

Towards An Integrated Water Resource Management In Tanzania: The Role of Appropriate Institutional Framework in Rufiji Basin

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Abstract

Over the past 50 years, changes in the intersectoral water use in the Rufiji basin have been enormous. A growing human population, migration and increasing demands in the basin have culminated this change. The basin, however, still lack an appropriate integrated management approach. This has resulted into inter-institutional conflicts, ineffectiveness, gaps in management imperatives and duplication of efforts. This paper reviews the existing institutional linkages identifies the gap and proposes an appropriate institutional framework which involve questions of institutional arrangements and the assignment of responsibilities among various levels of development, ensures stakeholders participation, accommodates adaptive change and remain self sustainable. The basic argument of this paper is that water management issue is both a question of developing stakeholders' participation and transferring state's competence to water user associations. Such an endeavour requires a complete and complex institutional framework, which would define clearly the role and rule of each stakeholder in water resource management. The paper further argues that; in Tanzania, the institutions that are involved in water management are loosely connected and lack basic coordination and are often at the periphery of the water management agenda – divorced from the water management programs; the predominance of isolated institutions locked up in narrowly defined activities with no interactive learning process will continue to hamper national aspirations to manage water; and that to change this situation will require innovative reforms in national institutions and institutional learning.

Introduction

The evolution of water management institutions has taken a long route in Tanzania, all the way long from pre-colonial, colonial and the contemporary post independence era. Within all this period institutions that are related to water management has remained fragmented or at least loosely connected. Most water management imperatives are techno-supply oriented, somewhat devoid of the intersectoral stakeholder participation and blind of institutional arrangements. Institutions have been left to evolve on themselves with no much-coordinated mechanism. This has resulted into the bypass of local traditional institutions. In the Usangu plains of the Rufiji basin, several predicaments have befallen the water management initiatives that are directly linked to the lack of coherent institutional arrangement. As a result, several misuse, abuse and conflicts have been common in the basin. This has culminated into the political concerns over the water use in the basin with the greater responsibility being laid on the irrigators and pastoralists. Institutional arrangements are not so clearly identified as a problem, nor are they connected to the inequitable allocation of water in the basin.

The basic argument this paper is that water management issue is both a question of developing stakeholders' participation and transferring state competence to water user associations. The paper also examines the constraints of water user associations in fostering water management and the potential role of informal local institutions in enhancing sustainability of the same. Such an

endeavour requires a complete and complex institutional framework. Finally the paper proposes an appropriate institutional arrangement and the due recommendation to attain the same.

Water Demand in Usangu

The Usangu plains have diverse multi-sectoral water use. Irrigation takes the lion's share of the water in the basin. Most farms are located on the upper side of the alluvial plains and include three large state-owned farms (Kapunga, Mbarali and Madibira) and a large number of traditional and improved smallholders. The large state farms do not irrigate during the dry season, although irrigation canals continue flowing to the unploughed fields and across the farms throughout the year. Most of the smallholder farmers do not irrigate during this season although they retain their share of water. Some of these farms are down stream of the large state farms. There are, however intensive dry season irrigation in the upper courses of the rivers, mainly for high-value crops such as vegetables onions, tomatoes, beans and green maize. This dry season irrigation supports considerable livelihoods in the basin.

There is no problem of water scarcity during the wet season, even in the dry years. However, during the dry season, villagers along the rivers in the lower catchments divert water to the irrigated fields and to the villages for consumptive domestic uses as well as for brick making, both commercial and domestic. Down the stream, most rivers dry up, leaving only five big rivers to maintain the flow throughout the year. The big rivers retain very minimal flows in the dry season and towards the end of the dry season the Great Ruaha River, the main canal that drains into the Ihefu wetland is very small. This swamp is a maze of canals and lagoons and it is described as a simple reservoir with a fixed spillway (Lankford, 2000, SMWUC 2000). It consist of the rock bar at the exit which when water level is low, no water leaves. As this happens, the Great Ruaha River in the Ruaha National Park becomes dry. This has brought a lot of environmental concerns, for example in 1996/7 when an extensive mortality of hippopotami and fish was reported. Downstream of the great Ruaha River, beyond the Ruaha National Park is the Mtera reservoir. This reservoir has both political and economic concern. It generates 80MW and also acts as a regulating reservoir for the large Kidatu hydropower scheme downstream that generate some 204 MW.

The national concern about the Usangu basin started in 1995 when the power had to be rationed due to low water levels at the Mtera reservoir. Water shortage had been previously experienced in 1992 and 1994 (Danida/World Bank, 1995). This shortage was attributed to the decreased flows in the Great Ruaha River and more specifically to the reduced dry season flows from the Usangu wetland. Local concerns however, had started earlier when the Ruaha River in the National Park dried up in 1992/3, and recurred in 1993/4 for 3.5 weeks, 1994/5 for 6 weeks, 1997/8 for 8 weeks and in 1998/9 (Lankford, 2000). The Ihefu wetland, although not as topical as the Ruaha National Park, is equally important because if it dries up, as sometimes claimed, then an important ecological resource for both resident and migratory species may be lost and the fisheries-based livelihoods attached to it may suffer.

The dry season smallholder irrigation in the Usangu plain is rhetorically linked to the drying up of the Ruaha River and to the water shortage at the Mtera hydropower station. However, a critical contextual analysis would show that in the past, even in the best of the years, dry season flow rates from the Usangu plains were minimal (0.5 - 1.5 m³/sec) and only made a marginal contribution to the Mtera Dam. Consequently, the contextual investigation of the drying up of the river in the National Park shows that the river dried up in 1947, 1954 and in 1977 and possibly in other years as well. With the increasing political pressure of reviving the annual flows of the river, and in search for the simple causal-effect conclusions about the changing water availability, several studies have identified several causes for the same. Danida/World Bank (1995) for example, attributed the shortage to the irrigation abstraction and deforestation and general degradation of environment. Charnley (1997) attach the shortage to the increased livestock and consequent overgrazing. It is interesting to note that many scholars tie the shortage to a single

simple explanation without a critical consideration of the fact that river basin management is a complex set up, which indeed involves multiple users who in essence must be bound to some institutional framework for sustainably managing the water resource. While Lankford (2000) agree in principle, and echoes the position of Danida/World Bank (1995) that “No single factor can be picked out as the only responsible”, none has actually advocated for a revised sound institutional framework which would foster an equitable and sustainable water management.

The Current Water Management Institution Framework in Tanzania

Tanzania is a country with legal pluralism, that is, the legal system is composed of statutory as well as customary laws. The state machinery and the wider scholarly opinion seem to ignore the latter at the expense of the former. For example, Boesen et al (1999) argue that the statutory laws in Tanzania are often bypassed especially by private enterprises and donor agencies, the majority of whom are outsiders who uncritically accept official rhetoric such as “all the land and water belong to the nation”, and therefore such resource can be for whatever purposes and by whatever persons the government allows¹. This position does not inherently encourage local initiatives to water management but rather side-stream them.

Considering the past would pave us a better way to view the present. The pre-colonial Tanzania societies were basically governed by informal rules in matters related to resource use. The pre-colonial era customary rules were not static. They were subject to some changes as a result of peaceful interaction between various ethnic groups or due to conflicts, warfare and conquest arising between enamouring groups, impact of long distance trade, population movement and so on (Boesen et. al.1999). Moore (1989), Odgaard (1997) and Koponen (1995) for example explain how gained experiences, changes in leadership regimes, increased pressure in resources and internal competitions exerted changes within the customary rule systems in the pre-colonial societies. The traditional societies were therefore, governed by the set of dynamic, change-sensitive and community-based resource management initiatives. This provides a potential for adaptive change to the present water management efforts, given a well-designed institutional framework.

The coming of the colonialists did not immediately deter the informal water management arrangements. It was up to early 1900s when the demand for water started increasing along with the goals of the colonial economy. Government efforts to curb water problems started therefore in the days of colonialism. In 1910 the German colonial government started to investigate the feasibility of irrigation agriculture (URT, 1999). It was however the 1923 Water Ordinance that marked the start of the Statutory Water Law in Tanzania (the then Tanganyika). Water by-laws to oversee water management were therefore started in 1926 basically to favour the colonialists. In assessing agriculture- pastorals portioning, the former was somewhat favoured as compared to the latter. It is basically in the light of this agriculture-pastorals hangover that most commentators have rhetorically perpetuated the view that livestock are a menace to water management in the Usangu without providing an alternative to the same.

The demise of the colonial rule did not signify changes in the state policies. In 1967 Arusha Declaration was launched. This gave Tanzania more a socialistic economy that discouraged private ownership of natural resources and insisted on the collective ownership of resources. After the Arusha Declaration (1967), the first steps were taken to create a policy framework incorporating natural resource management into the broader national framework of sustainable social and economic development (Danida 1989). The wider national socio-economic framework required a collective resource use and ownership. The government through the ministry of water started the management of water under the river basin approach. The main driving force for this approach was the increasing scarcity of water against increasing needs. These initiatives attenuated the progress of informal water management arrangements. One of the major national policies in the post colonial era that has interfered with customary arrangements is *Ujamaa* policy,

the implementation of which meant people had to be moved from their original clan set up and be resettled in away from their home areas in villages. This resulted into divorced customary arrangements for land and hence water management.

A critical overview of the existing institutional linkages would attest that Tanzania has various formal and informal institutions for water management and that several government, private and donor agencies are interested in water management, especially along the Rufiji and Pangani basins. Furthermore, Tanzania has of recent, formulated policies and laws to cover various aspects of water use for solving water problems and putting in place institutional and legal mechanisms and stakeholders' participation. Seemingly, the existing water management conflicts and problems would derive the solution from the revised water policy. While the water policy has been reviewed and is almost in use, efforts to amend the water law (Water Regulation Act) have not yet started. Having the former without amending the latter is synonymous to keeping a toothless dog! Even if water policy and laws were effectively revised to the best standards, there would still be an extra mile to go. This is not a panacea, as the implementation of the same will require both a sound framework and time for adaptive institutional change.

The water management initiatives in Tanzania are characterized by an institutional gap. The institutions that are involved in water management are loosely connected and lack basic coordination and are often at the periphery of the water management agenda ↓ divorced from the water management programs. There are several institutions that are involved in water management in one way or another. Water supply is under the regional water engineers, irrigation under Ministry of Agriculture and Food Security, and hydropower under TANESCO in the Ministry of Energy and Minerals, with almost lack of coordination between them (DANIDA/World Bank, 1995). Ministry of Natural Resources and Tourism is responsible for conservation of biodiversity in water bodies while Planning Authority oversees construction of resort facilities and hotels along the shorelines of lakes, rivers, islands and oceans. The Ministry of Industry and Commerce is responsible for industrial discharge to water. The present institutional framework ignores informal institutions, especially the traditional by-laws, norms and restrictions. According to Kaize- Boshe et al (1994), such predominance of isolated institutions locked up in narrowly defined activities with no interactive learning is likely to continue to hamper national aspirations to manage water.

Looking from the wider context, the history of water management in Tanzania can be envisaged as follows, at least from the Arusha Declaration to present;

- 1967- Abolition of water user fee
- 1971- Launching of 20-year rural water supply program
- 1972 –Abolition of local governments
- 1974 –Introduction of Water Utilization Act (Control and Regulation)
- 1975- Separation of Water Department and Irrigation Dept
- 1981- Amendments of Water Utilization Act (Control and Regulation)
- 1981- Designation of Tanzania into 9 Water Basins
- 1991 -Institution of National Water Policy
- 1991- Establishment of Rufiji Basin Water Board
- 1994- Review of water user fee
- 1995- World Bank Appraisal
- 1996- Start of RBM/SIIP
- 1999- Draft New National Water Policy
- 2001- Merge Ministry of Water with Livestock

The above trend gives a clue on the fragmented water management institutions in Tanzania. The growing influence of external forces that exclude local community in decision making is also noted, for example, separation and merging of various departments to meet political requirements at the peril of the management imperatives. The exhaustive list does not consider the river basin

approach despite the fact that water resource follows the course of a river basin, without preference to geo-cultural boundaries explained above. Nor do such metamorphosis of water institutions bear in mind the unique role of the informal, community-based institutions.

The Water Utilization Act (Control and Regulation) remains the supreme law on water management in Tanzania. Other pieces of legislation touching upon water matters in Tanzania include the Waterworks Ordinance, Cap.128 and Urban Supply Water Act, 1981. Both criminal and civil laws guarantee the sanctity of water management organs under Water Utilization Act. However, regulation of traditional water abstraction remains a problem because of lack of definite customary laws. These can be legally regulated through various possibilities; creation of village and District Council by-laws, forming companies under Companies Ordinance, Cap.112, forming cooperative societies, forming Water User Associations under Water Utilization Act (Control and Regulation) or through courts of law or ward tribunals.

Water Management in the Usangu Plains- The Case Study

Water management institutions in the Usangu reflect the wider framework of the nation as explained before. Several government organizations and formal institutions are dominant although in the actual sense, such formal institutions do not guide day-to-day human interactions with water. Some institutions that influence water use and management in the Usangu include: Usangu farmers and pastoralists, both native and migrants, River Basin Management and Smallholder Irrigation Improvement Project (RBMSIIP), Zonal Irrigation Unit- Mbeya, Rufiji Basin Development Agency (RUBADA), River Basin Water Office of the Rufiji Basin (RBWO), Ministry of Agriculture and Food Security through its extension agents, training and research², NGOs, Community-based organizations, Grassroots organizations and self-help groups, among others. Most of these institutions are governmental ones and are normally backed by formal rules and constraints. The village-based, local informal institutions are inconspicuous and are often ignored. NGOs, although are very influential in water management and service delivery (Suleiman 2002), they are not fully involved in management imperatives. The ongoing local government reform programs seem to have bypassed the water sector. The issues of water management are still centrally handled. This is culminated by the lack of basin management approach. Many water use conflicts have evolved due to this weakness.

Act. No 42 of 1974 allows for declaration of an area as a river basin and the establishment of basin water board. Management of water resource in Usangu basin is therefore legally a responsibility of two bodies: River Basin Water Board and the Rufiji Basin Development Authority (RUBADA). The two bodies however, have the same responsibility in the same area of operation (SMWUC 2000, DANIDA 1998 and Faraji & Masenza 1992). This duplication of authorities is the source of conflicts and constraints in the proper management of water resource in the basin, since it is not known which of the two bodies has authority over the other and the Acts that established them are silent on this issue. Such inter-institutional conflicts always result into ineffectiveness, gaps in management imperatives and duplication of efforts. RBWO is the most conspicuous water management organ, but it has no much influence in the grassroots. The office has a sub office in district headquarters and not in the villages and wards where people are. The office has no research arm, thus causing the implementers to base on findings from other researchers and rhetoric from conflicting sources. While the theory of intersectoral river basin management requires a participatory stakeholders' involvement, this does not seem to be the case in the basin. The stakeholders are not equally represented in the Water Boards and authorities and the decisions thereof. For example, DANIDA/World Bank (1995) noted that of the 11 members of the Rufiji basin board, 8 are drawn from one category of stakeholders, i.e. civil servants. Basically, civil servants have less to do directly with water management. Real users such as local irrigators, pastoralists and TANESCO are not adequately represented.

The Water Utilization Act No.42 of 1974 (Control and Regulation) as amended in 1981, declares all water to be the property of the Republic, and designates water as “National Waters”. The Act created a novelty in the form of Water Users’ Association (WUAs), which are viewed as important conflict resolution tools and seek to reduce the number of water right holders for effective purpose of coordination of water use. (WUAs) are a potential organ to take over all Water Rights now held by government departments, public corporations, local government authorities etc. Unregistered holders of irrigation works abstracting water in accordance with their customary law are being encouraged to regularise their water abstraction by forming Water Users Associations and acquire water rights owned collectively under the name of their WUAs. WUAs are legally mandated to enforce conditions contained in water rights as against the association. They are thus obliged, like any other water right holders, to return water used to the stream or body of water from which it was taken; to ensure that water is substantially undiminished in quantity and that water is not polluted during use and if so treated accordingly before being returned back in the stream.

The wider scholarly opinion seems to accentuate that WUAs are a long awaited solution to intersectoral water management. However, a closer observation reveals that irrigators, with little or no acknowledgement of other users, dominate WUAs. WUAs for example, do not take into consideration gender dynamics and imbalances, which normally, characterize resource use in Tanzania and in the Sub-Sahara as a whole. WUAs are not necessarily pro-poor, they are normally formed by the high and mid-class villagers that can both express themselves and win the support of the equally rigid water right acquisition procedures. A critical concern arises; do WUAs meet the expectations of the poorest of the poor in the villages? If so, to what extent? From whose agenda do the WUA arise and operate? Who are the ultimate beneficiaries of WUAs? Not many WUAs have brought together conflicting water users, like for example, pastoralists and irrigators in the Usangu basin so far.

While the RBWO is busy formalizing and encouraging formation of yet more WUAs, deliberate efforts to learn from and promote local informal institutions seems to be lacking. The extreme paradigm in such diverging water management imperatives may be when the ultimate resource users ignore the formal arrangements and sustain their local traditional institutions. Recent is resolution of water conflicts which, despite the establishment of ward tribunals, legal courts and WUAs, villagers still prefer their traditional arbitration approaches through the local informal organs (SMWUC 2000). This is more so because the formal institutions of water management are not only rigid but also reluctant to paramount to opinions from the grassroots. Changing this situation requires innovative reforms in national institutions entrusted with water management and institutional learning.

Proposed Institutional Framework

The present institutional linkages need to change so as to conform to the needs of intersectoral water management. Institutions must be able to serve as mechanisms resolve conflicts. When institutions fail to resolve conflicts they must either evolve or be abandoned³. Institutional change, however, is not a simple one-way process. Several factors bring about or accelerate the process of institution change. These range from economic factors such as fundamental changes in relative prices; which, according to North (1990) are changes in ratio of factor prices (i.e., change in the ratio of land to labour, labour to capital, or capital to land), changes in the cost of information, and changes in technology. Equally important here is the political will and deliberate community capacity building to foster the change. Other economic factors are changes in the bargaining power and changes in the tastes and preferences. Lobby groups, NGOs, CBOs and the active civil society can also effect the change, especially with time. Accidents, learning and natural selection can influence changes in the informal constraints, namely cultural characteristics of a society. Bandaragoda (1998) advocates that taking due care to ensure that the more democratic and participatory approaches are pursued reduce inequity in the future frameworks. While this is a too

important change to be left to the forces of nature, deliberate efforts need to be taken to foster the change.

Informal institutions have a potential of influencing the formal institutions and formalizing its rules. After years of tradition, informal practices also become “rules” in their own right, when they are accepted by the society. This conform to the fact that in many developing societies informal rules have a tendency to override formal rules, making the enforcement of the latter very difficult and thereby affecting their performance (Bandaragoda 1998). Seemingly, North (1990) advocates for the kinship system as the strongest institution. Basing on the Posner's model of primitive society (1980), he emphasizes the importance of kinship ties as the central insurance, protection, and law enforcement mechanisms of primitive societies. He further cites Bates' study of Kenya (1989) which equally focuses on the changing pattern of kinship ties in the context of political/economic conditions as the key to understanding the evolving institutional constraints of a society in rapid transition from a tribal society to a market economy. Informal institutions have been interfered by colonial legacy in almost all parts of Africa. The present phenomena are more or less a hangover of the colonial reflection and understanding of African traditional institutional set up. Africa is characterized by the creation of new formal organizations once such a need is felt, the majority of which are research or related organizations, and often operate in isolation and in sectoral basis, bound to the terms of reference and the objectives of their establishment and never willing from the formal ones. This results in under-utilization of the available expertise and equipment. Mugabe (1994) noting such arrangements, suggests the transformation /reformation of major institutions, for instance the research institutions. One can therefore not ignore informal institutions and expect much from the formal ones.

Most African countries have of late engaged in the review of the institutions for management of the water sector. South Africa has emerged as a leading example in these reforms. The pathway to this change is worth noting. The principles were translated, first into statements of policy (White Paper on a National Water Policy, 1997) and thence to legislation (Water Services Act, 1997), followed by the resources management framework. The basic approach was for water resource management to occur at the catchment level, and an institutional framework was being established for this purposes. As a result, South Africa is currently fairing very well in water policy management (Muller 2000). Some of the basic water management institutions in South Africa are; Catchment Management Agencies (CMA) which plays a coordinating role regarding water related activities and water management institutions, develop and implement catchment management strategy and encourage public participation; and Water Use Association (WUA) which is a statutory body established by the minister and operate at the localised level with exceptions especially when the length of the river managed by a WUA is so long that it relates more to the regional than local interest. WUA is cooperative associations of individual water users who wish to undertake water related activities for their mutual benefits.⁴

Water resource management functions that should be approached in an integrated manner include resource allocation and protection, use and conservation, monitoring, planning, development and operation. The complexity of an integrated approach to water management reinforces the need to assess competing water-uses on the basis of optimum rather than simply beneficial use. The most appropriate unit in which this can be done is either the catchment, part of a major catchment or a water system in which a number of catchments are linked. Whatever arrangement is introduced, it must be clear that it will remain subject to national authority.

Sustaining sound water management require commitment, sound enforcement mechanisms and cost effectiveness. Given the nature of the water funding mechanisms in Tanzania and in the Sub Sahara as a whole, informal institutions stands a better chance of managing local water resource. It is worth noting that an institutional environment that induces credible commitment entails the complex institutional framework of formal rules, informal constraints and enforcement that together make possible low-cost transacting. Enforcement is normally an expensive venture and may be

uneconomic altogether if the cost of enforcing a given by-law is far higher than the costs of the feared loss thereof. However, there are immense economies of scale in policing and enforcing agreements by a polity that acts as a third party and uses coercion to enforce agreements. The third party may be formal or informal, although the former would conceivably discharge its due duties more effectively. According to North (1990) third party enforcement involves a neutral party with the ability, costlessly to be able to measure the attributes of the contract and, costlessly to enforce agreements to a degree that made it costly to violate the contract. These conditions, however, are stringent and seldom. It is costly to measure the attributes; therefore enforcement remains a costly venture. A sound mix of formal-informal institutional framework can therefore effectively enforce the constraints as well as reduce the costs of operation. More so, the informal arrangements would help sustain peace during and after the enforcement.

Needless to say are the issues surrounding abuse of water rights. In most countries water is considered a public good, but individuals can obtain private rights over water by tradition or application. The riparian approaches to water allocation gave a way to the existing water rights, which are often a main constraint and a source of many problems in the optimisation and introduction of intersectoral water management of river basins (van Hofwegen, *ibid.*). The name in itself is misleading and attaches a sense of pride, superiority and ownership to the holder on the public resource that virtually is a right to all. The benefactor is just a steward and a borrower to use it in the most sustainable way and return the remaining water to the stream. Some countries have reviewed the phrase and have designated this favour as “water licence”. The water rights are practically never revoked nor reviewed to meet the growing demand of human and environment. Since most water rights were granted several years ago, there is a need to review all of them and develop a clear water use flow diagram to each basin and sub basin, so that this favour should be given to those who really deserve it in terms of quantity and quality after the basic water for free has been allocated to all people, including the poor.⁵ The water favour holders should pay duly to establish a revolving fund to manage the same in the future. The desired institutions should therefore be able to foster effective development and implementation of laws and regulations; enable effective constitution and development of relevant institutions; regulate decision making based on interests of all institutions, including informal ones; enable all stakeholders participation in the decision making; enable and regulates effective control and sanctioning of violations and enable and regulate private sector participation.

This paper does not believe in designing one single structure of institutions for water management, since doing that would be claiming too much! Molden, Sakthivadivel and Samad (2000) argue that there is no single best institutional model, as institutional requirements vary depending on the phase of development of the basin, and that an important feature of well-functioning set of water management institution is the ability to adapt to changes. Institutions must be dynamic entities that change with the changing phase of the development of the river. What is proposed here is that at any point in time the dynamic, open and sustainable institutional framework should be pro poor, engendered and free of class-race-ethnicity bias.

In the national water law, water should be set aside to fulfil basic consumptive and productive needs of poor people first (Schreiner & van Koppen 2000) and the poor in Usangu are those who irrigate their little fields in the dry season, water their livestock, lay bricks for money and fish for livelihoods. The better off members of community grow large fields and trade in rice. In Tanzania there is no water for free arrangements that would ensure that even the poorest of the poor access water, at least for basic needs. This shows that, in future, and with the increasing trend of increasing economic gap, the poor will not access water at all and will be extremely marginalized, if the situation is not checked. This deprivation would mean denying them their basic and only source of livelihoods.

Conclusion

Sound intersectoral water management of river basins require a sound understanding of the physical, economic and institutional linkages of water resource system. In the case of Usangu, such linkages are imperfectly understood. Furthermore the common-man understanding of the water management in the basin is still full of rhetoric and political dynamisms. Such perceptions will not solve the problem of water management, nor will it provide the solution to the desired situation downstream. The water management in the area should be viewed as site-specific, and the specific institutions be incorporated in such initiatives. In the light of all these, the marginally poor should be prioritised and the downstream needs for environmental flows should be valued. The notion that formalization of the informal arrangements should be avoided and the latter should be equally incorporated in the process.

Policy Implications and Recommendations

The new water policy in Tanzania provides for the development of sustainable means of managing water resources, among which are catchments and wetlands. The assumption is that once these sources are properly managed, water will be available for intersectoral use as well as for the flow downstream to the Mtera dam. With the increasing population in the Usangu basin, management imperatives that bypass institutional arrangements would operate only in a short span. The available water may be poorly distributed among users, the result of which is overuse, conflicts and basic denials to livelihoods. While the government is exonerating itself from supply and management operations, it remains solely responsibly for coordination and regulatory mechanism, the processes both of which require sound institutional frameworks. It is recommendable here that the Water Utilization Act No.42 of 1974 (Control and Regulation) amended in 1981, should be reviewed and amended to empower the new water policy.

Consequently, the various fragmented pieces of water management legislation should be harmonized and coordinated. The conflicting and contradicting institutions should be reviewed and harmonized. Those that deserve to be abandoned should be abandoned for the benefit of common good. Formulation of new institutions and laws should not be taken for granted as a panacea. Any new formulation of law should start with a thorough inventory of existing laws; i.e. assembling the different fragments of law that are related to water management, and coordinating institutions formal and informal, and the building up of databases on institutions. Deliberate encouragement of public participation in water management and creation of sufficient awareness of community on the detrimental effects of poorly managed water resource should be effected. Capacity building to local communities should be carried out to enable them identify their roles and obligations in water management. Networking and collaboration among various stakeholders; government agencies, private sector, NGOs, CBOs and grassroots organizations should be encouraged. Any anomaly in water management should be thoroughly discussed by all stakeholders and the due recommendations should be effected. Existing local institutions especially the informal traditional arrangements that favour water management should be proactively tapped and be incorporated in the wider management imperatives.

Endnotes

1. Within the Usangu basin, there are several Agricultural Extension Staff, the Ministry of Agriculture Training Institute –Igurusi (MATII) and the Southern Highlands Agricultural Research Institute- Uyole.
2. The authors argue in the light of examples cited by Lane 1990, Kiwasila & Odgaard 1992 Mustafa 1993 Mwaikusa 1994
3. C.f. The Institutions in the Murray –Darling basin in Australia; It is point blank that once institutions fail to resolve conflict, they must evolve or are abandoned straight forward, for keeping such ineffective institutions is not only costly but also time wasting. (See Hatton MacDonald and Young, 2000; Institutional Arrangement in the Murray –Darling River Basin)
4. For details of the South African Water Policy review and success, see Muller, M.(2000) “ How National Water Policy is Helping to Achieve South Africa’s Development Vision” and Karodia, H.and D. Weston “South Africa’s New Water Policy and Law”, both in Abernethy (2000) (Ed.) *Intersectoral Management of River Basins (IWMI)*
5. In South Africa, the new National Water Act of 1998 guarantees, through the provision of reserve that sufficient water to provide minimum of 25 litres per person per day is set aside before water is allocated for other purposes..(Schreiner & van Koppen 2000)

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