access, shortages, revenues, destructive activities etc. The groups presented their discussions in the plenary in form of map and list of issues.

**Group One: Agriculture**

ACTIVITY	AREA	MANAGEMENT ISSUES
Farming of cashew nuts trees, simsim, fruits, pumpkins, sweet potatoes, millet, rice, cassava, and banana.	Practised mainly in the floodplain (north and south of Rufiji river between Mloka to Ikwiriri). Within the Delta it is practised in Chumbi and Mbwara.	<ul style="list-style-type: none"> <li>• Destruction of the crops by wildlife such as elephants, hippos, wild pigs, monkeys,</li> <li>• Droughts</li> <li>• Poor prices for the crop yields</li> <li>• Poor agricultural implements</li> <li>• Poor market for their produce such as fruits, and</li> <li>• Floods,</li> <li>• Poor extension services,</li> <li>• Lack of modern farming implements</li> </ul>
Coconuts, rice	Coastal Strip, Rufiji floodplain (for rice)	<ul style="list-style-type: none"> <li>• Poor transport system (water and land) and hence limited access to markets,</li> <li>• Poor commodity prices</li> <li>• Conflicts between the farmers and the mangrove resources managers over growing rice in the delta</li> <li>• Problems of village boundaries,</li> <li>• Destruction of wetlands through clearance for rice cultivation,</li> <li>• Environmental pollution as a result of using chemicals to kill the rice-eating crabs – use of DDT has been witnessed in the Delta,</li> <li>• Poor extension services,</li> <li>• Lack of high yielding rice varieties encouraging opening up of virgin areas for improved production</li> </ul>
Livestock rearing	Kilimani, Mkongo, Ikwiriri, Mohoro, Utete, Mbwera and South of Delta	<ul style="list-style-type: none"> <li>• Poor livestock husbandry,</li> <li>• Poor income from livestock,</li> </ul>
Water for domestic use, irrigation, transport	Mbunju (Segeni), Mkongo Rufiji flood plain and the delta	<ul style="list-style-type: none"> <li>• Attacks by crocodiles (human wildlife conflicts)</li> <li>• Salt water intrusion into clean water wells</li> <li>• Unreliable transport facilities e.g. canoes,</li> <li>• Regular floods,</li> <li>• Lack of safe drinking water</li> </ul>
Oil exploration	Rufiji River basin from Kisangire to Mtunda	<ul style="list-style-type: none"> <li>• Clearing vegetation (natural and agricultural) for seismic lines,</li> <li>• The seismic lines and the improved roads being used by poachers and loggers to transport their cargos out of the district,</li> </ul>
Gas pipeline	Area for gas pipeline from Somanga, Mohoro, to Ndundu.	<ul style="list-style-type: none"> <li>• Clearing vegetation,</li> <li>• Likely pipe bursts that could destroy ecosystems from gas leakages,</li> </ul>
Salt extraction	Rufiji Delta	<ul style="list-style-type: none"> <li>• Cutting down mangrove to evaporate the brine,</li> <li>• Poor economic returns</li> </ul>

**Group Two: Wildlife**

ACTIVITY	AREA	MANAGEMENT ISSUES
Poaching of wildlife in the Selous Game Reserve and other open game areas	All villages around Selous Game Reserve and open areas at Mohoro Ngulakula, and Mkongo	<ul style="list-style-type: none"> <li>• Poaching of wildlife,</li> <li>• Widespread forest fires,</li> </ul>
Human-wildlife conflicts	Widespread in the project area	<ul style="list-style-type: none"> <li>• Insufficient game officers from the Rufiji District Council to monitor and extinguish problematic animals</li> <li>• Insufficient equipment both for the district staff and the local village inhabitants to contain the situation,</li> <li>• The existing district are unmotivated to discharge their duties,</li> <li>• Extension of agricultural activities into wildlife open areas</li> <li>• Extension of wildlife reserve into farming areas</li> <li>• Traditional community systems for managing problem wildlife are broken down</li> </ul>
Hunting	Open areas mainly in Tapika, Ngarambe, and Mloka villages	<ul style="list-style-type: none"> <li>• Quotas are not based on sound wildlife population figures as there wildlife censuses conducted beforehand,</li> <li>• Lack of summarised information regarding offtake each season</li> <li>• Majority of the hunters are from outside Rufiji district, and therefore majority of the local people do not benefit from the hunting activities,</li> <li>• Villagers who hunt get very low returns compared to what they might get if they could trade their quarry legally</li> <li>• Illegal hunting for bush meat</li> <li>• The District Game Office is under-staffed making monitoring of hunting operations difficult</li> <li>• Hunting by using illegal methods such as traps and axing animals to death,</li> <li>• Low awareness and lack of information on natural resources management policies and legislation,</li> <li>• The game officers sometimes do not adhere to the laid down regulations on hunting</li> </ul>
Tourism	Mainly within Selous Game Reserve, but also limited tourism activities in villages surrounding it such as Mloka, Tapika, and also in the Delta.	<ul style="list-style-type: none"> <li>• Tourism potential in Rufiji district has not been fully exploited,</li> <li>• Limited knowledge and awareness on community-based tourism, at any level in the district.</li> <li>• Investors not willing to develop tourism activities in Rufiji district</li> <li>• Disputes likely regarding Concessions at Lake Utunge north area.</li> <li>• Increased pressure on areas adjacent to SGR are expected as the reserve restricts further tourism development in the park.</li> <li>• Oil exploration in north delta and north west corner of Rufiji District could threaten tourism/ reduce value for tourism</li> </ul>

**Group Three: Forestry Resources**

ACTIVITY	AREA	MANAGEMENT ISSUES
Logging	Widespread in the whole Rufiji district	<ul style="list-style-type: none"> <li>• Destruction of wildlife habitat such as the white colobus monkeys found in the forests in the MtanzaMsona area (Zilizili forest),</li> <li>• Depletion of important timber tree species such as Pterocarpus angolensis, Milicia excelsa, Dalbergia melanoxylon etc.</li> <li>• Lack of clear boundaries of the existing forest reserves, especially the present extent of the Selous Game Reserve and neighbouring villages such as MtanzaMsona</li> <li>• The government control system is only operating at the post-harvest stage, checking licences to transport timber, when the tree is already dead.</li> <li>• The majority of the village community may not know the extent or contents of the communities' lands and forests or have a sense of its value.</li> <li>• Communities feel powerless to control logging</li> <li>• Communities collaborate with pole cutters and loggers, sometimes because they are relatives.</li> <li>• Some community leaders accept emoluments from illegal loggers.</li> <li>• Communities are not aware that new forest policy allows them to enter joint management agreements with government and to have their own forest reserves.</li> <li>• Opening up roads for wild animal poachers</li> <li>• Licence giving occurs at district or national level distant from the resource and without information regarding the status of the resource.</li> <li>• No community- based timber-marketing systems, which could raise local profitability from the locally harvested resource.</li> <li>• Most of the timber is "exported" from Rufiji in a raw state (logs, planks) so little value is added or profit gained within the district.</li> <li>• The quality of the timber products (e.g. furniture) produced is low and not achieving high prices or exclusive markets.</li> </ul>
Wildlife and bird hunting	Mtanza Msona, Ndundunyikanza, Ngorongo	<ul style="list-style-type: none"> <li>• Hunting activities have been identified as one of the root causes of the forest fires menace</li> <li>• Hunting traps cause human injury</li> <li>• Communities generally do not think that any bird species are under threat from their own hunting activities or from bird trapping for sale.</li> </ul>
Honey harvesting	Ruhoi Forest reserve	<ul style="list-style-type: none"> <li>• Honey harvesting being carried out by non-residents of Rufiji district</li> <li>• Legal status of bee product trading is confused.</li> </ul>
Charcoal Burning	Ruhoi Forest reserve	<ul style="list-style-type: none"> <li>• Forest fires,</li> <li>• Destruction of vegetation cover,</li> <li>• Inefficient charcoal making processes</li> </ul>
Expansion of agriculture activities	Utete	<ul style="list-style-type: none"> <li>• Shifting cultivation leading to opening up of new areas,</li> <li>• Spread of forest fires when fire is used to clear</li> </ul>



		<p>vegetation to pave way for agricultural farms,</p> <ul style="list-style-type: none"> <li>• Increasing riverbank erosion</li> </ul>
<p>Mangrove harvesting for construction and export poles, furniture, firewood for salt-processing</p>	<p>Rufiji delta</p>	<ul style="list-style-type: none"> <li>• Destabilisation of the river banks and shorelines,</li> <li>• Negative impacts on the fisheries nursery grounds,</li> <li>• Re-colonisation of mangrove species in degraded areas difficult due to changes in biophysical factors</li> </ul>
<p>Road construction by Village Transport and Transportation Project, District Roads Development Project, Selous Game Reserve, National Roads Authority (bridge over Rufiji River)</p>	<p>Nyamwage, Mbwara, Tawi, Mohoro, Delta, Kingupira to Utete via Kichi, Mtanza – Kisarawe</p>	<ul style="list-style-type: none"> <li>• Clearing woodland and forest areas to pave way for the roads, for instance the Utete-Kingupira road that cuts through the Kichi Hills forests, through mangroves in the south delta.</li> <li>• Rock quarrying danger to water source and forest cover at Nambunju/Mbwara</li> <li>• Opening up the Rufiji district, making transport of natural resources from the woodlands/forests easier, adding to the already existing pressures on these resources.</li> </ul>

**Group Four: Fisheries Resources**

ACTIVITY	AREA	PROBLEMS
Trawling	The Indian ocean shores especially at Jaja, Pombwe, and Mbwera etc.	<ul style="list-style-type: none"> <li>• Impacting negatively on the artisanal fisheries,</li> <li>• Destruction of fisheries,</li> <li>• Destruction of fisheries nursery grounds,</li> <li>• High by-catches levels</li> <li>• Trawlers fish inside the limits of closeness to the coastline</li> <li>• Trawlers operate outside legal hours.</li> <li>• Trawling licences are given from the national level without consultation to lower levels regarding sites and stocks.</li> <li>• No returns to communities who should be in control of the coastal zone up to 12km offshore.</li> <li>• Communities feel powerless and get little response to their complaints to higher levels.</li> <li>• District centre is distant from the coast; therefore officers seldom access the coast.</li> </ul>
Dynamite and fish poisoning	The Indian ocean shores especially at Jaja, Pombwe, and Mbwera etc. especially in the border with Lindi region.	<ul style="list-style-type: none"> <li>• Destruction of fisheries,</li> <li>• Environmental side-effects,</li> <li>• Destruction of corals and non-fished species of fish, crustaceans and other species.</li> <li>• Fisheries breeding grounds destruction</li> <li>• Risk of human injury by bombs</li> <li>• Risk of human poisoning by chemicals.</li> </ul>
Use of cast nets and seine nets	The Indian ocean shores especially at Jaja, Pombwe, and Mbwera etc.	<ul style="list-style-type: none"> <li>• Fisheries nurseries destruction</li> </ul>
Fish poisoning (Mtuka)	Rivers (floodplain and the delta), Lakes Ruwe, Zumbi, and Lungonyi	<ul style="list-style-type: none"> <li>• Destruction of fisheries nurseries grounds</li> </ul>
Use of small meshed nets, traps, and seine nets, and tanda (cloth or mosquito netting)	Rivers (floodplain and the delta), Lakes Ruwe, Zumbi, and Lungonyi	<ul style="list-style-type: none"> <li>• Removal and killing of small juvenile fish species</li> </ul>
Use of lead weights for fishing	Lakes and rivers	<ul style="list-style-type: none"> <li>• Risk of poisoning fish, other fauna and humans.</li> </ul>
Blocking river fishing method	Rivers (floodplain and the delta)	<ul style="list-style-type: none"> <li>• Removal and killing of small juvenile fish species</li> </ul>
Luring of fish by noise and disturbance of the water	Rivers (floodplain and the delta)	<ul style="list-style-type: none"> <li>• Destruction of fisheries nurseries</li> <li>• Environmental destruction.</li> </ul>

### **Additional Issues Identified in the Plenary**

1. Most of the problems affecting the natural resources management in the Rufiji district are as a result of poor communication between the various stakeholders ranging from decision-makers to resource-users, to institutions mandated with natural resources management at all levels,
2. Poor environmental awareness: despite majority of the inhabitants and the Rufiji district council relying heavily on the natural resources appreciation of the many benefits and services from these resources is quite low. This partly is to blame for the present unsustainable utilisation of the natural resources in the District,
3. Poor implementation/effecting of the existing legislation and policies and formulation of new by-laws,
4. Lack of information on the current status of natural resources in Rufiji district making elaboration of management systems difficult,
5. The ever-changing river characteristics and flooding dynamics
6. Lack of by-laws at village level – the implication is that the licenses are bought from the district headquarters and the licensees harvest resources from some of the villages without paying any concessions to the village governments,
7. Destruction of coconuts by diseases,
8. The burgeoning bird collection without prior information on the present status of birds in Rufiji district,
9. Increasing harvesting of *Phoenix reclinata* (Ukindu) for weaving mats and for trading in Zanzibar.

After each group made their presentations there were discussions and clarifications sought before such points could be listed as valid management issue that requires intervention.

## **5 Recommendations for Management Options for the Issues Raised Through Group Discussions**

After all the groups made their presentations, new groups with a mixture of all the other group members were formed. Whereas the former groups were mainly sectoral groups (fisheries, forestry, agriculture, and the wildlife), the new groups were cross-sectoral (multi-disciplinary) with each group having experts/users from all the four sectors. The new 3 groups were provided with copies of all the management issues raised by the various sectoral groups and requested to come up with recommendations on what and how they would like the natural resources in Rufiji to be managed. That is solutions for the problems identified. Each group made their presentation, and recommendations discussed in the plenary. Instead of having each group presenting their recommendations, subsequent groups (after the first one) were requested to present only any additional issues that had not been covered by the previous group(s). Therefore, the table below shows all the management options that were recommended by the various groups as a continuous list, but not on a group basis.

**Table 1: Recommendations for Management Options for the Issues Raised Through Group Discussions**

ACTIVITY	AREA	MANAGEMENT ISSUES	MANAGEMENT OPTIONS
<p>Farming of cashew nuts trees, simsim, fruits, pumpkins, sweet potatoes, millet, rice, cassava, and banana.</p>	<p>Practised mainly in the floodplain (north and south of Rufiji river between Mloka to Ikwiriri). Within the Delta it is practised in Chumbi and Mbwara.</p>	<ul style="list-style-type: none"> <li>• Destruction of the crops by wildlife such as elephants, hippos, wild pigs, monkeys,</li> <li>• Droughts</li> <li>• Poor prices for the crop yields</li> <li>• Poor agriculture implements</li> <li>• Poor market for their produce such as fruits, and</li> <li>• Floods,</li> <li>• Poor extension services,</li> <li>• Lack of modern farming implements</li> </ul>	<ul style="list-style-type: none"> <li>• The Rufiji District Council should make provisions for funds to fight the menace of the destructive animals in terms of equipment (bullets) and transport for the District staff,</li> <li>• The local communities in areas that are severely affected by the destructive animals should be enabled to deal with the problems themselves by providing guns and bullets to the village governments,</li> <li>• The villages should plan to farm together as opposed to the present scattered farm-lots so as to be able to fence-off their farms and ward off the wild animals,</li> <li>• Village governments should create funds for this purpose out of the tax being collected in their respective villages from natural resources harvesting,</li> <li>• The most probable solution for the recurring droughts is assisting the farmers with low-technology and less-intensive reasonable irrigation techniques, in addition to adapting lessons learnt from the other parts of the country,</li> <li>• Practice mixed farming and practice organic farming to improve on the agricultural productivity,</li> <li>• Provision of improved varieties that mature faster and produce larger quantities of produce,</li> <li>• Pilot and test additional sustainable activities that offer alternative incomes,</li> <li>• Floods – develop flood warning systems that would prepare the local communities of their occurrence,</li> <li>• Droughts – encourage farming of drought-resistant crops such as cassava,</li> <li>• Encourage flood-recession farming after floods,</li> <li>• Assist the local communities in establishing processing and marketing techniques,</li> <li>• Over-dependence on rice cultivation should not be encouraged,</li> <li>• Improve extension services for advising farmers on modern agricultural production systems, and use innovative extension approaches such as farmer to farmer etc,</li> <li>• Improve awareness status in the district by providing educational materials to villages,</li> <li>• Marketing of products – improve infrastructure in the villages</li> </ul>

ACTIVITY	AREA	MANAGEMENT ISSUES	MANAGEMENT OPTIONS
Coconuts, rice	Coastal Strip, Rufiji floodplain (for rice)	<ul style="list-style-type: none"> <li>• Poor transport system (water and land) and hence limited access to markets,</li> <li>• Poor commodity prices</li> <li>• Conflicts between the farmers and the mangrove resources managers over growing rice in the delta</li> <li>• Problems of village boundaries,</li> <li>• Destruction of wetlands through clearance for rice cultivation,</li> <li>• Environmental pollution as a result of using chemicals to kill the rice-eating crabs – use of DDT has been witnessed in the Delta,</li> <li>• Poor extension services,</li> <li>• Lack of high yielding rice varieties encouraging opening up of virgin areas for improved production</li> </ul>	<ul style="list-style-type: none"> <li>• Create awareness to villages on the dangers of polluting the environment, for instance the build-up of pollutants in the food-chain which they depend on for food, and likely contamination of the drinking water,</li> <li>• Demarcate village boundaries to avoid the boundary conflicts, and allow villages to develop their land-use plans,</li> <li>• Encourage the local people to maintain the roads within their villages jurisdiction,</li> <li>• Improve transport system especially water transport in the Delta to facilitate marketing of produce,</li> <li>• Encourage development of collaborative management plans in areas where there are conflicts between conservation and livelihoods support systems. For instance in the mangrove areas which are national reserves but the policy allows for elaboration of community-based co-management arrangements between the Forestry Department and the villagers,</li> <li>• Provide high rice-yielding varieties,</li> <li>• Create further awareness on the importance of mangrove ecosystem, and the inter-dependence of various ecosystems,</li> <li>• Establish benefit-sharing mechanisms for the revenue generated from the sale of mangrove produce,</li> <li>• Involve the local communities in collection of revenues from mangrove areas and supervise the harvesting exercise,</li> </ul>
Livestock rearing	Kilimani, Mkongo, Ikwiriri, Mohoro, Utete, Mbwera and South of Delta	<ul style="list-style-type: none"> <li>• Poor livestock husbandry</li> <li>• Poor income from livestock</li> </ul>	<ul style="list-style-type: none"> <li>• Educate villages on good livestock husbandry by establishing a demonstration farm within the Rufiji district,</li> <li>• The floodplain is very rich in livestock and livestock rearing should be encourage as a viable option both as a source of food and as an income generating income,</li> </ul>

ACTIVITY	AREA	MANAGEMENT ISSUES	MANAGEMENT OPTIONS
Water for domestic use, irrigation, transport	Mbunju (Segeni), Mkongo Rufiji flood plain and the delta	<ul style="list-style-type: none"> <li>• Attacks by crocodiles (human wildlife conflicts)</li> <li>• Salt water intrusion into clean water wells</li> <li>• Unreliable transport facilities e.g. canoes,</li> <li>• Regular floods,</li> <li>• Lack of safe drinking water</li> </ul>	<ul style="list-style-type: none"> <li>• Rufiji district probably has the largest population of crocodiles and should be given the largest quota under the 1,600 crocodiles to be culled in Tanzania as allowed by the CITES, and the benefits from harvesting such crocodiles should find their way back to the affected local communities,</li> <li>• Most of the crocodiles occur when the villagers are fetching water and an enabling environment should be provided in working with communities to provide safe methods of obtaining drinking water. This could assist in reviving the water provision systems and storage facilities in some of the villages,</li> <li>• Educate the local communities on health aspects of drinking water such as boiling water,</li> <li>• Salty water intrusion- where this takes place local communities should be encouraged to embrace rain-harvesting technologies, and identification of other sources of clean water,</li> <li>• Establishment of cooperatives to assist the local community pool their resources together and address some of the problems they facing. This ranges from transport whereby they could obtain credit to buy lorries or ice-processing factories to aid in fish industry.</li> </ul>
Oil exploration	Rufiji River basin from Kisangire to Mtunda (in the Delta)	<ul style="list-style-type: none"> <li>• Clearing vegetation (natural and agricultural) for seismic lines</li> </ul>	<ul style="list-style-type: none"> <li>• TPDC to inform the local communities on the progress being made through leaflets, and the implications of these activities</li> </ul>
Gas pipeline (gas mining in Songo Songo island)	Area for gas pipeline from Somanga, Mohoro, to Ndundu.	<ul style="list-style-type: none"> <li>• Clearing vegetation,</li> <li>• Likely pipe bursts that could destroy ecosystems from gas leakages,</li> </ul>	<ul style="list-style-type: none"> <li>• Ditto</li> </ul>
Salt extraction	Rufiji Delta	<ul style="list-style-type: none"> <li>• Cutting down mangrove to evaporate the brine.</li> </ul>	<ul style="list-style-type: none"> <li>• Salt-harvester should be encouraged to use environmental-friendly means of making salt such as using the solar-induced evaporation</li> </ul>

ACTIVITY	AREA	MANAGEMENT ISSUES	MANAGEMENT OPTIONS
Poaching of wildlife in the Selous Game Reserve and other open game areas	All villages around Selous Game Reserve and open areas at Mohoro Ngulakula, and Mkongo	<ul style="list-style-type: none"> <li>• Poaching of wildlife,</li> <li>• Widespread forest fires.</li> </ul>	<ul style="list-style-type: none"> <li>• Create awareness on the Wildlife legislation and policy,</li> <li>• Encourage local communities especially those that bear the brunt of living close to the wildlife to initiate wildlife management areas (WMA) to benefit from wildlife utilisation initiatives being encourage under the wildlife policy,</li> <li>• Use the income from the wildlife utilisation to support development aspirations of the local communities,</li> <li>• The present 25% of revenue being accorded to the local communities is too low and should be increased,</li> <li>• Train and provide equipment to the local communities on game patrolling to be able to apprehend the poachers in their respective village areas</li> </ul>
Human-wildlife conflicts	Widespread in the project area	<ul style="list-style-type: none"> <li>• Insufficient game officer from the Rufiji District Council to monitor and extinguish problematic animals</li> <li>• Insufficient equipment both for the district staff and the local village inhabitants to contain the situation,</li> <li>• The existing district staff are unmotivated to discharge their duties,</li> <li>• Extension of agricultural activities into wildlife open areas</li> </ul>	<ul style="list-style-type: none"> <li>• Develop appropriate land use plans for the whole district to avoid the conflicts being experienced between various land uses,</li> <li>• Where the district staff are few for effective patrolling and management of wildlife areas encourage involvement of the local people,</li> <li>• All the villages surrounding the Selous Game Reserve should be involved in community-based wildlife conservation in line with the Tapika and Ngarambe villages experiences,</li> <li>• Enhance community education.</li> </ul>



ACTIVITY	AREA	MANAGEMENT ISSUES	MANAGEMENT OPTIONS
Hunting	Open areas mainly in Tapika, Ngarambe, and Mloka villages	<ul style="list-style-type: none"> <li>• Quotas are not based on sound wildlife population figures as there wildlife censuses conducted beforehand,</li> <li>• Majority of the hunters are from outside Rufiji district, and therefore majority of the local people do not benefit from the hunting activities,</li> <li>• Illegal hunting for bush meat</li> <li>• The District Game Office is under-staffed making monitoring of hunting operations difficult</li> <li>• Hunting by using traps,</li> <li>• Low awareness and natural resources management policies and legislation,</li> <li>• The game officers sometimes do not adhere to the laid down regulations on hunting</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct annual wildlife surveys to be able to establish the actual population figures for the wildlife before issuing licenses,</li> <li>• The District Game Department must keep proper records on the animals hunted down each season, that should be easily accessed by all the interested stakeholders,</li> <li>• Discipline any district staff found abetting with the poachers,</li> <li>• Encourage the local people/stakeholders to take advantage of the hunting seasons to avoid the resentments against the outside hunters,</li> <li>• Establish the location of all the escape routes being used by the illegal hunters and post officers in collaboration with villages to monitor them regularly,</li> </ul>
Tourism	Mainly within Selous Game Reserve, but also limited tourism activities in villages surrounding it such as Mloka, Tapika, and also in the Delta.	<ul style="list-style-type: none"> <li>• Tourism potential in Rufiji district has not been fully exploited,</li> <li>• Limited knowledge and awareness on community-based tourism,</li> <li>• Investors not willing to develop tourism activities in Rufiji district</li> </ul>	<ul style="list-style-type: none"> <li>• Market the untapped tourism potential in the district at Regional, and National levels,</li> <li>• Encourage and support local communities to initiate community-based tourism activities,</li> <li>• Conduct study tours to other areas in the country where community-based tourism has been successful for stakeholders to learn from their lessons,</li> <li>• Investigate eco-tourism potential for the Rufiji delta,</li> <li>• Use the existing networks such as the TANAPA, TWPF, to woo investors to invest in Rufiji,</li> <li>• Initiate tourism-related markets such as curios to generate income from the Selous Game Reserve-bound tourists,</li> <li>• Improvement of infrastructure (transport and telecommunication)</li> </ul>

ACTIVITY	AREA	MANAGEMENT ISSUES	MANAGEMENT OPTIONS
#Logging	Widespread in the whole Rufiji district	<ul style="list-style-type: none"> <li>• Destruction of wildlife habitat such as the white colobus monkeys found in the forests in the MtanzaMsona area (Zilizili forest),</li> <li>• Depletion of important timber tree species such as <i>Pterocarpus angolensis</i>, <i>Milicia excelsa</i> etc.</li> <li>• Lack of clear boundaries of the existing forest reserves, especially the present extent of the Selous Game Reserve and neighbouring villages such as MtanzaMsona</li> </ul>	<ul style="list-style-type: none"> <li>• Create awareness on the rare, endemic, and threatened wildlife species of Rufiji district,</li> <li>• Establish district by-laws to control harvesting of over-harvested tree species such as the Mpingo, Mninga, etc.</li> <li>• Establish the existing timber resources in the district and develop appropriate annual coupes based on the annual mean increments,</li> <li>• Survey and demarcate boundaries of all the protected areas, and develop their management plans,</li> <li>• Pilot collaborative management of some of these protected areas between the Rufiji District and the local communities,</li> </ul>
Wildlife and bird hunting	Mtanza Msona, Ndundunyikanza, Ngorongo	<ul style="list-style-type: none"> <li>• Hunting activities have been identified as one of the root causes of the forest fires menace</li> </ul>	<ul style="list-style-type: none"> <li>• Create awareness on the destructive effects of fires</li> </ul>
Honey harvesting	Ruhoi Forest reserve	<ul style="list-style-type: none"> <li>• Honey harvesting being carried out by non-residents of Rufiji district</li> </ul>	<ul style="list-style-type: none"> <li>• Educate local people on appropriate honey-harvesting and processing techniques,</li> <li>• Develop manuals on the above,</li> <li>• Source for markets for the honey produced locally</li> </ul>
Charcoal Burning	Ruhoi Forest reserve	<ul style="list-style-type: none"> <li>• Forest fires,</li> <li>• Destruction of vegetation cover,</li> <li>• Inefficient charcoal making processes</li> </ul>	<ul style="list-style-type: none"> <li>• Regulate charcoal making and transportation activities,</li> <li>• Pilot fuel-saving and efficient and appropriate technologies,</li> <li>• Replant trees in areas decimated of trees as a result of charcoal making activities,</li> </ul>
Expansion of agriculture activities	Utete	<ul style="list-style-type: none"> <li>• Shifting cultivation leading to opening up of new areas,</li> <li>• Spread of forest fires when fire is used to clear vegetation to pave way for agricultural farms,</li> <li>• Increasing riverbank erosion</li> </ul>	<ul style="list-style-type: none"> <li>• Establish by-laws on the width along riverbanks that should not be cultivated as stipulated by the Water Act.</li> <li>• Disallow agriculture in such protected river banks</li> </ul>

ACTIVITY	AREA	MANAGEMENT ISSUES	MANAGEMENT OPTIONS
Mangrove harvesting for construction and export poles, furniture, firewood for salt-processing	Rufiji delta	<ul style="list-style-type: none"> <li>• Destabilisation of the river banks and shorelines,</li> <li>• Negative impacts on the fisheries nursery grounds,</li> <li>• Re-colonisation of mangrove species in degraded areas difficult due to changes in biophysical factors,</li> <li>• Degraded mangrove areas being infested by non-commercial climbers, and the mangrove fern</li> </ul>	<ul style="list-style-type: none"> <li>• Regulate mangrove harvesting especially on the shores and river-banks,</li> <li>• Restore harvested areas with the most appropriate mangrove species,</li> <li>• Continued siltation/deposition of silt in the mangroves should not be curtailed in the upstream and floodplain areas, as this is important both for stabilisation, as growth-medium for many estuarine organisms, and as food for filter feeders,</li> </ul>
Road construction by Village Transport and Transportation Project, District Roads Development Project, Selous Game Reserve	Nyamwage, Mbwara, Tawi, Mohoro, Delta, Kingupira to Utete via Kichi, Mtanza – Kisarawe	<ul style="list-style-type: none"> <li>• Clearing woodland and forest areas to pave way for the roads, for instance the Utete-Kingupira road that cuts through the Kichi Hills forests,</li> <li>• Opening up the Rufiji district, making transport of natural resources from the woodlands/forests easier, adding to the already existing pressures on these resources,</li> </ul>	<ul style="list-style-type: none"> <li>• Regulate opening up new areas and concentrate on improving the existing road network.</li> </ul>
Trawling	The Indian ocean shores especially at Jaja, Pombwe, and Mbwera etc.	<ul style="list-style-type: none"> <li>• Impacting negatively on the artisanal fisheries,</li> <li>• Destruction of fisheries,</li> <li>• Destruction of fisheries nursery grounds</li> </ul>	<ul style="list-style-type: none"> <li>• Restrict the trawlers movement to areas close to the villages in the Delta,</li> <li>• Monitor trawlers' fishing activities and ensure that they do not throw away the by-catch to the sea which drift to the shorelines,</li> <li>• There should be close collaboration between the Rufiji District Council and the Mafia Island authorities, more so the Mafia Island Marine National Park, as these activities taking place in the Mafia channel might have negative impacts on the ecosystems thereof.</li> </ul>

ACTIVITY	AREA	MANAGEMENT ISSUES	MANAGEMENT OPTIONS
Dynamite and fish poisoning	The Indian ocean shores especially at Jaja, Pombwe, and Mbwera etc. especially in the border with Lindi region.	<ul style="list-style-type: none"> <li>• Destruction of fisheries,</li> <li>• Environmental side-effects,</li> <li>• Fisheries breeding grounds destruction</li> </ul>	<ul style="list-style-type: none"> <li>• Encourage the fisher folk to use sustainable fishing methods, and educate them on the destructive effects of the dynamite poisoning and other fishing methods,</li> <li>• Establish fishing guidelines at the village levels, which should be passed as agreements at the village level,</li> <li>• Educate people on the need to conserve threatened migratory species such as sea turtles,</li> <li>• Conduct rapid assessment of the fisheries resources (finfish, shellfish) in all the water bodies to establish future off-takes,</li> <li>• Linkages with the neighbouring districts especially Lindi is recommended as it has been alleged that these activities take place there.</li> </ul>
Use of cast nets and seine nets	The Indian ocean shores especially at Jaja, Pombwe, and Mbwera etc.	<ul style="list-style-type: none"> <li>• Fisheries nurseries destruction</li> </ul>	<ul style="list-style-type: none"> <li>• Ban all destructive fishing methods in areas they are known to be taking place,</li> <li>• Form fishing cooperatives which should develop their own code of conduct in ensuring that all the destructive fishing methods are curtailed,</li> <li>• Conduct study tours to other areas such as Tanga to learn on how this menace has been controlled.</li> </ul>
Fish poisoning (Mtuka)	Rivers (floodplain and the delta), Lakes Ruwe, Zumbi, and Lungonyi	<ul style="list-style-type: none"> <li>• Destruction of fisheries nurseries grounds</li> </ul>	<ul style="list-style-type: none"> <li>• As above</li> </ul>
Use of small meshed nets, traps, and seine nets	Rivers (floodplain and the delta), Lakes Ruwe, Zumbi, and Lungonyi	<ul style="list-style-type: none"> <li>• Removal and killing of small juvenile fish species</li> </ul>	<ul style="list-style-type: none"> <li>• Restrict usage of small-sized nets to the allowed sizes as highlighted in the Fish Act.</li> </ul>
Blocking river fishing method	Rivers (floodplain and the delta)	<ul style="list-style-type: none"> <li>• Removal and killing of small juvenile fish species</li> </ul>	<ul style="list-style-type: none"> <li>• Ban it and incorporate it in the village natural resources management guidelines</li> </ul>
Luring of fish by noise and disturbance of the water	Rivers (floodplain and the delta)	<ul style="list-style-type: none"> <li>• Destruction of fisheries nurseries</li> <li>• Environmental destruction.</li> </ul>	<ul style="list-style-type: none"> <li>• As above.</li> </ul>

ACTIVITY	AREA	MANAGEMENT ISSUES	MANAGEMENT OPTIONS
Poor stakeholder groups' communication	Widespread	<ul style="list-style-type: none"> <li>Most of the problems affecting the natural resources management in the Rufiji district are as a result of poor communication between the various stakeholders ranging from decision-makers to resource-users, to institutions mandated with natural resources management at all levels,</li> </ul>	<ul style="list-style-type: none"> <li>Identify and encourage inter-agency and inter-sectoral co-ordination and collaboration at all levels,</li> <li>Establish networks or working groups OR where possible use existing networks such as the TCMP and epwani</li> </ul>
Low environmental awareness	Widespread	<ul style="list-style-type: none"> <li>Poor environmental awareness: despite majority of the inhabitants and the Rufiji district council relying heavily on the natural resources appreciation of the many benefits and services from these resources is quite low. This partly is to blame for the present unsustainable utilisation of the natural resources in the District,</li> </ul>	<ul style="list-style-type: none"> <li>Design and implement an environmental awareness campaign targeting various natural resources users, decision-makers, and other projects.</li> </ul>
Legislation and policy framework	Widespread	<ul style="list-style-type: none"> <li>Poor implementation/effecting of the existing legislation and policies and formulation of new by-laws,</li> </ul>	<ul style="list-style-type: none"> <li>Organise seminars and workshops on the current natural resources legislation and policies,</li> <li>The Rufiji District Council should be active in formulating by-laws on the existing natural resources,</li> <li>Develop Environmental Impact Assessment (EIA) for the district.</li> </ul>
Dearth of information	Widespread	<ul style="list-style-type: none"> <li>Lack of information on the current status of natural resources in Rufiji district making elaboration of management systems difficult,</li> </ul>	<ul style="list-style-type: none"> <li>Continue undertaking assessment and inventories to establish the current status of natural resources in the district,</li> <li>Use the information from the surveys and assessments to elaborate the environmental management plan,</li> <li>Train local community members to assist in the assessment of natural resources in their respective areas.</li> </ul>

ACTIVITY	AREA	MANAGEMENT ISSUES	MANAGEMENT OPTIONS
Floods	Widespread	<ul style="list-style-type: none"> <li>The ever-changing river characteristics and flooding dynamics</li> </ul>	<ul style="list-style-type: none"> <li>Liase with the upstream projects and institutions on updates about their activities, as this greatly affect the characteristics of the river section in the lower floodplain,</li> <li>Establish the minimum water level requirements to sustain the lower Rufiji floodplain,</li> <li>Establish the current silt concentration and deposition rates to safeguard against future changes due to developments in the upstream,</li> <li>Enhance the capacity of the district in the area of water resources management.</li> </ul>
Enabling policy framework at village level	Widespread	<ul style="list-style-type: none"> <li>Lack of by-laws at village level – the implication is that the licenses are bought from the district headquarters and the licensees harvest resources from some of the villages without paying any concessions to the village governments,</li> </ul>	<ul style="list-style-type: none"> <li>Finally, the district should build on the work initiated by the REMP in the four pilot villages of Jaja, Twasalie, Mtanza Msona, and Mbunju Mvuleni, and develop village environment management plans in other villages,</li> <li>Each VEMP should be accompanied by by-laws that will guide use and management of the natural resources in their respective areas.</li> </ul>
Tree crops diseases	Widespread	<ul style="list-style-type: none"> <li>Destruction of coconuts by diseases.</li> </ul>	<ul style="list-style-type: none"> <li>Source for disease-resistant coconut species,</li> <li>Uproot diseased coconut plants,</li> <li>Undertake trials of other palms such as oil palm.</li> </ul>
Lack of ecological data	Widespread	<ul style="list-style-type: none"> <li>The burgeoning bird collection for trade without prior information on the present status of birds in Rufiji district.</li> </ul>	<ul style="list-style-type: none"> <li>This activity is present being coordinated from the Wildlife Department in Dar es Salaam. It is recommended that issuance of licenses should be in close collaboration with the Rufiji District Council for proper record keeping,</li> <li>Any quota provided for the District should be based on sound technical figures on the current status of the birds being harvested,</li> <li>Initiate community-based monitoring system of the birds being collected as the District Game Department is already understaffed,</li> <li>Use the ecological information that will be collected in future to develop quotas, zoning, and for M&amp;E purposes.</li> </ul>
Over-utilisation of resources	Widespread	<ul style="list-style-type: none"> <li>Increasing harvesting of <i>Phoenix reclinata</i> (Ukindu) for weaving mats and for trading in Zanzibar</li> </ul>	<ul style="list-style-type: none"> <li>Majority of the palms harvested in the District grow naturally. Replanting in areas over-harvested should be initiated alongside with other reforestation activities by the District Forestry Department.</li> </ul>

## **6 Concluding Remarks**

### **Mr. Abdalla Shah**

The REMP's Manager, Mr. Abdalla Shah, who thanked the workshop participants for their contributions and perseverance in working hard to late hours to ensure that all the workshop objectives were met, officially closed the workshop. He informed them that once the workshop report was finalised, each would receive a copy, which they should share with as many people as possible.

He stated that natural resources management planning processes should be sensitive to the needs of stakeholder groups at all levels, and their involvement is crucial if the envisaged management systems have to be sustainable.

Afterwards he declared the workshop officially closed.

## **7 Workshop Evaluation**

**Ms. Rose Hogan**

### **Was the workshop interesting for you?**

Majority of the workshop participants were happy with the workshop and recommended that such many workshops be organised in future.

### **What did you learn?**

- Issues related to environmental conservation
- Means of improving agriculture productivity
- Participatory approaches in natural resources management planning processes
- The need to have boundaries between the conservation areas and villages
- Stakeholder groups' involvement
- Village boundaries demarcation processes
- Advantages of coordinated approaches in natural resources management
- Dissatisfaction of various stakeholders on the current management and status of natural resources in the district
- Declining status of natural resources and the need to conserve them
- The extent and types of natural resources in Rufiji district as highlighted in the Land Use and Cover maps
- Lack of agricultural inputs
- Natural resources management problems identification and how to solve them
- Policies supportive to management of natural resources by the local community members
- Mangrove ecosystems management and conservation
- Fisheries breeding areas requirement
- Effects of cultivating rice in mangrove forest areas
- Poor farming methods and destructive animals
- Problems afflicting natural resources management in our district
- Different natural resources management planning processes
- Understanding the ecological requirements of various resources is important for management planning
- Examples of good natural resources management programmes that the Rufiji inhabitants could learn from
- Necessity of conserving water sources (springs)
- How natural resources in Rufiji district are being used by the people outside the villagers
- Different institutions and NGOs and how they play part in environment conservation
- Gender aspects and their integration in natural resources management
- Natural resources management will ultimately contribute to the improved livelihoods of all of us
- All problems presented at the workshop are true. Because even the villagers themselves talk about the same problems

### **How I will communicate what I have learnt to my colleagues**

- Integration of environmental conservation aspects in my day-to-day duties
- Public meetings
- Staff meetings



- Circular/Letters, trip reports
- To educate women groups
- Ward committee meetings
- Environmental committee meetings
- Meeting with football players
- Working with people in villages
- To educate adults through religious institutions
- To educate fellow loggers on the side effects of destructive logging
- Through village environmental management planning programmes
- Using village leaders
- Meeting with people at different areas
- Giving out the feedback of what you have seen in your journey (making notes)
- Using different art groups e.g. drama
- To educate the family in practical work

## 8 Workshop Programme

### Rufiji District Environment Management Planning Workshop Programme, Utete- Rufiji, 29 – 30 June 2000.

Day 1: Thursday 29 June 2000		
8.00-8.30	Registration and Self-introductions	Secretariat/Participants
8.30-9.00	Overview of the objectives and expected outputs of the 2-day Workshop and how it fits into overall EMP process	Mr. Chande M S, District Lands, Natural Resources, and Environment Officer
9.00-9.30	Official opening of the Workshop	District Commissioner, Rufiji District
9.30-10.30	Integrated Natural Resources Management Planning Processes: Experiences from other areas. (KDDP, SELOUS CONSERVATION PROGRAMME, MANGROVE MANAGEMENT PROJECT, REMP-VILLAGE ENVIRONMENT MANAGEMENT PLAN)	Resource persons
10.30-10.45	TEA BREAK	
10.45-11.30	Identification, listing, and categorisation of all the natural resources users and respective uses (current and proposed) in the Plenary. Further Stakeholders Identification	Resource Person
11.30-1.00	Group work: mapping out of areas used and to be used by respective natural resources users and management issues thereof.	Groups (Maximum – 4 groups)
1.00-2.00	LUNCH	
2.00-4.00	Group presentations and plenary discussions (maximum 30 minutes)	Resource persons
4.00-4.15	TEA BREAK	
4.15-5.00	Guided plenary discussion on further issues that need to be addressed in the sustainable management of natural resources in the Rufiji floodplain and delta.	Resource Persons
Day 2: Friday 30 June 2000		
8.00-8.15	Recap of the previous day proceedings	Mr. Chande, (DLNREO)
8.15-10.00	New Groups: Develop a “RICH” map on how natural resources in Rufiji District should be managed. Each map to be accompanied with a list of management options for natural resources in the District.	Resource persons
10.00-10.30	TEA BREAK	
10.30-11.00	Group 1 Presentation	Resource Persons
11.00-11.45	Plenary discussions	Resource Persons
11.45-12.15	Group 2 Presentation	Resource Persons
12.15-1.00	Plenary Discussions	Resource Persons
1.00-2.00	LUNCH	
2.00-2.30	Group 3 Presentation	Resource Persons
2.30-3.15	Plenary Discussion	Resource Persons
3.15-4.00	Prioritisation of management issues and identification of broad strategies to be employed.	Resource Persons
4.00-4.15	TEA BREAK	
4.15-4.45	Workshop Closing	District Executive Director, Rufiji District.

END OF WORKSHOP

## 9 Workshop Participants List

### Rufiji District Environment Management planning Workshop, Utete/Rufiji 29-30 June 2000 Participants' List

No	Name	Position/Institution	Address
1	Ganda Mohamed	Ward Executive Officer	Mkongo
2	Juma A. Lipwemwike	Ward Executive Officer	Maparoni
3	Hasani M. Msati	Village Executive Officer	Kiasi
4	Salum O. Chomboko	Ukindu Dealer	Twasalie
5	Rajabu Ramadhani	Village Chairman	Twasalie
6	R.B. Mng'ombe	Chairman, Village Environment Management Planning Team	Jaja
7	Nungwana, W.N	Community Development Officer	Bomani
8	Salima Mohamed	Chairman, Village Environment Management Planning Team	Twasalie
9	Ms. Fatuma Bakari	Member, Village Environment Management Planning Team	Jaja
10	Itunda G. Mbwambo	Officer In-charge	RUBADA Box 64 Ikwiriri
11	Haji S. Kiumwa	Officer In-charge	Ministry of Water, Ikwiriri
12	M.Z. Zungiza	District Natural Resources Officer, Kilosa	Box 82 Kilosa
13	C.T. Mduma	District Water Engineer Rufiji	Box 25 Utete
14	S.O. Nindai	District Natural Resources Officer	Box 12 Utete
15	Richard Elibariki	Forest Extension Officer WWF	Box 63117 DSM
16	Kaimu H. Mkwanywe	Ward Executive Officer	Box Mkongo
17	Hatibu A. Mkikinau	Divisional Executive Officer	Mbwera
18	Ramadhani M. Mtulia	Divisional Executive Officer	Muhoro
19	Uwesu S. Mbembeni	Ward Executive Officer	Mwaseni
20	Salum A. Mtou	Member, Village Environment Management Planning Team	MtanzaMsona
21	Ms. Faida A. Mbonde	Member, Village Environment Management Planning Team	Mtanza Msona
22	Ms. Mwajuma M. Kitambulio	Member, Village Environment Management Planning Team	Mbunju Mvuleni
23	Yusufu Kipengele	Assistant District Planning Officer	Rufiji
24	Shabani A. Mkonywe	Member, Village Environment Management Planning Team	Mbunju Mvuleni
25	Sultani M. Makasala	Village Executive Officer	Mbunju Mvuleni
26	Rajabu Ungamwipi	Ward Executive Officer	Kiongoroni
27	Sefu A.	Councillor	Mkongo
28	Hashim S. Muhenga	Chairman, Village Government	Mbunju Mvuleni
29	A.S. Mosse	Director, RUFIDELTA	Mohoro
30	H.A. Mpogo	Project Officer, RUFIDELTA	Mohoro
31	Ms. Sharifa Kitamuyo	Nominated Councillor	Kibiti
32	N.O. Mmbaga	Community Development Officer	Utete HQ
33	Rudolf Hahn	Technical Advisor, SCP-GTZ	Box 1519 DSM
34	Halfan A. Njenge	Ward Executive Officer	Mbwara
35	Nandi, R.X.L	Land Use Planning Officer	Box 40 Utete
36	Mwakalinga, A.B	DSMS-Nutrition	"
37	Ms. Mwambeso, P.A	Agriculture Officer	"
38	Kassim, A.Palla	Councillor	Kiongoroni
39	Kabila M. Kipengele	Councillor	Nambunju Mbwara
40	Ms. Zuhura Rashid	Community Development Officer	Box 14
41	J.A. Kabika	Ag. District Administrative Secretary	Box 43 Utete

No	Name	Position/Institution	Address
42	M.S. Chande	District Lands, Natural Resources, and Environment Officer	Box 12 Utete
43	Ms. R.S. Kitambi	Nominated Councillor	Box 10 Utete
44	C.M.K. Malima	WWF-Tanzania	Box 63117 DSM
45	E.J. John	District Game Officer	Box 12 Utete
46	Peter, J.M.B	District Agriculture and Livestock Development Officer	Box 40 Utete
47	Ms. Kuruthumu Mwichande	Nominated Councillor	Box 47 Utete
48	Francis Karanja	Programme Officer-IUCN/REMP	C/o REMP
49	Ms. Salma Mtambo	Nominated Councillor	Mtunda
50	Bainga, I. Bwenda	DSMS-Horticulture	Box 40 Utete
51	Ms. Tabu H. Mlanzi	Nominated Councillor	Box 10 Utete
52	S.Y. Msumi	Councillor	Mwaseni
53	Damian Mwarabu	Divisional Executive Officer	Mkongo
54	Gaspar J. Levira	Forest Officer, Mangroves Management Project-Kibiti	Rufiji
55	Mwinshehe D. Mwelekwa	Chairman Village Government	Nyamisati
56	Mussa Lipabule	Timber harvester/dealer	Kibiti
57	Kayoyo, K.S.	Game Warden Kingupira	Box 2595 Kingupira DSM
58	George Ngwale	Principal Officer-Tanzania Petroleum Development Corporation	Box 2774 DSM
59	M.A. Monero	Chairman, Rufiji District Council	Box 28 Utete
60	Abdalla S. Shah	Project Manager -REMP	Box 11 Utete
61	J.L. Mgaya	Surveyor	Box 28 Utete
62	Ms. R Hogan	Technical Advisor, Community Development-REMP	Box 11 Utete
63	M.S. Ngwalima	District Planning Officer	Box 28 Utete

## 10 Discussion Group Members

### I. FISHERIES RESOURCES

1. Palla
2. Sultani
3. Mng'ombe
4. Mbembeni
5. Mkame
6. Mkwanye
7. Rajabu Rmadhani
8. Nindai
9. Fatuma Bakari
10. Kiumbwa
11. R. Mwipi
12. H. Mkikinau
13. Njenge
14. Mtambo
15. Mpogo

### 2. AGRICULTURE

1. Ganda Mohamed
2. S. Mmera
3. Alli S. Mosse
4. Salma Alamala
5. R. Kitambi
6. Z. Rashid
7. K. Mwichande
8. Peter, J.M.B
9. C.T. Mduma
10. A.R. Hogan
11. Ngwale George
12. P.A. Mwambeso
13. Bainga I. Bwenda

### 3. FORESTRY RESOURCES

1. Abdalla Shah
2. Mwinshehe Bakari
3. K.H. Mkanywa
4. Tabu Mlanzi
5. Mwajuma Mussa
6. Sharifa Kitamuyo
7. J.A. Liponike
8. M. Lipabule
9. R.M. Mtulya
10. Y. Kipengere
11. Mbwambo
12. Eribariki
13. Hasani Msati
14. Mmbaga
15. Gasper K.L
16. K. M. Kipengere
17. Rugaimkamu
18. Nandi R.X.L

### 4. WILDLIFE RESOURCES

1. C Malima
2. Hashimu S. Mhenga
3. Faida A. Mbonde
4. Damiani Mwarabu
5. Mhe. S.Y. Msumi
6. Hahn, R.
7. J.J. Eniyoye
8. K. Kayoyo