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**IMPACT OF LEGISLATION ON COMMUNITY
BASED MANAGEMENT OF WATER FOR
INFORMAL IRRIGATION IN SOUTHERN
AFRICA:**

Case Studies of Zimbabwe and Tanzania

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ABSTRACT

This paper analyses the impacts of water and environmental laws on informal irrigation farming in Zimbabwe and Tanzania. It explores how legal frameworks in Zimbabwe and Tanzania have for years hindered the development of community-based management of water for informal irrigation purposes. This is illustrated in the article by a detailed analysis of water and the environmental legislations of Zimbabwe and Tanzania. The actor-oriented approach theoretical framework guides the analysis of the data presented in this article. The case studies of Zimbabwe and Tanzania serve to illustrate that legislation in the Southern African region has yet to reach a point where it promotes sound community-based management of water for informal irrigation farming. It is also not clear how new water acts, such as the one introduced in Zimbabwe in 1998, will promote community-based management of water among informal irrigators. Given this scenario of legislation that does not promote community based management of water by informal irrigators, the participants in this economic activity have resorted to ignoring legal provisions and have, in most cases, developed their own local rules and regulations that govern management of water resources in their localities. This article contends that it is time governments in Southern Africa accepted informal irrigation and enacted laws that encourage the sustainable management of water by the local communities. Enacting laws that impede informal irrigation, as is the current situation, will sideline local communities from taking an active role in managing natural resources.

1. INTRODUCTION

Since the colonial period in Zimbabwe and Tanzania, environmental and water legislation has had little or no regard for informal irrigation farming. Legislation pertaining to water use, not only disregards informal irrigation, but also criminalizes it (Chenje and Johnson, 1996). The main reason behind disregarding informal irrigation is because both academic literature and policy making on smallholder irrigation in many Southern African countries including Zimbabwe and Tanzania have tended to focus exclusively on formal irrigation, that is, irrigation schemes initiated and managed by the governments (Bolding *et al.*, 1996). Moreover, engineers have tended to adopt a strict definition of irrigation farming that excludes much of Africa's informal irrigation systems (Adams, 1992).

As a result of laws that do not recognize informal irrigation in Tanzania and Zimbabwe, there has not been an attempt to place the management of water resources in the hands of local communities that practise informal irrigation as is the case with community-based management of wildlife under the communal areas management programme for indigenous resources (CAMPFIRE) in Zimbabwe (Thomas, 1991; Murombedzi, 1993). Informal irrigation refers to plots of land initiated and irrigated by independent farmers or as communities using their own local technology without assistance from the government (Adams and Andersen, 1988; Roberts, 1990; Yabes, 1992; Kujinga, 1996). In some cases informal irrigation is also referred to as traditional or indigenous irrigation (Adams and Andersen, 1988; Underhill, 1990; Adams, 1992; Yabes, 1992; Kujinga, 1996).

The next section presents the analytical framework used in this article.

2. ANALYTICAL FRAMEWORK: THE ACTOR-ORIENTED APPROACH

This article uses the actor-oriented approach to analyse the impact of legislation on community based management of water for informal irrigation and the reaction of the irrigators to the different pieces of legislation that are aimed at controlling their activities (Long, 1992; Long and van der Ploeg, 1994). The actor-oriented approach places more emphasis on local actors as influencing and shaping development processes and outcomes in their areas (Long, 1988; Long, 1992; Long and Van der Ploeg, 1994). The social actor is the entry point in an actor-oriented analysis. The term "social actor" is a social and cultural construction, where individuals and institutions are metaphorically transformed into social actors (Magadlela, 2000:14). In this article social actors refer to those communities and individuals involved in informal irrigation

farming who are playing a role in ensuring household food security and in the management of land and water resources. Actors in this article also include governments which pass water and environmental laws that impact on community-based management of water for informal irrigation farming. The actor-oriented approach is a suitable tool for analysis since it facilitates the identification of the different actors, their interests, objectives and organizing strategies as they interact with other actors (Magadlela, 2000:12).

The enactment of legislation by governments in Southern Africa that impacts on informal irrigation is a form of intervention by the states in the management of water resources by communities which practise informal irrigation. Such forms of intervention present to farmers new sets of values that they may or may not internalise, or adopt and adapt to their situations automatically (Magadlela, 2000:12). The meanings that the actors are expected to attach to such interventions, and how they develop or attach their own meanings to it, demand that one uses an analytical framework that gets close to doing justice to the complexity of such intervention situations. The actor-oriented perspective and its related research methods help interpret different responses at all levels (Magadlela, 2000:11).

Social actors or institutions should be seen as having the ability to process and formulate strategies to cope with life's difficulties as those caused by drought and poor soils, which could have influenced a number of local communities to embark on informal irrigation farming. This introduces the concept of human agency, the idea that actors are knowledgeable and capable of devising ways of coping with life, even under the most extreme circumstances (Long, 1992:22). Though a number of countries in Southern Africa have enacted different pieces of legislation that discourage the practice of community-based management of water for informal irrigation, the actors involved in this economic activity have not, to a large extent, stopped practising this economic activity which, according to them, is viable. In a number of instances as shall be seen later, informal irrigators, as capable actors and agencies of change, have actually developed their own rules and regulations that govern the use of water resources in their irrigation operations (Adams, 1992; Kujinga, 1996).

At the core of the actor-oriented approach is the concept of lifeworld (Schultz and Luckmann, 1973 cited in Arce and Long, 1992:212; Seur, 1992). This refers to the way actors view their situation in a particular place, together with the constraining and enabling factors around them. It has a lot to do with their view of themselves, their situation, and their everyday lives and encompasses how they see the outside world and interpret this outside world and new innovations using conceptual tools acquired in their world view. The concept would be useful to analyse how the women practising informal irrigation view their situation (Magadlela, 2000).

The following section gives a background of the practice of informal irrigation in Zimbabwe and Tanzania.

3. BACKGROUND TO THE PRACTICE OF INFORMAL IRRIGATION IN ZIMBABWE AND TANZANIA

In Zimbabwe, informal irrigation has been practised for over 100 years. Roberts (1990) and FAO (1993) estimated that there is over 20 000 ha of land under informal irrigation in Zimbabwe. Despite this economic activity being widespread, the government of Zimbabwe does not officially recognize it (FAO, 1993; Magadlela, 1999). This means that those who are practising informal irrigation are illegally doing so. In all formal small-scale irrigation schemes in Zimbabwe, farmers participate in the management of the schemes including water distribution through Irrigation Management Committees. The Irrigation Management Committee of each scheme is responsible for maintaining discipline among farmers, the control of water distribution, the maintenance of all irrigation structures and the collection of maintenance fees (FAO, 1990; Magadlela, 2000). Irrigation Management Committees have been set up in formal schemes because they operate in government-controlled situations. There have not been plans to encourage informal irrigators to set up their own irrigation management committees that are responsible for managing water resources. Such committees can be given training that ensures that water is being managed properly and that good agricultural methods are practised by the farmers.

Machiwenyika (1923), cited in Beach (1995), describes the nature of the technology used in informal irrigation as follows:

"There is also something interesting which used to be done by Manyika people in the north. They used to hoe their fields in early winter, in places where they knew water could reach easily. The fields were hoed along the rivers, and from these rivers they dug small furrows, which aided them in leading the water to their fields. Some of the furrows came a long distance to their fields. Thus irrigation began before the coming of the Europeans. They carefully irrigated their fields in which they sowed their crops: peas, pumpkins, mealies and other roots."

Informal irrigation farmers in Zimbabwe now grow crops for household consumption and for sale. The crops grown include beans, tomatoes, wheat, onions, carrots, sugar cane and lettuce (Kujinga, 1996; Bolding, 1999). Since some of the crops are now being grown for sale, informal irrigation has become a form of employment for farmers who practise it.

In Tanzania, there is written evidence that by 1840 traditional irrigation was being practised by the Sonjo and the Wachagga tribes (Adams and Andersen, 1988). Informal irrigation in Tanzania has been practiced in areas such as Mount Kilimanjaro, Mount Meru, in the northern Tanzanian Rift Valley between lakes Manyara and Norton, and on the floodplains of major rivers (Adams and Andersen, 1988; Clark, 1990; Underhill, 1990; Adams, 1992). The technology used in informal irrigation involves the use of water carried in earth canals bifurcating from the main stream with low earth and stone dams. In some cases an extensive furrow systems fed from the mountain streams, together with water storage ponds, have been developed around Mt Kilimanjaro (Adams and Andersen, 1988). Crops grown include bananas, coffee, cereals, sorghum, tobacco and vegetables.

The following two sections explore the impacts of legislation on informal irrigation in Zimbabwe and Tanzania. The first section looks at the impacts of colonial and post-independent legislation in Zimbabwe. The section that follows does the same for Tanzania. The sections are not a comparison of the impacts of Zimbabwean and Tanzanian laws on informal irrigation, but an analysis of the impacts of legislation on informal irrigation in each of the two countries.

4. IMPACTS OF LEGISLATION ON INFORMAL IRRIGATION IN ZIMBABWE: A HISTORICAL OVERVIEW

In Zimbabwe, from the 1920s up to 1998 there existed a legal and administrative framework which governed the ownership, access, control and use of agro-water in favour of sectional interest: white commercial farming, industry and mining. The legal denial of productive water for irrigation to communal people inherited by the Zimbabwean government from the colonial regime led to low productivity, poverty and environmental degradation in communal lands (Kambudzi, 1997:6). In Zimbabwe, legislation which controls the utilization of water for agricultural purposes was first passed by the colonial regime in 1927. The colonial government of Zimbabwe considered informal irrigation as environmentally destructive and inefficient, hence its banning. Such laws were passed without looking at ways of improving the practice of informal irrigation (Roberts, 1990).

Another Water Act was passed in 1976 and the post-independent government of Zimbabwe inherited this version of the Act. The Water Act of 1976 remained in existence until 1998 when a new water act was passed by the parliament of Zimbabwe. The Act came into effect in January 2000. The 1976 Water Act played a major role in denying local communities in communal and resettlement areas legal rights to the use of water for irrigation purposes. The 1976 Water Act did not take into consideration that within communal areas there were a number of communities that had a tradition and history of using water. This historical and traditional right to water use was disregarded (Magadlela, 1999). As a result of this, it was difficult for the government to recognize informal irrigation and to adopt better ways of upgrading this type of farming so that sound management practices could be adopted by those communities which have been practising this type of farming for years.

Under the 1976 Water Act, official permission was required for secondary use of water that included irrigation farming. This meant that an individual or a group of people who wanted to embark on irrigation farming had to get a water right that was granted by the Water Court in Harare (Bolding, 1997). In most cases, people in the rural communities could not get water rights because there was concern by the Rhodesian government that increased use of water by informal irrigators would affect downstream flow to the disadvantage of formal irrigators who were in most cases white settlers. Moreover, only a person with title deeds to land could apply for and be granted a water right. Since communal people do not have title deeds to land it was thus difficult for them to get water rights. The other arguments advanced against informal irrigation are that since the communities that practised informal irrigation do not have water rights, they should not be allowed to use water which they do not pay for (Magadlela, 1999). Arguments against informal irrigation were advanced throughout the 1980s and 1990s. The consequence of this has been to deny informal irrigators a chance to manage and benefit from the utilization of water. In Gutu district of Masvingo Province, some households were banned from practising informal irrigation as they were said to be illegally doing so (Roberts, 1990:20).

The colonial and the post independent governments of Zimbabwe never thought of implementing what Elias (1996:1) proposed:

"Those who cultivate land, on any scale, must accept that land and water are finite resources, that their management must be improved and that for any real progress to be made and maintained we all must learn to work and cooperate with our neighbour."

Improved management of land and water also needs the full backing of a law that supports the economic activity being carried out. Had the 1976 Water Act recognized informal irrigation, this could have led to the government of Zimbabwe putting in place strategies to ensure the proper management of water by local communities in Zimbabwe's rural areas.

As a result of a legal framework that did not recognize informal irrigation during and after the colonial era, communities which practise this type of farming have continuously suffered persecution from large and small scale formal irrigators (Bolding, 1997; Magadlela, 1999). There have been cases where irrigation structures of informal irrigators have been destroyed by formal irrigators downstream. Bolding (1999) described how officials from the then Department of Agricultural Technical and Extension Services (Agritex) renamed Agricultural Research and Extension (AREX), Natural Resources Board (NRB), the Police and some Nyanyadzi irrigation scheme labourers went upstream the Nyanyadzi river to forcibly close irrigation canals of informal irrigators in May, 1994. The canals were closed simply because the informal irrigators upstream of the Nyanyadzi river were abstracting water without formal water rights thereby causing water shortage to the Nyanyadzi irrigation scheme which had a water right (Bolding, 1999:135).

There has prevailed an allegation by policy makers that informal irrigators are wasteful water users since they do not operate in government controlled situations. This allegation has not been proved on the ground; often, water from informal irrigators' earthen canals flows back to the river through seepage. It is also unlikely that seepage rates in the informal furrows are as high as the rates in the unlined formal irrigation canals of irrigation schemes such as Nyanyadzi (Bolding, 1999).

The other piece of legislation passed during the colonial era that still affects the practice of informal irrigation in Zimbabwe is the Natural Resources (Protection) Regulation of 1975. This Act is commonly known as the Streambank Protection Regulation. It prohibits the cultivation of any land which is within 30 m from a river. In 1987, there were proposals from the Natural Resources Board to have the Act amended so that the 30 m distance could be increased to 100 m (Roberts, 1990). The argument is that if cultivation takes place within this 30 m-distance from the river, there will be increased soil erosion. As shall be seen later, this assumption is now being challenged by recent research.

Most gardens of informal irrigators are within a distance of 30 m from a river in many areas which the current Natural Resources Regulation prohibits. If the 100 m proposal had sailed through, leading to the amendment of the Act, most of the existing informal irrigators would have been ruled out (Roberts, 1990:21). Since

informal irrigation provides food security for those who practise it, there have not been moves by the government to help those who practise it to adopt environmentally sound farming methods that do not cause harm to rivers. Communities could be encouraged to plant sugar cane, bananas and grass along the riverbank so as to halt siltation that is normally a consequence of cultivation of streambanks.

The prohibition of cultivation within 30 m of a streambank, because of its erosive effects, is being challenged by recent research on the sustainable use of vleis. Research in this area has shown that in some cases streambank cultivation in the form of irrigated gardens can be beneficially exploited without negative effects in terms of river siltation and decreased water holding capacity (Mharapara *et al.*, 1995). If the results of the research on sustainable use of vleis are confirmed by other studies, they will invalidate the claims of universal detriment caused by streambank cultivation.

The practice of informal irrigation continued during the colonial times and after independence despite the legal prohibitions and discouragement by state apparatus (Bolding *et al.*, 1996). Since legislation in Zimbabwe did not provide a framework within which informal irrigators can operate, some communities practising informal irrigation have been able to put in place their own informal irrigation management structures and rules. Kujinga (1996) described how informal irrigators in Manyau village, in a catchment area known as Murozi, formed their own association of informal irrigators and also elected an irrigation management committee for the purpose of developing their irrigation farming.

The Manyau people drafted a constitution which outlined the objectives of the association and how the affairs of the association should be run. According to the constitution of the Manyau Market Garden Association drafted in 1991, the major objective of the association is to grow a variety of crops for sale and to encourage the practice of farming methods that ensure environmental sustainability (Kujinga, 1996:45). In their endeavour to practise better irrigation farming, the people of Manyau, through their irrigation management committee, decided to look for fencing material to erect around their irrigated gardens so that individual farmers would not cut trees to erect around their gardens each year. The Natural Resources Board agreed to provide the fencing material on condition that all the gardens and the fence would be 30 m from the river that supplied the gardens with water. The villagers agreed to abide by this rule, although a number of them lost their gardens. The villagers themselves realized that if their gardens remained unfenced, individual farmers would continue cutting down trees to fence their gardens. The cutting down of trees was seen as having the long-term effect of encouraging deforestation. Consequently, this would affect the flow of water in the river that supplies their gardens. The Manyau irrigation management committee also managed to draft some by-laws that all irrigators were supposed to follow. The case of the Manyau informal irrigators demonstrates that informal irrigators can organize themselves in order to adopt better strategies of managing natural resources including water. This case demonstrated that laws which prohibit certain practices can be passed but people might ignore them and devise their own rules and regulations to manage their affairs.

Having looked at legislation, passed during the colonial era and inherited by the Zimbabwean government, that criminalized informal irrigation, it is important to have a closer look at the new Water Act of 1998. The Water Act of 1998 and the establishment of the Zimbabwe National Water Authority (ZINWA) were premised on the call to decentralize water management. The formation of Catchment Councils and Sub-Catchment Councils are at the heart of the reform process. It looks like there is an attempt to achieve natural resources management strategies in the water sector such as in the Communal Areas Management for Indigenous Resources (CAMPFIRE) and co-management efforts underway in the forest sector (Derman, 2000). The question is, will this new water legislation enable the previously disadvantaged communal farmers and informal irrigators to be accorded the opportunity to manage water on their own and exploit it for their benefit?

A closer look at the Water Act of 1998 reveals some weaknesses which could be a disadvantage to informal irrigators and other prospective water users in the communal and resettlement areas. Section 20 (b) stipulates that:

"In considering application for permits for the use of water, a catchment council shall have regard to the suitability for irrigation of the land concerned and the efficiency of the proposed method or possible methods of using the water concerned."

The above clause in the Act will most likely work against informal irrigators who have for a long time been termed inefficient water users, since most informal irrigators cultivate land which is near the streambank. This clause could be used with the one in the Natural Resources (Protection) Regulation which prohibits cultivation near the streambank. The argument might be that the land which informal irrigators want to irrigate or are irrigating is not suitable for irrigation and the method to be used is destructive to the environment. The government should have made a commitment in the Water Act of 1998 to support informal irrigators so that they will not be disadvantaged in the granting of water permits.

The 1976 Water Act was structured by the colonial government in such a way that it gave the white community more access to water than the black people in the communal areas. As a result of the biased nature of the 1976 Water Act, large-scale commercial farmers used 85% of the water. The colonial government also offered generous financial packages to white farmers so that they could develop their irrigation farming. It is very difficult for informal irrigators who have never received any government sponsorship, like white commercial farmers did, to achieve efficiency. Informal irrigators cannot afford the sophisticated equipment that ensures high water-use efficiency. This clause (Section 20 (b) quoted above) thus contradicts the main objective of water reform which is equity (Manzungu, 2001). The legislators should have considered having a clause which states that government will commit itself to help informal irrigators that are granted water permits to achieve water use efficiency.

All the people who held water rights at the time the Water Act (Chapter 20:24) of 1998 came into effect automatically had their water rights changed to water permits for up to twenty years. In a catchment area with many people who formerly held water rights, this will not translate into immediate release of water to informal irrigators (Manzungu, 2001). Those people with water permits might devise strategies to make sure that local communities that want to practise informal irrigation do not get water permits. Arguments such as the inefficient methods of irrigation used and the unsuitability of the land to be irrigated might be advanced to the catchment councils so as to pressure them not to grant informal irrigators water permits. Moreover, a catchment council might not give new permits immediately, arguing that doing so will lead to a critical shortage of water in the area.

The other option available for informal irrigators without permits to get them could be too expensive. Section 34(6) of the Water Act says:

"Before granting an application for a permit relating to water which is being beneficially used by another person, a catchment council shall require the applicant to pay the person/s beneficially using the water concerned such compensation as maybe agreed by the applicant and such persons or failing such agreement, as maybe fixed by the catchment council."

It is highly unlikely that local communities in communal areas can enter into any meaningful negotiations with commercial farmers and small-scale formal irrigators and be able at the same time to meet the demanded compensation (Manzungu, 2001). There is no fixed amount of compensation to be paid. As a way of keeping local communities from engaging in irrigation farming, those who must be paid compensation can demand huge sums of money which the former cannot afford. The minimum and the maximum amount which the catchment council can order to be paid to the person beneficially using the water is not clear. The government should have provided money for such compensation on behalf of local communities through the Water Fund as was suggested by Zimconsult in 1996 (Manzungu, 2001).

Democracy in the Water Act was compromised because the Minister of Rural Resources and Water Development or any Minister assigned by the President of Zimbabwe to administer the Act was allocated absolute powers in many aspects. These absolute powers include drawing the boundary of a catchment and sub-catchment areas and stipulating the number of members of a particular catchment council and assigning the catchment council a name. The Minister has powers to alter or abolish the membership of a

catchment council. Moreover, the catchment manager, who is a government appointee, also wields a lot of power including cancelling water permits (Manzungu, 2001). Section 21 (2) stipulates that:

"The Minister may, by written notice to a catchment council, confer all or any of the powers of the officers upon a catchment manager or on all or any of the members of a catchment council and may at any time amend or revoke such notice."

It is very difficult to see the extent to which informal irrigators can meaningfully participate in water management as a result of the many powers which have been conferred on the Minister and catchment managers and other catchment council members. In the end the catchment council might not exercise the people's will in managing water resources, but the will of the Minister.

Existing local institutions such as traditional leaders, village and ward development committees are neither recognized nor is their existence provided for in the Water Act. The Act overlooked the idea of strengthening existing institutions in the communal areas for the management of water at the local level (Manzungu, 2001). This could have been a chance for the above institutions to take part in the management of water resources at the local level.

The facts which have been raised about the impacts of Zimbabwe's legislation on informal irrigation show that more still needs to be done so as to bring the irrigators at the forefront of managing water for their own benefit. The next section will look at the law and informal irrigation in Tanzania.

5. LEGISLATION AND INFORMAL IRRIGATION IN TANZANIA

The use of water in Tanzania is regulated by the Water Utilization (Control and Regulation) Act No. 42 of 1974, as amended in 1981, and the Water Utilization (General Regulations) of 1975. Under these Acts, all water is vested in the state and one has to obtain a water right to dam a water source and direct it elsewhere through piping or channels (Government of Tanzania, 1991; Moyo *et al.*, 1993). According to the Tanzanian water legislation, the practice of informal irrigation is illegal, therefore those communities which practise it do so without water rights. Thus Tanzania like Zimbabwe also has legislation that criminalizes informal irrigation that is practised without formal water rights in most cases. This confirms the assertion of Chenje and Johnson (1996:93) that most legislation on water and the environment in most Southern African countries does not only disregard informal irrigation but also criminalizes it.

Though one has to obtain a water right to practise irrigation farming like the informal irrigators, most of the communities who practise this activity have been doing so without water rights. In the case of tribes such as the Wachagga and Sonjo, informal irrigation is more of a tradition that has been practiced for many generations within their communities and to them there is no need to obtain a government water right. Thus, they consider themselves as having both historical and traditional water rights which the Zimbabwean and Tanzanian legislation on water does not regard as legitimate (Magadlela, 1999). On the other hand, the government of Tanzania has not been forcefully stopping the practice of informal irrigation farming as it intends to transform all informal irrigation schemes into modern irrigation schemes without frustrating the informal irrigators.

In Tanzania, by 1984 79% of all irrigated land fell under informal irrigation (Table 1). This shows how widespread this farming practice is in Southern Africa. The widespread prevalence of informal irrigation in Tanzania, like in Zimbabwe, should have encouraged policy makers and legislators to adopt an approach that seeks to place the informal irrigators at the forefront of managing their schemes.

Table 1: Types of irrigation farming in Tanzania

Type of Irrigation	Ha	%
Total Irrigated area	141 900	100
Smallholder, traditional irrigation	112 500	79
Smallholder modern schemes	4 200	3
Large scale private or public farms	25 200	18

Source Mrema (1984)

Due to the extent of informal/traditional irrigation in Tanzania, both the colonial and post independent governments initiated steps to upgrade this type of irrigation. This is despite the fact that both governments passed pieces of legislation that criminalize this farming practice (Mrema, 1984; Chenje and Johnson, 1996). The approach adopted by the colonial and the post-independent governments of Tanzania in upgrading informal irrigation schemes was and is still a radical one that endeavours to do away with anything informal or traditional. The assumption was, and still is that those who are involved in informal irrigation management do not know much since they operate unplanned and inefficient schemes (Mrema, 1984; Adams and Andersen, 1988; Underhill 1990). As a result, there has been more imposition of changes on informal irrigators than adopting a community involvement approach whereby the participants are involved in planning and implementing new water management and farming methods. Kujinga (1996: 43) argued that if there is going to be any intervention for development purposes in informal irrigation farming by the state or other outside agencies, a bottom-up approach must be adopted as policies of development must not be imposed on informal irrigators. This, as was observed by Adams and Andersen (1988), can lead to the total collapse of informal irrigation schemes. Informal irrigators should be accorded the opportunity to enhance land and water conservation while at the same time benefiting legally from the exploitation of these resources (Laisi, 2000). The fact that informal irrigation schemes have survived for many generations through the management skills of the local people was not being adequately considered when upgrading the schemes in Tanzania (Adams and Andersen, 1988).

Though the government of Tanzania has invested a lot of money in upgrading informal irrigation schemes in different areas of the country, the performance of the upgraded schemes has been disappointing over the years (Mrema, 1984). As these schemes are upgraded, government control increases, thereby weakening the farmers' ability to manage the schemes as they used to do under informal irrigation. This has led to the total collapse of some schemes (Adams and Andersen, 1988). The government of Tanzania has over the years failed to put in place effective management methods that can give the farmers more room to manage the affairs of the schemes on their own. The infrastructure put in place, for example the canals, need a lot of money to annually maintain them which the government of Tanzania and the farmers cannot afford.

The failure by the colonial and the post-independent governments of Tanzania to effectively develop successful community-based and managed informal irrigation schemes, has led many communities in Tanzania to continue practising their informal irrigation outside of the state's influence. These community-based and managed irrigation schemes have their own institutions that are recognized and respected by the farmers. The locally based irrigation committees have the task of ensuring that the schemes are well maintained and that water is distributed equally in times of scarcity (Moyo *et al.*, 1993). This is happening in areas such as Mount Kilimanjaro and Mount Meru. In these areas the communities have devised their own rules and regulations of managing their irrigation schemes. The survival of the schemes in these areas for generations shows that the rules and regulations being used are to some extent playing an important role in the sustainability of these community-based and managed irrigation schemes.

In areas like Mount Kilimanjaro and Mount Meru, each community has its own water allocation and management committee. The main duties of each committee are to ensure that water is distributed according to a set rotation, and to mobilize community members to take part in the maintenance of canals. For example, among the Sonjo people, the water and management committee is composed mainly of elders. These elders are the ones who have the task of preventing over-irrigation, overseeing maintenance work of their schemes and ensuring that all able-bodied men help in repairing dams which would have been washed away by floods. The issue of maintaining the Sonjo irrigation system is regarded as a sacred duty. The Sonjo mythology records that since the irrigation systems date from the time when the tribe's villages were first created, it is important to ensure the survival of the systems (Clark, 1991:140).

The Wachagga informal irrigation system is also based on community management and maintenance. Each community has an irrigation organization with a committee which leads the organization. Farmers wanting to use water for irrigation farming brought by canals/furrows from the mountains are supposed to join the irrigation organization. All the farmers who join the organization are required to help in maintenance work and to pay a fine if they fail to do so. Those who continuously fail to take part in maintenance work and do not pay the fines are expelled from the scheme by the irrigation management committee (Clark, 1991).

6. DISCUSSION

Since informal irrigation farming has evolved for centuries in the region, it is surprising that legislation in Southern Africa in general, and Tanzania and Zimbabwe in particular, has continuously lost sight of the importance of this economic activity, especially its contribution to household food security. The actors involved in this informal irrigation view it as an important lifeworld to them and are conscious of their capability to manage the water resources that sustain them. In drafting their environmental and water legislation, the governments of Zimbabwe and Tanzania should find ways of recognizing informal irrigators as having traditional and historical rights to water for irrigation (Magadlela, 1999).

The birth of independent Tanzania and Zimbabwe did not immediately result in the promulgation of pieces of legislation which took into consideration the historical and traditional rights of the local actors to natural resources such as water. In most cases, governments have intervened in the community-based management of water resources for informal irrigation farming by enacting laws that are aimed at stopping this economic activity rather than encouraging it. Informal irrigators in countries such as Zimbabwe and Tanzania have for a long time failed to internalize and adopt legislative frameworks that are aimed at stopping their economic activity (Magadlela, 2000). This problem of environmental and water legislation that does not adequately recognize the importance of community-based management of water resources for informal irrigation still persists today in many Southern African countries such as Zimbabwe and Tanzania.

It is important to note that if the local communities, as actors, are given the opportunity to legally manage their natural resources such as water, this could contribute to sustainable management while at the same time they benefit economically from the utilization of the natural resources. The survival of informal irrigation for centuries demonstrates the capability of the actors involved in managing water resources (Magadlela, 2000). The informal irrigators have the knowledge and capability of devising strategies of managing water resources (Long, 1992). It is high time the CAMPFIRE concept be legally adopted by all Southern African countries and extended to the local management of all natural resources including water for informal irrigation. In extending the CAMPFIRE concept to irrigation farming, the contribution of informal irrigation to household food security and employment must drive policy makers to do so. It is unfair for governments such as those of Tanzania and Zimbabwe to legally deny the utilization and management of water resources to communities that have historical and traditional water rights (Bolding, 1996; Kujinga, 1996; Magadlela, 1999). In most instances the legislation that denies informal irrigators access to water is passed without their knowledge and involvement but is later imposed on them.

At the moment, a number of communities in Zimbabwe and Tanzania cannot do without practising informal irrigation since it is an important life-world to them given the erratic rainfall patterns in these two countries. Since this is the case, the governments of Tanzania and Zimbabwe should have seen this great need for informal irrigation and must have taken steps to work with the irrigators to manage their schemes without damage to the environment. Passing legislation such as the Streambank Protection Regulation and water acts which stipulate that no one is supposed to use water for irrigation without a water right or water permit will not deter informal irrigators as they will continue with their farming practice which ensures food security to them.

Informal irrigators in Tanzania and Zimbabwe have taken a positive step by developing their own regulations and administrative rules which seem to be working for them though not formally recognized by their governments. The development of these local rules and regulations among the informal irrigators in Tanzania and Zimbabwe is enough testimony to show and prove that the national laws in these countries are dysfunctional and ineffective for the irrigators. The water and environmental laws of Tanzania and Zimbabwe have not yet fully benefited the informal irrigators. Though Zimbabwe now has a new water act, one cannot conclude with certainty that this act will give informal irrigators legal rights to fully manage the utilization of water in their localities. The weaknesses of the act have been highlighted above but I will revisit some of them in this discussion.

If factors such as the efficiency and suitability of land to be irrigated form the basis of acquiring water permits, informal irrigators might not get the opportunity to acquire these water permits. Once informal

irrigators are denied water permits, catchment councils can use force to stop them from practising their farming activity. This can in the end result in many informal irrigators losing a source of livelihood. The Water Act of 1998 should have at least recognized that there are many communities of informal irrigators that need legal recognition and assistance from the government to be encouraged to adopt better water management practices.

The issue of making new applicants pay compensation to anyone “who is beneficially using water” has to be reconsidered because most of the people who did not have water rights under the old Water Act of 1976 are the communal people who constitute most of the informal irrigators and cannot afford to pay any form of compensation. As has been said earlier, those whose water rights have been automatically changed to water permits might use this clause to keep informal irrigators from acquiring water permits as they can easily demand huge compensations.

The Water Act of Zimbabwe of 1998 failed to recognize vital local institutions such as the traditional leaders, ward and village development committees in the management of water resources. These institutions are currently playing an important role in CAMPFIRE project areas. Community management of natural resources such as water has a good chance of being successful as long as the local communities are actively involved in the planning process and decision-making structures such as the ones mentioned above.

There is a great need for Southern African countries including Zimbabwe and Tanzania to change their attitudes towards informal irrigation and encourage the adoption of the CAMPFIRE strategy in communities practising this economic activity. The adoption of the CAMPFIRE approach in the management of water by informal irrigators will also entail a change of legislation in order to accommodate the irrigators' interests. Under CAMPFIRE, people living in the communal lands are given legal rights and technical support to manage their natural resources. Over the years CAMPFIRE has mainly concentrated on encouraging communities to harvest wildlife and use the profits for rural development while also contributing to environmental conservation. However, the CAMPFIRE principles of community management and sustainable resource utilization are being adapted and applied to other natural resources such as woodlots and grass (Murombedzi, 1998). Water management is one area being considered for community based management, but for this to effectively take place legislation governing water in Zimbabwe and Tanzania have to first give local communities legal rights to sustainably manage water resources for their own benefit.

7. CONCLUSION

This paper showed that informal irrigation has a long history as its practice in Southern Africa dates back to the 18th century and earlier, yet a number of countries in the region including Zimbabwe and Tanzania have little regard for this economic activity. As a result of this, no major steps have been taken by governments in Southern African to encourage community-based management of water resources for irrigation. Despite the criminalization of informal irrigation in Zimbabwe and Tanzania, the economic activity has persisted with the irrigators themselves adopting their own local rules and regulations which are to some extent helping them to continue managing their water resources. This now calls for a change of stance by Southern African governments such as Zimbabwe and Tanzania. Research that seeks to find ways of promoting informal irrigation than passing legislation that seeks to ban this important economic activity should be encouraged.

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