

Irrigation Management Transfer: Experiences from Tanzania

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INTRODUCTION

CURRENT DEVELOPMENT PARLANCE stresses the fundamental question of people's participation in all stages of project development, from identification to implementation and monitoring and evaluation. There is a rejection of the past and current trends which have been top down and less participatory in nature whenever a rural development intervention is planned in the developing countries. Farmer participation has proved to be a crucial approach towards successful rural development interventions.

The persuasion towards a participatory approaches to irrigation management is not new either, although it is being pushed hard in many developing countries due to the positive effects this process has had in the Asian countries, e.g., India, The Philippines, Sri Lanka, Nepal, Indonesia and Pakistan. It is for that reason that other countries stress the need for farmer participation in irrigation management.

In irrigated agriculture, strong farmers' organizations represent a key factor in the assessment of sustainability of the irrigation systems and the communities which use them. It is for this reason that the question about irrigation management transfer is very important for developing countries where irrigated agriculture is still at its infancy.

THE CONCEPT OF IRRIGATION MANAGEMENT TRANSFER

In this contribution, irrigation management transfer (IMT) means the passing and adapting of modern irrigation expertise (knowledge, skills and research findings) which are in the hands of government or private agencies to the smallholder irrigators themselves (who possess traditional irrigation expertise), through the mediation of their irrigation institutions.

This process could be seen as that of empowering the irrigation farmers through increasing their capacity to own, control and manage their irrigation farming systems (IFS). A corresponding aspect of "blending" the traditional and the modern irrigation management skills is carried out simultaneously. Such fusion is reproduced through research interpretations and participatory approaches to irrigation management.

Such irrigation skills are of different types: socio-cultural, economic, technological, juridical, administrative, management and gender-related arrangements towards building cohesive, viable, and sustainable irrigation institutions.

The main goal for such transfers is that of increasing efficiencies and improved operation and maintenance performance of the irrigation schemes as a result of decentralized ownership, control, and management of the irrigation systems by the farmers.

In Tanzania, this process is known as "handover" (in Swahili, *kukabidhi*). From available records, handover has often meant surrendering to the farmers, the equipment, the irrigation infrastructure and buildings. It also involves training of farmers in handling pumps or operating intake gates and division boxes before the actual handover ceremony.

IRRIGATION IN TANZANIA

Tanzania is a big country covering some 940,000 square kilometers. Out of this area, the irrigation potential was estimated to be about 1 million ha in early 1960s. A more recent study conducted in 1982 by FAO and covering the whole of Sub-Saharan Africa, puts the potential for Tanzania at 2.3 million ha. However, as of 1993, only about 200,000 ha were under irrigated agriculture (180,000 ha smallholders and 20,000 ha mixture of parastatal, government institutions and private sector).

There are about 600 irrigation schemes functioning at different levels today. About 80 percent of these schemes are owned, controlled and managed by the smallholder farmers themselves. The remaining 20 percent are a combination of the parastatal large-scale types under the Sugar Development Corporation (SUDECO), and the National Agriculture and Food Corporation (NAFCO), and the large and small privately owned ones.

Anthropological and sociological research findings indicate that irrigation culture did exist in Tanzania as way back as the Iron Age. The period between 1700 and 1890 shows the existence of pockets of well defined irrigated culture

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in the current administrative regions of Arusha, Iringa, Kilimanjaro, Mbeya, Morogoro and Ruvuma. These are "indigenous irrigation systems."

These systems have survived until today. Now in modified forms, they have been referred to as "traditional irrigation systems." They are owned, controlled and managed by the smallholder farmers themselves. In each system, there is a furrow committee.

However, one of the characteristics of these systems is that they were originally owned by clans and have therefore been inherited for generations by the same clans. Some of them have now become village irrigation systems due to their importance to the economic life of each household and are therefore known as "village government-managed irrigation schemes."

Irrigation is the centrifugal force of the local economy. Household food security depends on the streams and rivers which are the sources of irrigation water. These systems are found in hilly and well watered areas and the often drought-stricken valleys along the Rift Valley Corridors.

A variety of crops are under irrigation during both dry and rainy seasons, including coffee, bananas, rice, maize, beans, onions, tomatoes, chillies, cabbages, african mustard, french beans, amaranths, sugar cane, etc. The most important irrigated crop is rice, followed by vegetables.

New Irrigation Systems

There are several traditional schemes which have been rehabilitated and so changed their status into new schemes. At the same time, totally new schemes have been built. This includes the new water harvesting methods.

A newly completed irrigation scheme is initially in the hands of staff from the Irrigation Department. The government places staff and other resources at the scheme. The period from completion of construction stage to handover, differs from scheme to scheme, but on average, it does not exceed 5 years.

However, during the period when the scheme is under the management of the government irrigation staff, farmers use the scheme and participate in some of the management tasks,

The process towards farmer-managed irrigation systems (FMIS) in Tanzania has often meant assisting farmers to establish their own organizations so as to run the schemes "together" with a skeleton government staff. Usually an irrigation technician, engineer, or agronomist is placed as scheme manager with a few supporting staff members. In most irrigation schemes, only one government employee is stationed as manager.

The transition from government to farmer management of irrigation schemes is usually a painful experience to both the government staff and farmers. This is so because during the joint management period, a kind of umbilical cord is created between them to the extent that both become dependent on each other. Total separation becomes difficult.

Management of schemes includes the aspects of water, finance, property and infrastructure. Furthermore, this involves conflict resolution, evaluation, coordination, watershed protection and crops.

Scheme management is an equally complex undertaking like water management and has implications for the entire life of the system; that is why it is made jointly (government staff and farmers) while water management is sometimes left in the hands of farmers assisted by an irrigation technician. Many of the rehabilitated small schemes have irrigation technicians as managers.

Traditional Irrigation Management Systems

Indigenous farmer-managed irrigation systems are part of the inherited customary laws in areas where irrigation has existed for many years. Such places like Sonjo (Arusha) are known to have practised irrigation since the Iron Age. Communities of irrigators created their own organizational structures in order to manage their furrows.

These are the indigenous farmer-managed irrigation systems (IFMIS). The characteristics of such systems indicate that only some of the people in the community participated in the management of the structures. Those were usually chiefs and elders. Because of certain taboos, women were excluded from any activities dealing with furrows.

There is strict observance of the customary laws related to leadership patterns. Delegation of powers is almost nonexistent because leadership goes by age and lineage. So some clans still control certain furrows through their presence as leaders. Examples include *wazee wa mfongo* (furrow elders) of the Kilimanjaro Belt where several furrows still have a mixture of inherited and elected committee members.

Community Ownership

The traditional irrigation management systems are still in place in many parts of Tanzania. The determinant factor for their persistence and long endurance has been the underlying concept of ownership of the furrows. These furrows have

been owned by the communities which have used them for generations and ownership has been passed over from generation to generation.

In some of them, initial ownership was a clan which might have lived close to the river, stream or spring, as source for the furrows. Such furrows were turned into village properties after the [villagization program] of the 1974/76 period.

The furrows were then considered as property of the chief as they were guarded and protected by the supernatural powers vested on the chiefs. Later, these furrows were turned into community property when chieftaincy was abolished in 1963. But the underlying concept of community ownership has survived until today and continues to be the mediating force behind the operation and maintenance of the systems through village governments.

Community Protection of Water Sources

Water sources are owned by the communities which live within or close to them. This contiguous relationship between water sources and the communities of irrigators has become a social reality which we should use in order to translate them into specific cases for more refined forms of community concern, and so protection resources for posterity.

Many studies have shown that where community spirit is high in ownership and so is protection for "others yet to come," a sense of consensus emerges and is strengthened in the leadership and management styles. Such styles depict strong collective dimensions of leadership. Traditional irrigation communities are very strong on watershed management. Water sources are sacred places. This is true in almost all the regions of Tanzania.

Community Management of Irrigation Structures

We find that traditional irrigation committees, e.g., wazee wa mfongo among the *Chagga* (furrow elders), and *kamati ya mfereji* (canal committee) among the Bena and Sangu in Usangu Plains are testimonies of existing irrigators' organizations which have functioned for years as grassroots institutions and kept alive the irrigation systems and ensured long-term food security provisions for these communities.

New Water Users' Associations

Where rehabilitation of traditional schemes has taken place, there are organizational and management changes, especially in the establishment of irrigation committees. Sometimes, these new organizations are referred to as water users' associations (WUA) for lack of a proper name related to the specific conditions of the areas.

TOWARDS FARMER-MANAGED IRRIGATION SYSTEMS

The government has launched a National Irrigation Development Plan for the year 2014. The plan stresses the importance of farmer management of irrigation schemes. An irrigation management system (IMS) is being prepared in order to meet the growing demand from irrigation professionals and farmers for guidelines on this issue. Examples of current handovers are listed below.

Lower Moshi

This scheme was constructed by the Japanese Government. It was financed through both grant and loan arrangements. There was a total lack of farmer participation in scheme development activities from scheme identification, planning and design to construction.

A Central Water Users' Association was formed in 1986 after the completion of construction works and commencement of production. It united water users belonging to 4 villages. In 1993, a new organization, *Chama cha Wakulima wa Mpunga* (abbreviated as CHAWAMPU or Rice Farmers' Primary Cooperative Society) was formed. This is the organization to which the government handed over the management of the scheme.

Kitivo

This scheme was constructed through a loan from the African Development Bank (AfDB). One of the conditionalities in the agreement was the establishment of a farmers' organization prior to project takeoff. So the Kitivo Farmers Cooperative Society (KFCS) was formed in 1987 and got registered in 1990.

Kimani

By 1985 when the project identification process started, the Kimani River Basin had 32 canal diversions, each with its own irrigation committee. In 1989, the Kimani River Canals Committee (KRCC), a central committee to coordinate the other committees, was created under the guidance of the Community Development Section of the Kimani Irrigation Project.

During the construction of 500 ha of pilot project, the KRCC was enlarged to 43 committee members. By laws were passed by the Ward Development Committee and forwarded for registration by using the Local Government Act (1986). It will be this organization, in conjunction with the 6-member village governments, to which the government is to handover the scheme.

Mombo

Mombo is a traditional irrigation scheme which was rehabilitated through German development assistance under GTZ in 1982. Prior to the rehabilitation, the farmers had formed an Agriculture and Cooperative Society in 1979. It was registered under the Cooperative Societies Act of 1968 in the same year. The majority of members are women irrigators.

The rehabilitated system was handed over to the cooperative and the 2 villages using the scheme. Ever since, the government has placed an Irrigation Technician as Scheme Manager to assist farmers in their operation and maintenance activities. The farmers are in control of the scheme as evidenced in the way they meet all the costs of salaries, office needs and other allowances of water distributors.

Majengo

Majengo Scheme was fully remodelled/rehabilitated in 1987. It was for a long time a traditional irrigation scheme. The scheme was financed by the United Nations Development Programme (UNDP) as a grant. After completion of the works in 1987, farmers formed the Majengo Agriculture and Cooperative Society. This was an organization which took over from the Irrigation Committee which was composed of village chairmen and elected farmers. It was registered as a cooperative society in 1987.

In 1992, a new organization, Majengo Water Users' Association (WUA) was formed through recommendations of the irrigation officials. To date, this WUA is not registered. The two organizations have the same claims over the scheme in terms of operation and maintenance. However, it is the registered cooperative which has a legal basis for farmer participation or not in irrigation management, O&M activities.

Mkindo

Mkindo Scheme was rehabilitated through Dutch grants under the Small Irrigation Development Unit in 1986, and handed over to the farmers the same year. Prior to rehabilitation, the farmers used to irrigate traditionally. The organization, *Kiwala cha Simba* (Lion's Home), has not been registered. Farmers own and are in control of the scheme which is partially rehabilitated.

IMPORTANT LESSONS

An obvious lesson to be learned from the Tanzania experiences about irrigation management transfer is that irrigation systems have to be managed as commercial enterprises even if they are controlled by smallholder farmers. As economic investments, irrigation schemes have to abide to the laws of economic analysis and social feasibility studies during the planning stages. If irrigation systems are managed from that angle, it is possible that some of the problems which are currently being felt in different countries in Africa, would be solved.

Irrigation management transfer to the farmers is a kind of cultural liberation in that the superiority and elitism of the government irrigation professionals are challenged by the experiences of the traditional irrigation management systems which have survived without the use of university graduate engineers or sociologists. Other lessons are listed below.

1. The need for the gradual process of handover: The concept of ownership (central government, village government, farmers, clan, or part of the village population), must be clarified from the scheme identification stage.

2. The need for joint irrigation management systems (farmers, village government and Irrigation Department): It should exist and should be appreciated.
3. The specificity of water management by farmers themselves: The relationship between canals and fields is determinant. It is the canal which is the main water conveyance system, despite the importance of the intake as the hub and nub of an irrigation system. However, it is the field which consumes the water. On-farm water management is by farmers, so it should be for water management from intake to field levels.
4. The need for scheme management by trained personnel: This means trained irrigation staff and farmers (men and women), because irrigation techniques change very fast.
5. The need for self-financing irrigation systems through cost sharing mechanisms: This includes mobilization of financial resources, assessment of the affordability of farmers, and the government distancing itself from funding schemes but maintaining technical assistance to smallholder farmers.
6. The training of farmers: The training of farmers is an important aspect of irrigation development in general in the country. It is to be viewed as a process of cultural change in that totally new concepts and practices in irrigated agriculture which are different from rain-fed ones in a major way, are being introduced to the communities of smallholder farmers.

Such concepts and practices include: election of leaders through popular vote in an assembly of WUA members (different from the traditional method of inheritance of leadership of canals); calculation of the amount of water to be allocated to each tertiary canal or plot (as opposed to free flow of water based on location and not demand); water management through meetings and planning (as opposed to inherited knowledge of the elders); etc. A modern system of irrigation management must be established in order to meet the demands of modern agronomic practices which aim at high productivity ratios.
7. Technical support from the government staff: Irrigation extension services are crucial as irrigated agriculture is being introduced in newly sedentarized cultures which are/have been leading a nomadic or transhuman type of pastoralist culture. Examples include the Maasai irrigation farmers in Usangu, Pawaga, Morogoro, Arusha and Tanga regions, and the Nyaturu around Mwamapuli Scheme, Singida and Dodoma regions.

CONCLUSION

The following statement by Cernea [(1994)], might summarize my own perception of irrigation management transfer to the farmers.

"In practice, irrigation programs have often dealt with institution building by proliferating government bureaucracies to manage the irrigation systems. Infinitely less attention has been paid to the creation of stable, culturally appropriate, and institutionally enduring patterns of social organization at the grass roots level."

Without this kind of facilitation of farmers into managers of their own destinies, there will be no development. Benefits from irrigation will be low. Irrigation farmers are social actors. Through water user groups, they will create the necessary social infrastructure for the transformation of their societies. Unorganized societies have weak interactions and so low levels of productivity and adoption of technologies.

Irrigation should be seen as an enterprise with costs for water, membership, shares, operation and maintenance, etc. Mobilization, motivation, organization, and participation of farmers for and through training should become a key indicator of project impact and success in farmer-managed irrigation systems.

The types of organizations envisaged are water users' associations, water users' cooperative societies or primary cooperative societies. Separation of roles and functions of these organizations for water and scheme management and the supply of farm inputs and marketing of crops (under cooperatives) ought to be clearly made.

There is a need to improve the traditional irrigation organizations through training of leaders and farmers in leadership skills, water and scheme management techniques, supply of farm inputs and crop marketing, etc. New irrigation organizations should not be imposed on the farmers during the project identification, planning and implementation phases, as has been the case in some of the water harvesting methods in Western Tanzania. Rather, these

organizations ought to be allowed to grow gradually from construction committees which get established during the construction phases.

Women's participation in leadership positions of irrigation committees is weak and so must be increased and improved through gender sensitization programs. Creation of awareness of the gender imbalances in decision-making processes at community levels is a must in all schemes. Scheme management is not so much a problem for women's participation; the problem is at water management levels and community decision-making processes.

AREAS FOR DISCUSSION

From the paper, five areas have been determined for discussion. They relate to the Tanzanian context but could be useful in other countries, especially in Sub-Saharan Africa where the history of rural development interventions through donor agencies and NGOs and the reality of poverty of the people are experienced almost in the same way. These areas are listed below:

1. Water, scheme, and farm inputs management functions and roles at village levels and how to separate them: Between farmers' organizations, government irrigation departments, traditional irrigation committees, WUAs, village governments, and donor agencies/NGOs.
2. Absence of a legal framework for registration of WUAs: The Cooperative Societies Act is being used for registration but the concept of irrigation as an activity which could be termed "voluntary association" is yet to be born among lawyers.
3. Women in irrigated agriculture (WIA), particularly where their participation in water users' committees (decision-making level), is weak or nonexistent in many schemes. How to break with the traditions which prohibit women from irrigation activities at the intake levels. In some communities, women are not allowed at the intake zone (they are only allowed within the canals).
4. How to introduce the idea of a membership fee and shares in a traditional irrigation committee and WUA.
5. The relationship between WUAs and primary cooperative societies at irrigation scheme level or village government level.

Table 1. Management status in selected schemes in Tanzania.

Name of scheme	Date of WUA formation	Membership	Type of Scheme	Management
1. MOMBO	1979	326	Rehab.	Farmer
2. MAJENGO	1987 Coop. 1992 WUA	470	Rehab.	Farmers/GOT
3. KIMANI	1989	524	Rehab.	Farmers/GOT
4. MKINDO	1986	42	Rehab.	Farmers
5. MWIJANGA	1967	3,000	Rehab.	Farmers
6. LOWER MOSHI	1986	2,000	New	Farmers/GOT
7. KILEO	19	700	Rehab.	Farmers
8. GICHAMEDA	1992	3,000	Tradit.	Farmers

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