

IMPACT OF INSTITUTIONAL FRAMEWORK ON WETLAND MANAGEMENT IN TANZANIA

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ABSTRACT

Wetland loss continues today despite the existence of institutions with a specific mandate to manage wetlands in Tanzania. In reviewing this apparent contradiction, this paper goes in depth to explore the existing sectors associated with the development and management of wetlands in the Country. Specifically it focuses on institutional framework at Village level, Ward level, District level and national level. Among the key sectors consulted includes; agriculture and livestock, wildlife, forestry, fisheries, water resources, lands, minerals and energy. The interest while visiting them was aiming at exploring the existing opportunity with regard to the values of the wetlands and their respective policies. The findings of this study show that, wetland loss continues today despite the existence of institutions with a specific mandate to manage wetlands. The principle factors contributing to this institutional inefficient are: sectoral organization of wetland management; limited availability of management techniques for protected wetland; shortage of qualified staff; inadequate legislation; and limited resources. This paper therefore, recommends the mitigating measures in order to sustain wetland resources use and management.

Key words: Institutional framework, wetland management, stakeholders

INTRODUCTION

Lake Victoria basin (LVB) of Tanzania is endowed with a variety of wetlands, ranging from fringing swamps, drawdowns, floodplains, ground-water forests and riverine systems. Although wetlands are often inaccessible and seen as wastelands, there is a growing recognition that they provide a wide variety of goods, services and attributes important to our well-being. As natural ecosystems, wetlands are an essential part of the ecology and like any other resource, they provide social and economic benefits to human life, whether directly or indirectly. Wetlands are also one of the most fruitful areas of archaeological research, and they are the ideal setting in which to study the interactions between physical processes and human actions that encapsulate and exemplify many of the themes of human impact on the environment. These benefits include among others irrigation agriculture, fishing, water supply, timber production, transport, recreation, tourism, papyrus, sediment/toxicant retention, flood control, groundwater recharge and discharge

(Williams, 1990; 1991; Turner, 1990; and Turner *et al.*, 1995; Chapman *et al.*, 2003; Howard, 1992; Kakakuona, 2001; de Voogt *et al.*, 2000).

However, all these beneficial functions of wetlands seem to be in danger of being lost to draining and in-filling. Some studies in the Lake Victoria basin in Tanzania, shows that, wetland degradation in the Lake Victoria basin is largely because of agricultural activities, mining and animal husbandry, and to a lesser degree attributable to human settlements, deforestation and industrial development (IRA, 2001; Mwanuzi, 2003). All these have caused the Lake Victoria basin to face environmental and socio-economic problems that have led to poverty dangers.

Since, Wetland loss continues today despite the existence of institutions and policies with a specific mandate to manage wetlands in Tanzania, this paper examines critically the current institutional framework on wetland management in Tanzania and recommend how institutional inefficient problems might be addressed.

METHODOLOGY

This study was confined to wetland management in rural communities in Magu District of Mwanza Region. The fieldwork was conducted in 2005. Specifically the study focused on areas that are around the Simiyu wetland which is a sub-catchment of Lake Victoria basin. Due to limited resources, assessment of wetland utilization in other areas of the LVB was not considered in this study (Figure 1). Within the Simiyu wetland the study area was divided into three major parts namely the upstream located at the upper part of the Simiyu river system, the middle part located at the middle of the river and the downstream. The selected villages were Kitongo, Bubinza and Ilungu respectively.

A stratified random sampling was used to select 40 respondents from each study village. In some cases it was not possible to reach this number due to the fact that a respondent was unwilling to be questioned, then the next person was selected. In the end a total of 116 respondents were interviewed. A complete list of all units in the population was made available and then the population was subdivided into subgroups/strata based on gender, duration of stay and age categories (youth, adults and old people).

A procedure for random sampling of respondents was employed using existing village household lists in Ward Executive Office. In villages where a household list was not available, a taxpayer list was used. In areas where women were exempted from tax paying, efforts were made to get a household list to make sure that women headed households were represented.

In view of the amount and the details of information required in a limited period of time the data collection method was based on Participatory Rural Appraisal (PRA) which is a multi-disciplinary, cross-sectoral approach to

engaging researchers and community members in development through interactive and democratic participatory process. This method is based on interactive learning, sharing of knowledge and it ensures high-level participation of local people in the research, hence enriches the findings. The PRA method was applied to quickly generate new information. This involved relaxed rapport, open dialogue, brainstorming and mutual sharing of knowledge, skills and experiences among others. The tools employed in field data and information gathering included focus group discussion, participatory observation and questionnaire monitoring. Essentially this is a data triangulation technique which is an essential for improving the reliability of data and information.

Structured and unstructured interviews were also used in the gathering of information on institutions governing wetland resources, the activities of these institutions and how they influence the utilization and management of natural resources. Also gathering and evaluation of economic and political change and change in the natural environment was conducted.

The researchers and key informants first assessed and organised the desegregated data and information into a preliminary list of problems and opportunities related to institutions and wetland resources allocation, use and management. Then the PRA team discussed and generated a comprehensive compendium of possible problems and options. The ranking process was then conducted through the open-ended discussion.

Quantitative data were coded, entered and verified using computer software (Statistical Package for Social Sciences-SPSS). The data then was summarised and presented using frequencies, percentage distributions and tables.

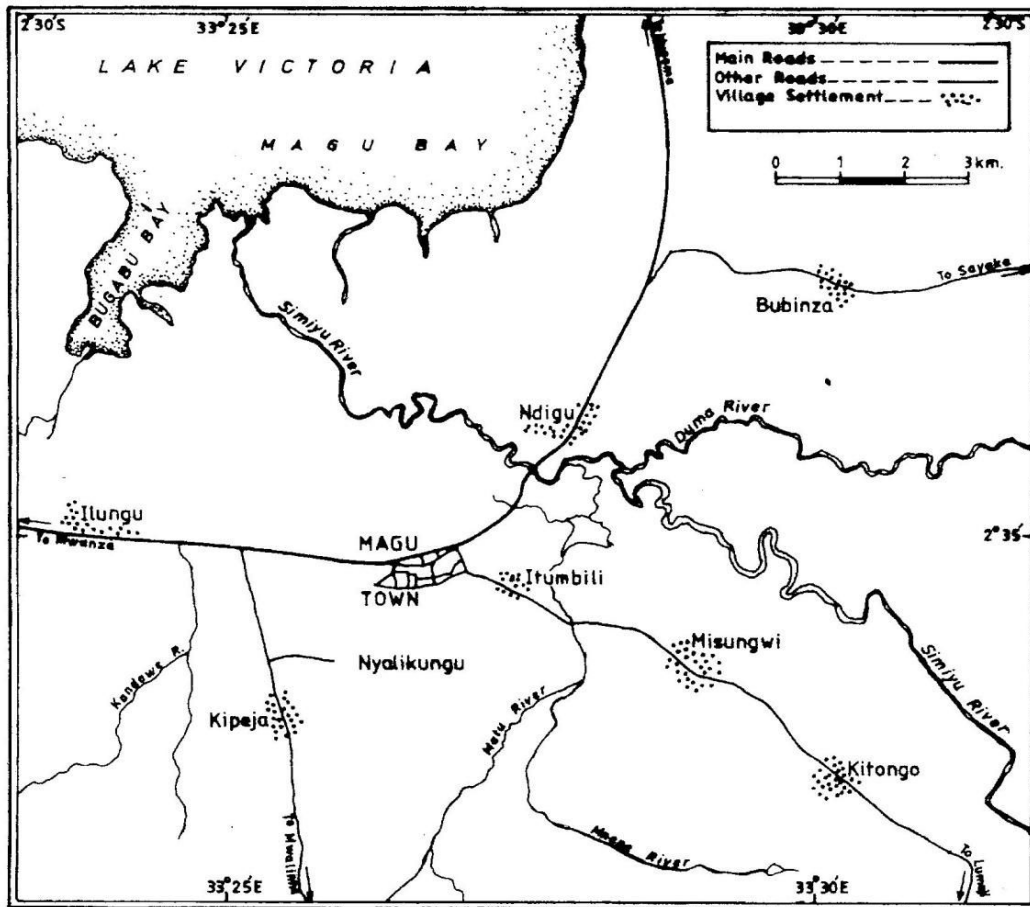


Figure 1. The locational map of the study villages in Magu district

RESULTS AND DISCUSSIONS

Village level institutions and wetland management

Village is the lowest level of local government structure in Tanzania. The respondents of

Simiyu basin comprised 57% males and 43% female (Figure 2) ranged between 20 and 75 year old. The overall age groups of respondents and their respective percentages are shown in Table.1.

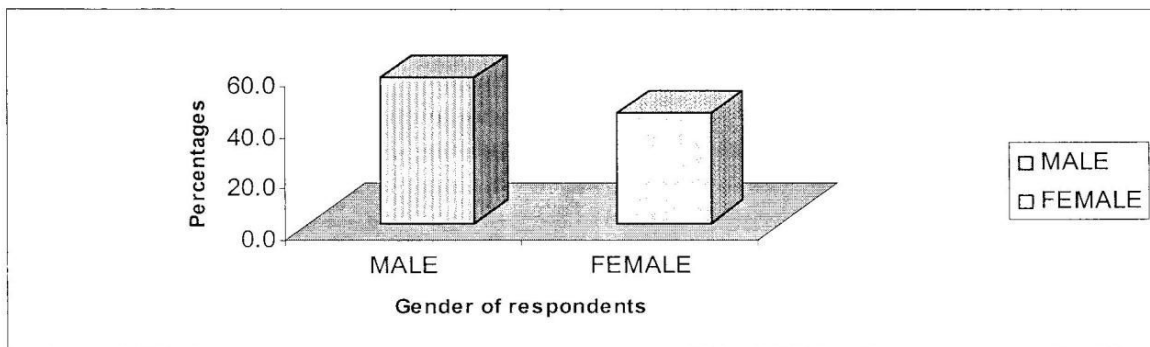


Figure 2. Overall Gender balance of respondents (N=116)

Table 1 Overall age group of respondents

Age groups	Percentages
20 – 30	19.5
31 – 40	30.7
41 – 50	25.5
51 – 60	16.0
61 +	8.3

Table 2, shows the majority of respondents in three villages have completed primary education (68%) followed by those who did not go to school (30%). Few have attained secondary school (2%).

Table 2. Education level of respondents (N=116)

Education levels	Frequency	Valid Percent
PRIMARY EDUCATION	78	68.4
SECONDARY EDUCATION	2	1.8
NO FORMAL EDUCATION ATTAINED	34	29.8
Total	114	100
MISSING	2	

Majority of respondents (86%) reported that they cut trees for the sake of firewood or charcoal. This implies that, the wetland is at high risk of being degraded due to deforestation, and this endangers the sustainability of wetland resources in Simiyu basin. However, the problem of wetland degradation can be alleviated if the reforestation programme is effectively implemented. About 64% of respondents indicated that, there is no effective management of reforestation. Most of the respondents (87%) reported that, individuals are responsible management of reforestation. However, we noted different response as regards to management of that problem (Table 3), mostly indicated flooding as major problem in wetland management particularly during the wet season.

Table 3 People's response on management of flooding problem

	Frequency	Valid Percent
FLOODING	36	38.3
FLOODS ARE UNCONTROLLABLE	12	12.8
WILD ANIMALS DESTROY THE CROPS	1	1.1
NOTHING	11	11.7
FLOODING SOMETIME I GROW THORN TREES	1	1.1
FLOODING DESTROY OUR CROPS THERE IS NO MEASURE CAN BE TAKEN	3	3.2
CONSTRUCT NEW BOUND	1	1.1
MAKING CANALS TO REDUCE FLOODING	15	16.0
CANAL MAKING TO REDUCE WATER	3	3.2
BOUND MAKING SO AS TO RESERVE	6	6.4
WATER HYACINTH I TEND TO REMOVE THEM FROM THE FARM	3	3.2
DEVELOP PONDS WHICH HELP TO RESERVE WATER	1	1.1
TRYING TO FIND ANOTHER AREA FOR GRAZING	1	1.1
Total	94	100.0

The structure of the village government is given in Figure 3 below. Each village assembly (VA), which comprises all adults residing in the respective village, and is the supreme authority on all matters of general policy-making in relation to the affairs of the village,

development projects, make budgets of village project plans, collect revenue and authorize the expenditures, plan fund raising activities and other sources of village income and co-ordinate and supervise development projects.

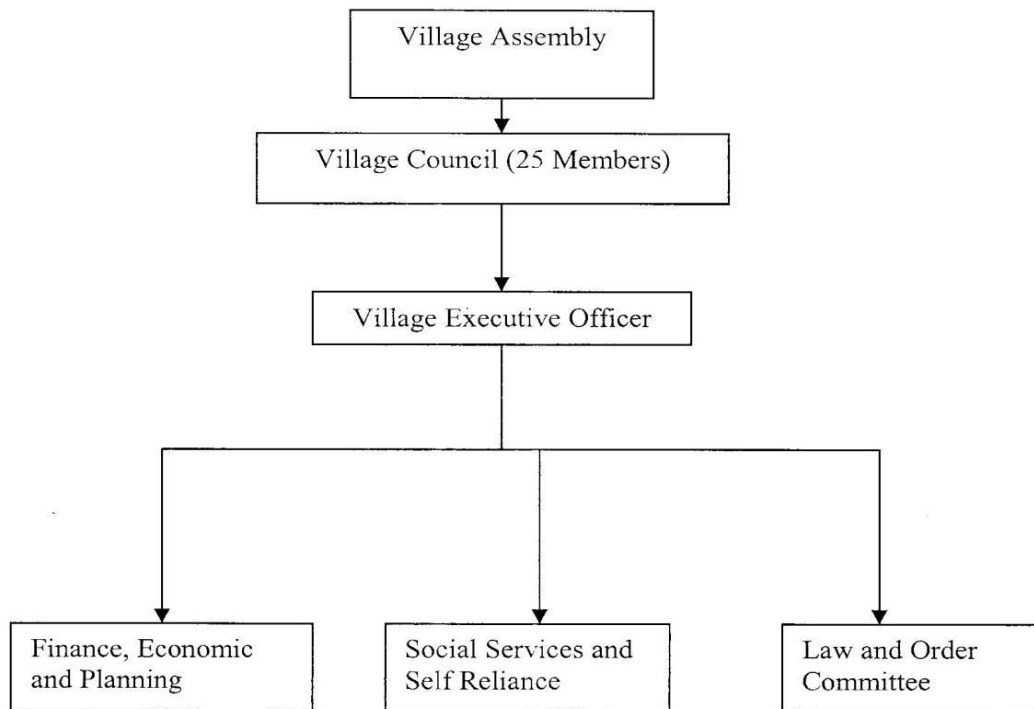


Figure 3. Structure of the village government

Village Executive Officer (VEO) is the highest executive in the village. VEOs are expected to be conversant with government functions, policies laws, and public relations so as to cope with their work. Logically, he or she is expected to be conversant with wetland management initiatives. In three studied villages did not feel a total responsibility of the management of wetland resources. During focus group discussions they felt that this is a task to be performed by committees. Lack of basic knowledge on village council and VEO's roles and responsibilities contributes on the village council's inability to make serious plans for the better use of the wetland resources in their respective villages.

As basis of discussion, participants were asked to identify the village level institutions and their influence on wetland management.

Following their identification, participants were then asked to rank each institution. Using the techniques of venn diagramming, participants then graphically represented the contribution of each institution to their total wetland resources management. Results of the ranking activity for the identified village level institutions are summarised in Table 4.

Apart from the village government, there are also other institutions, which influence wetland resource use. These are given here under according to the rank of their influence. Such institutions involve village government, Ward Council, Community Based Association (CBO), Lake Victoria Basin (LVB) office, Primary school, Secondary school, Churches and District Council. Table 3 summarizes institutional ranking as done by community members during PRA exercise.

Table 4 Village level institutions and their influence on wetland management

Institution	Level of Influence	Rank
Village Government	High	1
Ward Council	High	2
CBOs	High	3
LVB office	Medium	4
Primary School	Low	5
Secondary School	Low	6
Churches	Low	7
District Council	Low	8

Source: Field Data 2005

As seen from Table 4 above, LVB office is not very popular in the study area. Children's power in natural resources management was also noted. Primary and Secondary schools influence wetland resources management through school children. Schools have been in the forefront in advocating for conserving water sources and improved agriculture, all which indirectly impact wetland management imperatives for good.

Ward level institutions and wetland management

Wards play a significant role in the government structure. The overall functions of the Ward Development Committee (WDC) are to:

- Ensure the implementation of decisions and policies of the District Council;
- Ensure the implementation of the Ward Development Plan;
- Develop and/or initiate tasks designed to ensure the welfare and well being of residents;
- Supervise and co-ordinate the implementation of District Council projects and programmes;
- Assist in the formulation of village by-laws;
- Monitor revenue collection;
- Initiate and promote participatory development and Manage disaster and environmental related activities.

In the present local government reform structure Wards are basic linkage between communities and the Districts. Wards are made up of 3 to 7 villages depending on the population and geographical distance. The most influential institutions in the ward are Ward

Development Committee (WDC), Ward Executive Officer (WEO) and the Ward Councillors. WDCs is composed of the Ward Councillor who acts as the chair, the WEO as the secretary and the village chairpersons from the villages making up the ward as members.

WEO is the functional officer at the ward level with similar activities as the VEO but performing at the ward level. Other functions of WEO are to collect revenue for the district and supervise the implementation of all planned activities at ward level. The WEO is the most prominent government officer in the Ward who is responsible for coordinating the functions of the WDC. In the Simiyu basin, WEOs have not fully lived to the output expected of them. Some drawbacks that hinder the WEOs from discharging their due roles accordingly includes: lack of thorough understanding of their roles and responsibilities, and lack of the necessary skills, particularly in basic management, planning and budgeting.

Ward Councillors are very influential in the villages. Unlike WEOs who are employed and are salaried, Councillors are elected and are not salaried. They are expected to represent the community members who elected them into power at the District Council and thus sustain their services through allowances given in the District Councils meetings and on monthly basis. Ward councillors are normally high and middleclass businessmen, elites or retirees who are able to influence community members for votes during campaigns. Some of them are not local natives in the area, they have moved in for agriculture. They normally come from or

live in a village that is at least better off compared to other villages in the area. Owing to their prior influence, they are normally influential and respectable.

Councillors play a key role in wetland management. Since their mandate is persuasive some have used their influence to attain admirable outputs in various sectors. For example, they mobilize funds for domestic water supply-both local and external to the ward, repair and digging of feeder roads, schools, and dispensaries, etc. Councillors may also mobilize community members towards formation community based associations (CBOs) and setting of by-laws.

Of late there has been capacity building programs for Ward Councillors through workshops and training on their roles and responsibilities. No specific capacity building initiatives however, have been made to empower them on wetland management issues. While some success have been achieved, the effort is still hampered by the fact that there are no much ties between the Councillors with the wider local community; and the relation is that of 'honorable admiral'. The former have no attachment and practical feeling to wetland management imperatives hence are not sensitive to the special needs of the poor, the widow, women, youth etc.

There is no direct linkage between village and ward level institutions as far as wetland management is concerned, apart from few cases where several villages in the ward share some bureaucrats such as agricultural extension officer, forest officer, etc. The ward/village level officers operate sectorally under their sectors/sub-sectors.

District level institutions and wetland management

The on going local government reform structure has highly empowered the districts to undertake, among other things, natural resource management. The key components of the Districts are District Councils. District Councils are made up of a political and an executive arm, with the former arm comprising

of the District Commissioner (DC), elected Councillors and nominated Women Councillors (the number of which should be equal to or more than 25% of elected Councillors). The Executive arm, on the other hand comprises of the District Executive Director (DED) and the Heads of Departments.

The District Council is the highest authority of the local Government as provided by Local Government Act of 1982, and its subsequent amendments. The council is empowered to formulate by-laws, with the approval of the minister responsible for local authority. The general functions of District Council, according to Act No 7 of 1982 sect III (1) are:

- To maintain and facilitate the maintenance of peace, order and good government within its area of jurisdiction;
- To promote the social welfare and economic well-being of all persons within its area of jurisdiction;
- Subject to the national policies and plans for rural and when development, to further the social and economic development of its area of jurisdiction;
- To take all such measure as in its opinion are necessary, desirable, conducive or expedient:
 - For the suppression of crime, maintenance of peace and order and the protection of public and private property lawfully acquired;
 - For the control and improvement of agriculture, trade and industry;
 - For the furtherance and enhancement of the health, education, or the social cultural and recreational life of the people;
 - For the relief of poverty and distress, and for the assistance and amelioration of life for the young, the aged and disabled or infirm;
 - For the development, mobilisation and application of productive forces to the war on poverty, disease and ignorances and
 - For the sustainable management of natural resources.

The DC heads the political arm, being also the institution representing Central Government at the local level. Under the reforms, the DC is expected to play advisory roles and enforcement of law and order. DCs are very powerful and may duly issue orders that may influence wetland management.

Other government officials at the district level also exert great influence and carry major decisions that may adversely impact wetland management. For example, the District Natural Resource Officer can decide to bar fishing in rivers and consequently confiscate the properties of the people found fishing without trial. The District Executive Director (DED) who is responsible for the overall day-to-day running of the District heads the Executive arm of the District Council. The DED is supported by Heads of Department covering different sectors. The relationships between HoD and Councillors are weak, particularly in relation to the exchange of information on the communities concerns and demands. HoD feels that Councillors and the DCs are a potential useful source of information since they visit villages more regularly than HoDs and consequently have a greater understanding of peoples' problems. On the contrary, the Councillors feels that the HoDs are proud of their relatively higher levels of education and thus they shy away from grassroots issues. Such contradictory feelings have affected natural resources management, especially as far as wetland management is concerned.

Although theoretically the districts, through the District Planning Officers are expected to play a role of coordinating different sectoral plans, at the district level and below plans and programmes are still carried out sectorally without adequate coordination and linkages. This lack of coordination has resulted into institutional inefficiencies due to duplication of efforts and bypass of management imperatives.

The District level institutions mirror the national level institutional set up. The parent sectoral ministries coordinate most district level departments. The relevant ministries as far as wetland management is concerned are

Ministry of Lands, Ministry of Water and Livestock Development (MoWLD), Ministry of Agriculture and Food Security (MAFS), Ministry of Natural Resource and Tourism (MNRT), and the President's Office, Regional Administration and Local Government (PORALG).

There are also relevant inter ministerial institutions: Department of Environment in the Vice President's Office, National Environmental Management Council (NEMC), and the National Land Use Planning Commission. Inherently, the national level institutions are key guiders and directors who are supposedly expected to provide macro-level directions and decisions. However, there is a generally weak linkage and information flow between central level and the districts, wards and villages, which causes ministries and departments to cling to the traditional approaches and solutions to challenges despite the changes in the grassroots. Furthermore, the composition, scope, roles and designation of the ministries and government departments are somewhat dependent on the political regimes and the donor interest; the scope of a ministry or department may expand, shift or split depending on the current designation of the minister or president. As such a merger occurs it requires a time lag to get the changes reflected at the grassroots.

National level institutions and wetland management

The Wildlife Division

The Wildlife Division is responsible for the management of wildlife throughout Tanzania with the exception of areas designated as National Parks (Managed by TANAPA). It has a specific responsibility for wildlife within designated Game Reserve Areas. The Division manages the more important Game Reserves as National Projects.

The Wildlife Division of the Ministry of Natural Resources and Tourism was envisaging establishing the Protected Area Network and it is now charged with the Conservation of the Biological diversity. The

long-term wildlife Conservation perspective is to maintain great biological diversity, which contributes to healthy environment, and increases its contribution to Country's economy from the present level of about 2% to 5% of the GDP by the year 2017.

The Division is also charged with the coordination of all Sectors whose functions are associated with wetland development activities.

Agriculture and Livestock Department

In general terms land is the host for water, which when acting together regulates the environment together with its associated plant and animal life (i.e. flora and fauna). In the Country, Agriculture and Livestock used to be one Department since all the functions dealt with has a primary factor being land. For Agricultural purposes there is 43 million hectares suitable for agricultural production in Tanzania only 6.3 million hectares are under cultivation; further to this only 150,000 hectares are under irrigation despite the irrigation potential estimated to be over 1 million hectares.

There is a substantial potential of wetlands in existence in Tanzania which could be utilized for agricultural development. This situation is calling for immediate inventory on systematic characterization and classification in view of other sectors such as Wildlife, Forest and Fisheries having identified areas whose function are associated with wetlands for Conservation. The agricultural sector is yet to do this.

Forest Division

The Division is charged with the function of managing the Tanzanian's forest resources as a national heritage on an integrated and sustainable basis to optimize their environmental, economic, social and cultural values. In addition, as a result of the international forest-related discussion initiated by the 1992 UNCED conference in Rio and continued by the Intergovernmental Panel on Forests (IPF), the contribution of the forests to the international conservation functions

become an important part of the national policy.

The Forestry Division is responsible for the management of forest resources throughout the Country, particularly within areas designated as Forest Reserves. Since most of the Country's major wetlands depend upon appropriate management of forests in the upper catchments areas. Further, the Division has taken a lead role in the development of a Tanzanian Forestry Action Plan, which promotes a framework for the integrated management of forest and other natural resources, including wetlands.

Fisheries Division

Tanzania is rich in water resources (surface), such that the existing marine and inland fishery resources have led to a significant fisheries sector. The sector has a lot of economic and social significance to the Country, in view of its contribution towards the National GDP, which has been estimated at around 10%. The Division is therefore charged with the promotion of the conservation and development of a sustainable management of the fisheries resources for the benefit of the present and future generations.

National Environmental Management Council (NEMC)

NEMC was established around 1981, as a coordinating body in environmental affairs. The Council has a small professional staff and is divided into four Divisions, Natural Resources, Pollution Control, Documentation, and Finance and Administration. Since its inception NEMC has been instrumental in initiating a number of cross-Sectoral environmental activities and has commissioned several studies.

During the year 1989, NEMC initiated to develop a programme for the management of wetland resources ranging from substantial lake systems to river floodplains and deltaic mangrove formations. Preliminary contacts were initiated way back 1989 between NEMC, IUCN and WWF among the good thing which came out was the report - "Development of a

Wetland Management Programme for Tanzania" (NEMC/IUCN/WWF). There are three major issues raised in this report with regard to way forward i.e. content of the programme should comprise of different Sectoral interests, programme coordination and capacity building.

Under ideal circumstances, such a programme would begin only after detailed inventory of Tanzanian's Wetlands had been completed, although further suggestions were to develop a national programme without an extensive preparatory inventory. Such a programme would focus upon strengthening the capacity of institutions to respond to wetland issues, through training, policy development, and implementation of selected pilot projects.

In order to provide a basis for future discussions between different Sectoral interests, the report dealt successfully with wetland values, types of wetlands in Tanzania, and planning the use of wetland resources.

Through NEMC/IUCN/WWF, a list of wetland around the Country was established as a first step towards a National Wetland Programme, which will further provide details entailing to classification and characterization. Also in the report it was proposed that, NEMC should take the lead role in coordination due to internal coordination problems.

The Wildlife Division of the Ministry of Natural Resources and Tourism was mandated to take the lead role for a number of activities with regard to Wetland Management. Among its activities planned for the year 2001 includes stakeholders meetings, establishment of National wetlands Technical and Steering Committee.

National Land Use Planning Commission

The National Land Use Planning Commission was set up to undertake land use planning studies as and when required, and ultimately to produce a National Land Use Plan. NLUPC has prepared land use plans in several Districts, Regions and Zones, involving studies of human populations, wildlife populations,

and land capability, and has carried out a land use study along the Great Uhuru Railway from Dar es Salaam to the boarder of Zambia. NLUPC initiated a major project in the Mtera Dam catchments, where there are conflicts between pastoralists, agriculturists and fishermen, and problems with forest clearance and resulting sedimentation.

Surveys and Mapping Division

The Division produces and publishes maps and aerial photographs of the whole Country, and sells through its outlet – the Map Sales Office in Dar es Salaam. Maps at a scale of 1:1,000,000 (IMW Series 1301) and 1:250,000 (Series YS03) are available for the whole Country, and most if not all of the Country has been covered at a scale of 1:50,000 (Y742), but many of these maps are now 10 – 20 years out of date. Aerial photographs at scales of between 1:30,000 and 1:60,000 are available for the entire Country, although again many of these are now 10-20 years out of date. Prints are available for inspection at the Air Photo Library in Dar es Salaam. Individual photographs and mosaics can be ordered and purchased through the Map Sales Office.

Water Resources Division

The Water resources division provides data on water quantity, water quality, rainfall, sedimentation etc. This information is stored on computer and is available for analysis upon request.

The organization chart represented in Figure 4 are the stakeholders whose functions are associated with the wetlands. Each of the stakeholders has been represented in the National Wetlands Technical Committee (NAWETCO). The hierarchy is participatory, trying to involve all levels starting with the highest office i.e. the President of the United Republic of Tanzania down to the grass root level that is the Villages where most of the interactions with regard to wetlands are taking place.

Among the tasks of this committee (NAWETCO) is to discuss the progress of ongoing projects in the wetlands and

recommend remedial measures with regard to continuing implementation of their planned activities. The committee is also charged with

the responsibility of drawing up the framework of wetlands policy, which will form the basis for drafting the National Wetlands Policy.

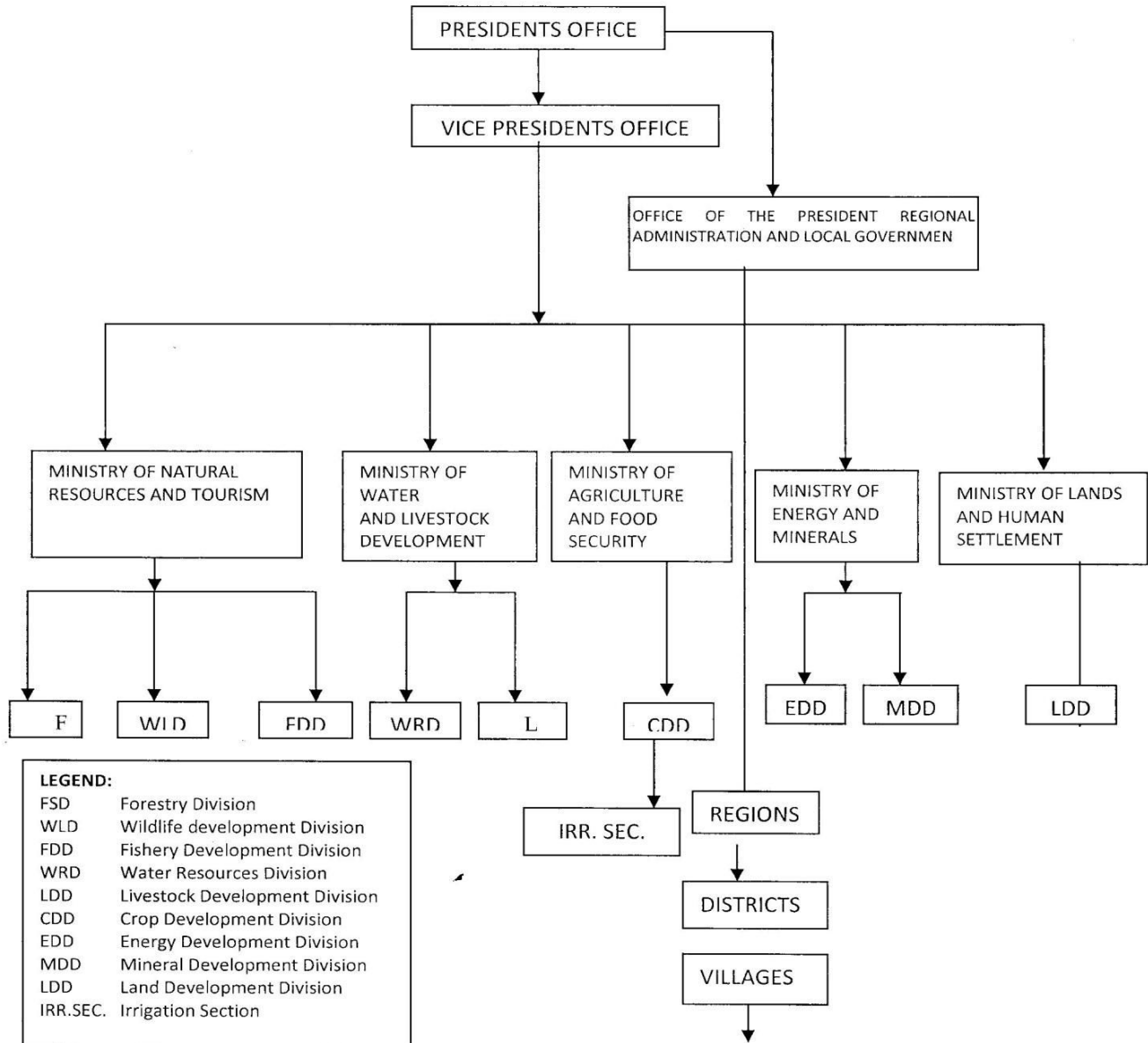


Figure 4: Organisation Chart of National Institutions on Wetlands

Factors for Institutional inefficient on Wetland Management

Wetland loss continues today despite the existence of institutions with a specific mandate to manage wetlands. In reviewing this apparent contradiction, respondents (key stakeholders in wetland management)

mentioned the following five principle factors contributing to this institutional inefficient: sectoral organization of wetland management; limited availability of management techniques for protected wetland; shortage of qualified staff; inadequate legislation; and limited resources (see Table 5).

Table 5: Responses on factors contributing to institutional inefficiency

Responses	Frequency	Percent	Cumulative Percent
Sectoral organization of wetland management	43	45.3	45.3
Limited availability of management techniques for protected wetland	12	12.6	57.9
Shortage of qualified staff	25	26.3	84.2
Inadequate legislation	10	10.5	94.7
Limited financial resources	5	5.3	100.0
Total	95	100.0	

With respect to the above-mentioned factors, the following possible actions could be taken to sustain the Simiyu wetlands.

Enhancing Cross-Sectoral Management

The effectiveness of national wetland management efforts will be enhanced greatly by the establishment and effective operation of cross-sectoral structures. These may include specific ministries or departments and inter ministerial committees and commissions. The success of such efforts will depend upon the capacity of the coordinating mechanism to bring together the widest possible range of institutions concerned with wetlands and to assist them in including wetland concerns in their work, rather than by replacing their existing functions.

Protecting wetlands

A diversity of management techniques exists for protecting wetlands of highest conservation concern. In deciding which techniques are most appropriate in specific situations, special account should be taken of externalities, in particular the impact of changes in the quality and quantity of water flow, the dynamic character of many wetland ecosystems, and the heavy human use made of wetlands.

Improving Human Capacity to Manage Wetlands

Substantial investment in training is required if wetlands are to be managed effectively. This should increase the capacity of individuals and institutions to pursue an integrated cross sectoral approach to wetland planning and use. Where possible, training course should be included in the curricula of existing

institutions. To help ensure that trainees can apply lessons learned, training opportunities should be increased as part of coordinated long term approach of wetland conservation at national and regional levels. In this way trainees and their institutions can receive continuing support from appropriate regional and international institutions.

Improving Legislation

Legislation is needed to regulate all activities, which impact wetlands, and to establish protective standards, mitigation, monitoring, and enforcement. This must include consideration of water pollution control standards for both point and non-point resources. In addition laws must ensure adequate planning for long term use of water and land, and they must require comprehensive impact assessment of major agricultural, residential, commercial or industrial project before they are approved. Existing legislation should be reviewed, deficiencies identified, and appropriate changes made. Where the deficiencies are particularly serious, new legislation may be required.

Improving the Funding Base

Several existing mechanisms can be used to provide funds for wetland conservation. Each institution should review the diverse options available and pursue those most appropriate for its all needs, where necessary seeking international assistance in doing so. A strong commitment to generate funds for wetland conservation from national sources is likely in turn to stimulate greater external support.

Mitigation measures for sustainable wetland management

Improving Information and Awareness

Until people understand why they should safeguard wetland ecosystem species and are aware of the action required to do so, many of the changes advocated in this report will not take place. The quantity and quality of information on wetland and their values must be increased, and communicated more effectively to the critical audiences. Ultimately however, full understanding of the wise use of wetlands will come about most rapidly through practical demonstration of the values that wetlands provide.

Support national and regional conservation programmes

Wetland conservation efforts will in most countries be more effective if they are the result of a consultative process among Government, non-governmental organizations, resource users, and the scientific community, and are based upon a clear analysis of the problems. All countries are therefore encouraged to pursue such a process. The first steps may involve establishment of a national Wetlands Management committee to review problems and design remedies.

Develop national policies, which support wetland conservation

Government policies that contributed to wetland loss must be corrected. New conservation policies must take into account costs and benefits of wetland conservation versus conversion and impact of current agriculture, water and tax policies. People will only demand wetland conservation if they see it to be in their interest. Government policies should ensure that this is so, and legislation developed to provide the necessary institutional support.

Improve methodologies for planning use of wetland ecosystems

Many wetlands are lost because of faulty planning methods. River basin and coasts provide especially important frameworks for

use of wetland resources. Appropriate tools should be developed to facilitate this process.

Support conservation of critical wetland habitats

Given the role wetland play in support of sustainable development and in conservation biological diversity, greater efforts need to be made to conserve ecosystems and sites judged to be of highest priority, and/or most endangered. National and regional programmes that set the priorities and get action started must be prepared.

Develop tools for wetland conservation that contribute to sustainable development

New method for managing wetland need to be developed, especially once to help local communities dependent upon wetlands to manage them in an environmentally sound manner. Traditional system well adopted to the dynamics of the ecosystem should be encouraged.

Strengthen management institutions

Investment is needed to strengthen institutional resources. Training opportunities in wetland management should be increased, especially among rural development planners who take decision about the value of wetlands and their management needs.

Widen the acceptance of principles and concepts of wetland conservation

The people who make decisions affecting wetlands often do so without full understanding of the importance of these resources. Greater investment is therefore needed to support environmental educators and their institutions. Awareness material needs to be developed that explain how wetlands support sustainable development and improve the quality of life of the rural poor. In the field, awareness work should focus on sites where wetland conservation activities are already underway and meeting the needs of the local population, thus complementing the conservation message.

Strengthen international collaboration for wetland conservation

All institution should increase their international involvement in wetland conservations. Contracting Parties should identify shared wetland resources, opportunities for exchange of information, transfer of technology, and direct support to wetland conservation in other countries.

Support wetland conservation through development assistance

Development assistance institutions should be encouraged to support wetland conservation as a means of aiding the rural poor. They should be made aware of the danger that other projects may incidentally destroy wetlands. Legislation encourage development agencies to address wetland conservation would help strengthen this process.

Cooperation between international institutions working on wetland conservation

Given the range of the problems faced by wetlands and the limited resource available to address these problems, greater coordination of wetland conservation activities will greatly enhance their effectiveness. A greater flow of information between international institutions is desirable, as well as regular programme review meetings where opportunities for corporation could be identified.

Identify and develop action to address critical issues

Current conservation efforts must not neglect emergence issues that may require substantial investment in the coming years. Among the most important is the impact of global climate change and rising sea level. These issues will be more easily addressed if they are considered well in advance and action is taken to design appropriate policy, planning and management measures.

CONCLUSIONS

The study has identified major factors contributing to institutional inefficient on wetland management as:

- Sectoral organization of wetland management;
- Limited availability of management techniques for protected wetland;
- Shortage of qualified staff; inadequate legislation and;
- Limited resources.

Basing on the findings the paper recommends the following possible actions to sustain wetland use and management:

- Improving Information and Awareness,
- Support national and regional conservation programmes,
- Develop national policies, which support wetland conservation,
- Improve methodologies for planning use of wetland ecosystems,
- Support conservation of critical wetland habitats,
- Develop tools for wetland conservation that contribute to sustainable development, Strengthen management institutions,
- Widen the acceptance of principles and concepts of wetland conservation,
- Strengthen international collaboration for wetland conservation,
- Support wetland conservation through development assistance,
- Cooperation between international institutions working on wetland conservation,
- Identify and develop action to address critical issues.

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