

MANAGEMENT CRISIS IN THE CATCHMENT AREAS IN TANZANIA

A case study of Iringa district, Tanzania

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Abstract

The Southern highland zone in Tanzania constitute one of the most important economical pillars in Tanzania both in terms of high food crop production and by contributing 86.6% of the total electricity demand of the nation. Three major hydropower plants are found in this zone, which all depend almost entirely on the upper catchment of Iringa District.

Poor planning in regard to agricultural farming, population increase, fuel wood energy use and uncontrolled livestock influx have prompted a number of land use conflicts.

Decreased farm output levels force the poor peasants in some areas to find alternative farmland near water sources, wetlands, in new watersheds and in forest areas. If this situation is left uncontrolled the water resources in the area can be expected to be depleted affecting the livelihood of the people of the whole country.

However, the Government of Tanzania has in the late 1990's endeavoured on a process, which involves the reviewing of almost all ministerial policies in respect of management of natural resources and land, and which will involve all the relevant communities. This process, supported by donor funds, may prove to be an effective way to check further environment depletion.

Abbreviations

DANIDA	Danish International Development Agency
EIA	Environmental Impact Assessment.
EPSF	Environment, Peace and Stability Facility. A Danish fund for environmental assistance.
HIMA	Hifadhi ya Mazingira. A soil and water conservation project in Iringa, Tanzania.
LAMP	Land Management Programme. A land use planning and management programme in Arusha and Singida Regions, Tanzania.
MEMA	Matumizi Endelevu ya Misitu ya Asili. Kiswahili for “Sustainable utilisation of natural forests”. Two participatory forest development projects in Iringa, Tanzania.
NGO	Non-Governmental Organisation.
SMUWC	Sustainable Management of Usangu Wetland and its Catchment. A wetlands research and development project in Mbeya and Iringa Regions, Tanzania.
URT	United Republic of Tanzania.
USD	United States Dollars

Introduction

Several institutions, including NGO's and Government departments supported by donors (i.e. HIMA in Iringa and the Land Management Programme (LAMP) projects) have undertaken management of watershed areas in the recent 10-15 years. Coordination and linkages between different institutions, which may be involved directly or indirectly in the management of watersheds in the same geographical area have, however, rarely been done. Moreover, the involvement of relevant communities and other important stakeholders has remained an undeveloped area. If and when farmers in hilly areas are involved, it has been seen often that pastoralists in the same area are left out of the process. This distorts the planning of the catchment area approach, for instance where overgrazing is causing problems such as gully erosion and water source degradation.

Policies have furthermore often been single institutional oriented and contradictory to each other. For example, when an agriculture expert talks about arable land to farmers, he will often include even the fragile forest areas or wetlands with high bio-diversity. Wetlands are thus sometimes addressed as wastelands.

Management of watersheds by independent institution, without involving the community and other stakeholders, will always be fragile in terms of sustainability and future social economic development.

Watershed management are restricted in many areas to administrative boundaries rather than the ecological coverage, either instituted by government or projects (FAO, 1979). However, in the initial planning stage, involvement of all stakeholders beyond administrative or project boundaries is crucial. In this case all aspects and ideas in regard to the relevant ecological zone are required for the approach to be effective. This could ensure an appropriate framework and a proper ecological and socio-economic approach inside and beyond the targeted areas.

Study area:

Iringa District is located in the southern highland zone of Tanzania. It is one of the five districts of Iringa Region, and lies along latitudes 7-9° S and longitudes 35-45° E. The district covers an area of 28,457 km², approximately 49% of the whole region.

The land is under extensive agricultural farming of different crops. Rice is the most important crop in the lowland, while highland crops include tea and wheat.

Objective of paper:

The main objective of this paper is to give an overview of conflicting management of Catchment/watershed areas, which leads to economical loss, social living disturbance and environmental degradation as a result of uncoordinated conservation activities among stakeholders. Secondly, the paper will describe the participatory management initiative from the Mema project (Danish funded development project in Iringa). Finally, some recommendations for the way forward are formulated.

Methodologies

Secondary data analysis from experienced projects, interviews, and on site observation has contributed to this report documentation.

Stakeholders in the water shed areas :

These include several groups who have an interest in the area: They can be grouped into Government institutions, communities, and outsiders.

Government institutions:

- Wildlife Department/ Tanzania National Parks
- Institutional irrigation paddy farms
- The Tanzania Electric Company
- The Rufiji Basin Development Authority
- The Iringa District Council.

Communities:

- Pastoralists, both nomadic and semi nomadic
- Farmers: - peasants in the upper and low land areas
- Commercial farms mainly for paddy and tobacco
- Fishermen

Outsiders :

- I.e. international conservations groups and researchers

Management of Rufiji basin:

The Rufiji Basin Catchment/watershed area is a vast area, covering several agro-ecological zones, i.e. the sub-humid, semi arid and the arid zone. Administratively the watershed area covers more than 14 Districts. However, the major watershed/catchment area, which is the prime contributing area to the permanent water flow into the basin, is Iringa Region (SMUWC, 2001). More than 4 major permanent rivers and several larger streams from Iringa are thus leading their waters directly to the three giant hydro-electric dams in the country, which produce more than 85% of the electricity in the country.

Land tenure in the watershed area:

The areas in the watershed fall under different status as follows:

- More than 80% of the farmland is under customary/traditional ownership, mostly owned by male. Landowner-ship is transferred traditionally to a male relative or to a male child in the family. Traditional laws mostly jeopardize rights to females.
- In some of the upper montane forest-land there are state forest reserves categorized as catchment forests (reserves). In these forests no harvesting of any kind is allowed. This status is mainly for water source catchment and bio-diversity values.
- Government or local government productive forest reserves; where harvesting can be done in these areas by acquiring a license from the forest department.

- General/public land areas, where the community has a free access to enter and harvest forest produce for domestic use - other than National reserved trees, but not for sale or barter. A license is needed for the latter purpose.
- Marginal land, mainly used for pastoralism.
- Protected areas under Tanzania National Parks and wildlife management areas.

Problems leading to management crisis in the watershed areas :

Valley bottom farming:

Uncontrolled traditional valley bottom farming is common in dry seasons all over Iringa District. It is mostly for cash crops, which include tomatoes, maize, cabbages, onions, beans and peas. Almost all valley bottoms within the village vicinity are under cultivation either by the owners or under rent to business people from as far as 500km away.

With high prices accrued from sales of the above cash crops in the dry season, most of the wet land, river banks and stream sources are under cultivation and water is channelled from the rivers or streams into farms, causing wetlands and water sources further downstream to dry up. Most communities in these areas have little knowledge on the proper management of watersheds, i.e. in regard to soil and water conservation. Sensitisation the community on proper watersheds management through their village government is crucial.

Deforestation:

(a) Hilltop vegetation degradation

In most business centres fuel wood needs for home use have increased tremendously. Consumption rate is more than 2.5 m³ per inhabitant per annum and between 1.6 – 2 million m³ of fuel wood is used annually. Available fuel wood ranges between 25 – 280 m³ per ha. (stacked) and the deficit of allowable fuel in Iringa region is more than 30% (Kaale and Temu, 1984). Alternative stove technology brought forward to the community by different organizations are only slowly adopted by the population, also because of negative impacts – e.g. improved stoves, which can use coal or sawn dust, can melt the normal iron cooking pots in use by the communities. Thus the improved technology is sometimes abandoned in preference to the traditional three-stone method.

As a consequence, most hilltops are denuded resulting into heavy water run off during rains down the slopes. A considerable number of gullies have already formed in the district, and the high run off also means less water percolating into the existing streams/river sources (groundwater discharge). Water is thus often only available for short periods and flooding and siltation is common. Most of the formed gullies impinge efficient transportation in the villages.

(b) Tree cutting due to agriculture

Iringa is one of the districts, which is well known for flavour fuel wood cured tobacco. More than 20000 m³ of high caloric value *miombo* fuel wood are used annually. Also, finger millet farming involves shifting cultivation, involving bush cutting, piling of

branches and burning to produce potash. Annual wild fires hinder in situ regeneration and sometimes covers vast areas of more than hundred thousands hectares.

(c) Encroachment into gazetted catchment forests

Due to increase in costs of farm inputs, some farmers have opted to illegally encroach the catchment areas in search for fertile land. Crops mainly found in the reserves include onion, beans, potatoes and of recently Marijuana (*cannabis sativa*) (Kasasian, 1971). Preferred encroached areas are moist lands around water sources.

(d) Illegal timber harvesting:

Illegal timber harvesting in reserved forests and water sources has been reported in several areas. About 1000 pcs. of timber are confiscated from reserved areas annually. With little surveillance done this may be less than 10% of the total illegal timber harvested from these areas. Younger trees, mostly on hilltops and in riverine forests, are harvested causing hill erosion and riverbank degradation.

Prospecting for minerals :

Several spots even in protected areas have been under uncontrolled smallholder mining prospectors. The soils dug out are transported to small water spots or streams for the processing of valuable minerals, blocking water flows and polluting running water with toxic chemicals like mercury. One example can be at Utengulinyi near Ifunda.

Livestock influx:

Livestock influx into the district from several areas of Tanzania has recently been settling in the rift valley and the adjacent the escarpments - areas that are prone to overgrazing and soil erosion. Cattle trafficking are uncontrolled; land use plans emphasized by the new land policy (URT, 1995) may reduce the problem in the foreseeable future.

However, an immediate strategy by the Iringa District Council is to establish livestock routes and thus control cattle movements. Emphasis is also on creating awareness to community and formulation of by laws.

Bird Control:

One of the local methods of controlling birds into rice paddy farms is traditionally the cutting of surrounding trees to control birds nesting and roosting. Most trees are thus cut down in some areas with no consideration of their otherwise positive effect to watersheds.

Irrigation Projects:

Water user projects have sometimes been established without involving all relevant stakeholders around and without proper Environmental Impact Assessments. For instance, rice farms established in Mbarali (upper Catchment of Iringa) was established without proper consultation with other potential water users downstream (e.g. the Tanzania National Park Authority and Tanzania Electric Supply Company). Low flow of water due to improper channelling of water into paddy rice farms have led to periodical drying of the great Ruaha River in the 1990's. Power rationing and high aquatic animal death in the national park has been on the increase since then. Park authorities are thus

loosing their clients due to wildlife loss or out-migrating of animals. A dialogue with stakeholders from the initial project designing and proper planning is the best solution to arrest further degradation.

Wild fires:

Large areas are burned each year in the dry season or close to the first rains by farmers preparing their lands and trying to keep away vermin's. Often, the fires run out of control. Also, honey and wild animal hunters set fires. Establishing fire brigades in the villages has proved to be somewhat effective.

Tanzania Government Endeavour:

As it may be understood from the above the situation is so critical that the government of Tanzania on its own cannot carry the burden of managing the vast watershed areas concerned. However, the government has been engaged in adapting a good number of the relevant policies both related to socio-economic, political and physical aspects. A guiding principle for the future is the need to review and address people's participation as a tool to future development. Another aspect is The need for a transparent revenue sharing on income from natural resources as this will motivate the community to engage positively.

Present catchment and forest area management status

Most of the key catchment and forest areas lie in public land, although several smaller catchment areas are within village's land jurisdiction without any legal status. Even for those areas that are gazetted, management records are lacking and most of the beacons along boundaries are not in place, either they have been removed through encroachment or they are worn out.

Lack of sufficient manpower, lack of sufficient support services and lack of sufficient capital combined with the extensiveness of the forest areas have left the watershed areas without any proper forest management *per se*. No proper management records exist at forest offices and forest operations in themselves have not taken place sufficiently. Nevertheless, some sporadic forest surveillance is implemented in forests where there is an expectation of economic gains.

The new National Forest Policy (URT, 1998) should be backed by a new set of forest laws to safeguard the management of watershed areas with a component of involving the community. The previous forest polices and laws were either blunt or have contradicting statements. E.g. allowing heavy exploitation of forests available even in catchment areas. Policing role of the natural resources staff has never stopped the access and exploitation of the communities to natural resources produce in watershed areas.

The MEMA Projects¹

- An example of participatory natural resources management

Based on the initiatives by HIMA, the MEMA/Danida project in Iringa, funded by the Environment, Peace and Stability Facility (EPSF), are piloting the involvement of the communities in 23 villages. A multidisciplinary approach is taken into account, where three different department policies are tested in designing simple collaborative management plans of natural resources, in forest reserves and in general land to safeguard further degradation of watershed areas.

All stakeholders are identified in the initial stage and are involved through the established village natural resources committees by making their own plans. Policies involved are the forest, wildlife and land policies. However, other policies in fisheries and beekeeping are also in-cooperated in several activities. In particular, the new National Forest Policy (URT, 1998) has opened new paths towards participatory forest and catchment management. The idea is that if communities surrounding a forest land are given certain rights to utilize the forest then they will in turn commit themselves to protect that forest land: 'use-it-or-lose-it'. User rights and sharing of revenues is expected to motivate the communities to take active part in forest and catchment protection, so that instead of one forest assistant being responsible for protecting the reserve, thousands of villagers will become active partners and monitors.

Villages in the Udzungwa Mountains catchment areas have during the last 2 years been involved in participatory catchment area planning supported by the MEMA Projects and implemented by the Forest & Beekeeping Division and Iringa District Council. After consultations between representatives from the communities, local and central government authorities as well as the Department of Natural Resources, it was jointly decided that the forest management plan should encompass the whole catchment forest rather than separate village management areas.

It was also proposed that the communities should draft the initial catchment forest management plan (Cowi, 2000b). In public meetings each of the villages surrounding a catchment forest elected two representatives. These people (men and women equally represented) comprise the Planning Team. The planning team's objective was to produce a draft forest management plan for their respective catchment area. In order to achieve this, the team visited the catchment to assess the status. In addition, consultants provided the team with summaries of the socio-economic survey (Cowi, 1999), as well as the biodiversity and human disturbance baseline surveys (Frontier, 2001a and 2001b).

¹ Udzungwa Mountains Forest Management and Biodiversity Conservation Component (Danida, 2001a) & Community Based Natural Woodlands Management Project (Danida, 2001b).

After the initial preparations the team met to draft the plan. The plan needed to address the following questions:

- How are the communities going to protect and improve the forest resource?
- How should the villages be enabled and organized to manage the forest?
- How are the communities going to benefit from the participatory management?

The draft management plans were passed through the respective village governments and village assemblies and revised accordingly. Then a team of technical experts at district level will scrutinize the plan and propose amendments before it gets its final approval by the village governments. The plan will then be sent to the legal owner of the catchment forest, the Forestry and Beekeeping Division, for approval.

Throughout this consultative process a forester and a community development worker will assist the Planning Team as advisors.

The issue of benefits unsurprisingly attracts a lot of attention in the communities. It is known that little valuable timber remains in the forest, so what are the benefits to the communities for investing time and energy in the management and protection of these catchments?

Benefits from the catchment forests are both direct (Cowi, 2000a) - e.g. fuel wood, medicinal plants and grass for fodder and weaving, and indirect - e.g. water and a favourable climate around the forest. However, these benefits were also obtained before the communities were invited to be active partners in the management of the catchment forest and the plan may even reduce rates of direct harvesting particularly in the case of timber and hunting (Frontier, 2001a and 2001b). It appears that improved harvesting rights are not the only reason that the communities are interested in participating in forest management.

Under the new plan the communities can ensure the sustainable management of the natural resources (e.g. water, microclimate, medicine and vegetables) from which they benefit. They also gain the legal right to enter and pass through the area. Villagers often need to pass through the catchment forest to see relatives or cultivate fields. Furthermore, there could be possible new income to the communities in terms of camping and research fees and from other services provided to visitors. Some products like grass, vegetables, mushrooms, fruits and medicine are traded commercially in the local market, albeit at a very limited scale.

However, the question remains whether these non-cash products will be able to sustain the motivation for the community to continue a long-term strategy towards protection? There is indeed a need to look at those products that are enjoyed by a wider community, be it national or international, and how the local community benefits.

The nation is interested in conserving the catchment area to ensure good and stable water and electricity supply, while the international conservationists are interested in preserving

the biological values hidden in the upper catchment areas. The possibility of ploughing back returns from sale of water and electricity should be investigated as well as an international long-term commitment to support the communities in their conservation efforts.

Some recommendations for the way forward

In order to achieve some of the listed recommendations lobbying and advocacy by all stakeholders is needed. So, there is a need to:

1. Have a common policy framework and laws of safeguarding the watershed/catchment areas, where stakeholders opinions are taken into account.
2. Outdated laws need to be changed, in particular those which put aside the community.
3. Raise awareness among the community on the importance of conservation in watersheds and catchment areas.
4. Emphasized multi-sectoral approach in watershed project design and include Environmental Impact Assessment (EIA) in the initial project formulation.
5. Give more autonomy and support to Local Councils, specifically on capacity building of the existing local structures.
6. Seriousness is needed in using the available by-laws and laws in relation to conservation of catchment areas. Law breakers are often not fined adequately, i.e. one may destroy a forest worth USD3000, but according to loop holes in the laws if found guilty he/she may be fined USD20 or just warned not to repeat again.
7. Finding an alternative use for fuel wood or else reduce use of fuel wood through the application of improved and appropriate technologies.
8. Lobby for the harmonization of different conflicting ministerial policies involved in management of watershed areas.
9. Investigate the possibilities for communities to benefit from capital accrued from the sale of water and electricity, of which both are dependent on an adequately protected upper catchment.

Final remarks

Besides all these management issues concerned with watershed resources problems, there is a vision of a close cooperation between our institutions in Tanzania aiming at empowering the communities to alleviate the problems. But, there is also a desire to harmonize government policies at national level, policies that will be clear to all stakeholders and will help to drive the society towards a sustainable management of watersheds and to improve the rural livelihoods.

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