

Full Length Research Paper

Stakeholders' engagement at Magozi Rice Irrigation Scheme: Case study of moving from food-aid dependency to food self-sufficiency in Tanzania

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This article examines stakeholders' engagement in attaining food security and reducing poverty in the rural areas endowed with water natural resource. The main purpose of the article is to find evidence of appropriate approaches to overcome food insecurity and poverty in areas having abundant natural resources but engulfed with food and income poverty. It reviews the principles of stakeholders' engagement to examine the extent to which Magozi village leadership applies in agricultural transformations. Data were collected using ethnographic techniques of key informant interviews, focus group discussions, and documentary review. Findings from the study show that Magozi village has moved from food-aid dependency to food self-sufficiency by engaging stakeholders in the entire process of problem definition (recurring hunger and poverty), planning, resource mobilization to implementation. The main finding is the success stories of moving from food-aid to food self-sufficiency attributed to the irrigation scheme that came as a result of engaging various stakeholders including the Anglican Church, Tanzania Social Action Fund, Local Government Authority, and the community. The article recommends the adoption and implementation of many irrigation schemes for transforming rural agriculture in Tanzania

Key words: Food security, irrigation, poverty reduction, stakeholders' engagement.

INTRODUCTION

Agriculture plays an important role in the Tanzania national economy. It employs 70% of the national workforce, contributes 25% of GDP, the source of 30% of foreign income and provides 65% of raw materials for the local industries (URT 2016). Despite its importance, agricultural productivity has remained low. Rice (paddy) production in Tanzania is 70% predominantly rain-fed in

lowlands, irrigated rice is 10% and upland rice of 20% is grown by smallholder farmers with an average farm size of 1.3 ha (MAFC, 2015). Data for Old Irina region from 2005/06 – 2009/10 produced 183.05 tons; whereas Irina D.C produced 137.84 tons (75%) of the regional production. Amongst the many challenges facing agriculture sector include low use of irrigation in farming.

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Out of 29.4 million ha potential land for irrigation, only 450,392 ha (1.5%) is utilized for irrigation (URT, 2016). The effect of low irrigation in many ways contributes to low food production, food insecurity and poverty amongst rural farming communities Magozi village inclusive. This paper draws evidence of irrigation schemes that emanated from the farming community and engaged other stakeholders to become self-food sufficient.

Background of Magozi Irrigation Scheme

Magozi Irrigation Scheme is located in Magozi village, Iloilo Mpya Ward Iringa Region in the Southern Highlands of Tanzania. The village is endowed with Ruaha River and fertile 1300 hectares low land suitable for paddy irrigation. The irrigation scheme covers three villages of Mkombilenga, Magozi and Iloilo mpya. It is registered under the Ministry of Home Affairs with registration number SO 14034 of 2005 and Cooperative Society Ltd. with registration No. 197 of 1995 with 522 farmers. The scheme has also acquired water user permit from the Ministry of Water and Irrigation. It is a requirement by the National Irrigation Act of 2013; owners of irrigation infrastructure or farmers initiated irrigation schemes and privately owned commercial irrigated farms to get water use permits (URT, 2016).

The recurring drought climatic condition in this area has made the communities to depend on food aid from the government and the Anglican church. Drought is one of the causes of low crop productivity in many rain-fed-agriculture areas in Tanzania. In the year 2000, the Ministry of Agriculture and Food Security, through its programme known as Participatory Development and Empowerment Project (PADEP) implemented in district council, conducted a Participatory Rural Appraisal (PRA) applying the Opportunity and Obstacles to Development (O&OD) techniques; it enabled Magozi villagers to identify Ruaha River Irrigation as their primary resource for addressing food insecurity and poverty reduction in their community. The Magozi village leadership engaged various stakeholders in the construction of the irrigation scheme. They sought for support from the central government, local government authorities, and religious organizations. Eventually the irrigation scheme infrastructure was constructed with head works off gate of 1000 l/s, excavated main canal of 8000 m, main canal lining of 5400 m, 22 division boxes, cross drainage structures and retaining walls of 50 m height.

Study objective

The objective of the study is to find out the effect of irrigation farming on food security and poverty reduction. This paper draws evidence of irrigation schemes that emanated from the farming community and engaged other stakeholders to become self-food sufficient.

Theory of stakeholders' engagement

A stakeholder is defined as any group or individual who can affect or be affected by the achievement of organizational objectives (Griffiths et al., 2008). The theory of stakeholders' engagement is the participation of stakeholders in planning, decision-making, and implementation to integrate their knowledge, resources, and values in a particular project, policy problem or intervention. The literature on stakeholder engagement reflects stakeholders as having power to object development programmes and policies, and also having interest in development programmes and policies to get the desired objectives. In the same vein, stakeholders are "those people who are affected by or can affect a decision" (Talley et al., 2016).

The theory of stakeholders entails that when concerted efforts of stakeholders are needed for resolving a policy problem, it requires identifying stakeholders that have interest and power. Stakeholders' engagement can be better understood as structured processes based on principles of participation in particular complex development issues (UNDP, 2006). Attaining food and nutrition issue is complex because there are many processes involved such as planning of what needs to be done, identification of stakeholders and resources, mobilization and implementation. It became, therefore the role of the Magozi leadership to identify stakeholders with power and interest in resolving food security and poverty.

Stakeholders' engagement as a theory and strategy for development emerged in the 1960s from pioneering work at Stanford Research Institute; it argued that managers needed to understand the concerns of shareholders, employees, lenders and suppliers, in order to develop objectives that stakeholders could support (Sinclair, 2011; Mitchell et al., 1997). It is built on stakeholders, who are defined as individual persons, groups, or institutions that have interest, can affect or be affected by activities of a main organization (Barney, 2003).

Stakeholders' engagement has found deep roots in strategic development management, public policy implementation, and business models. Stakeholder theory based on business examines the capacity of a firm to generate sustainable wealth over time, and hence its long-term value, is determined by its relationships with critical stakeholders of common interest (Rhodes et al., 2014; Menoka et al., 2013).

Literature shows that broader participation, including the identification and inclusion of stakeholders who are relevant to the objectives and context of the participatory process can improve both the effectiveness and efficiency of the engagement itself as well as the outputs and outcomes of the process" (Marthur et al., 2008; Talley et al., 2016). Magozi leadership and the community identified their stakeholders in resolving food insecurity and poverty in their area (Figure 1).

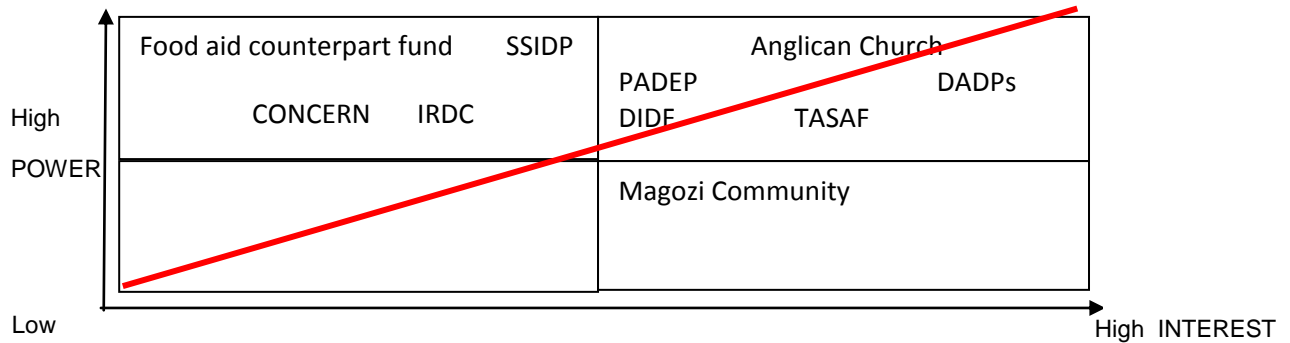


Figure 1. Magozi stakeholders for food security. DADPs: District Agriculture Development Programs; IRDC: Iringa District Council; PADEP: Participatory Development Empowerment Project; TASAF: Tanzania Social Action Fund.
Source: Author's construct.

Stakeholder engagement is therefore a techniques and process of bringing in and involving individuals, groups and institutions that affect or be affected (Sloan, 2009), have interest and power in the development policy and programme. As a process, Stakeholder engagement (SE) involves identifying and listing all stakeholders in the development issue at hand. The list should be exhaustive enough to include beneficiaries, supporters in the government, non-governmental organizations, private sector development partners, etc. The process also includes identifying their levels of interest and power (High or Low), as well as justifying why they should support the development programme or issue. Griffiths et al. (2008) generalize the basic reasons why stakeholders feel they should be engaged; "altruism", that they engage because they believe it is right to do so; "investment", that they perceive there would be return to investment; "compulsion", that they engage because they have been asked to do; and potential benefit, that they engage because potential benefits for engaging are greater than not engaging. This implies involving people and organizations in local government development programmes and service delivery requires keen analysis of not only stakeholders' interest and power, but also managing stakeholders' expectations. Figure 1 shows stakeholders with High power and interest (Anglican Church, PADEP, DIDF, TASAF, DADPS) all closer to the alignment line of the argument that the potential benefits for engaging in Magozi rice irrigation scheme are greater than not engaging in it. Given the fact that these stakeholders have been providing food aid, it makes more sense to support the community to become self-food secure.

Effective stakeholders' engagement requires clear objective of the development policy or programme before seeking for stakeholders' support. Involving stakeholders at every stage in the development which includes informing them of the development goal, targets, and challenges prior to and after implementation is the key to enhancing and gaining high alliance. Many articles have

looked into the typologies of stakeholders, but the important questions when considering stakeholders' engagement in development policy are; how do you get a particular stakeholder engaged? What value would that stakeholder feel for getting involved? How can stakeholders be engaged effectively? UNDP (2006) and Griffiths et al. (2008) argue that effective multi-stakeholder engagement needs active participation in a "continuum" from early stages of the process of problem identification, resource mobilization, implementation to monitoring and evaluation.

At any given moment in the "continuum" there should be dialogue and consensus building because they assure transparency, accountability, and ownership to development issues (Barney, 2003).

Crop irrigation is one of the necessary and needed transformations in the agriculture sector and for ensuring food security that requires concerted efforts of multi-stakeholders. The government of Tanzania has put in place irrigation policy with the aim of ensuring sustainable availability of irrigation water and its efficient use for enhanced crop production, productivity and profitability that contribute to food security and poverty reduction. Tanzania has 29.4 million ha potential for irrigation; however, only 1.5% is under irrigation (URT, 2013), and Magozi Irrigation Scheme is one of the few community based initiated irrigation scheme located in Iringa Region that utilizes its land for crop production. Prior to 2008, Magozi community was characterized as food insecure and high poverty leading to poor livelihood conditions.

Empirical evidence shows that there are multiple positive effects of irrigation on crop production, farm and non-farm employment, and food security (Hussain and Hanjra, 2004). Crops irrigation tends to reduce risks of crop failure and therefore contributes to assured yield and productivity (Ibid).

The objective of this article is to find out the effect of

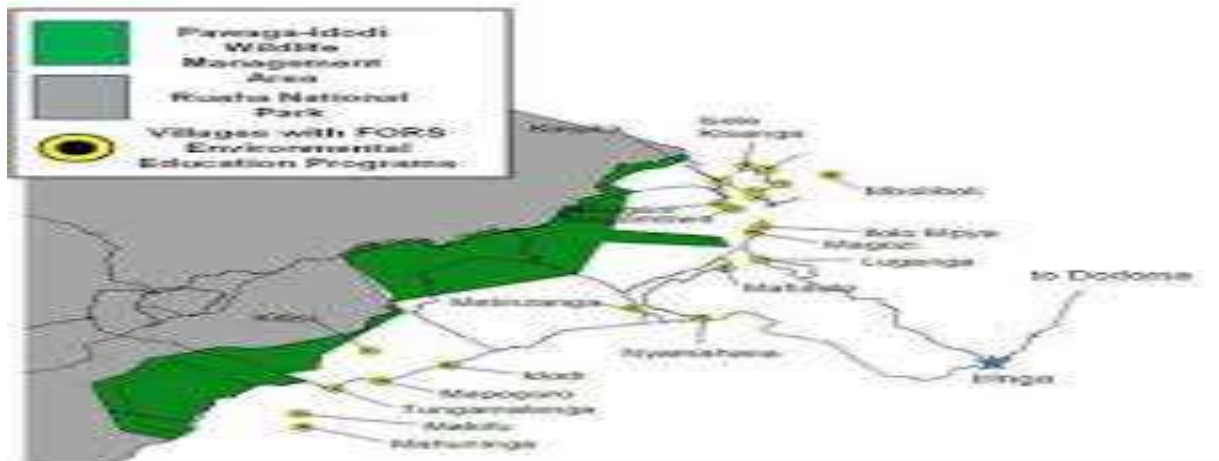


Figure 2. Map of Magozi village.
Source 1: Google map.

Magozi irrigation on communities and drawing lessons for advancing irrigation schemes.

Study area

The study area is Magozi village (Figure 2), located in Iringa Region, Southern Tanzania. The village is endowed with Ruaha River and fertile low land suitable for paddy irrigation. Magozi Irrigation Scheme is situated in Iringa District in Iloilo mpya ward. The scheme includes 3 villages, Mkombilenga, Magozi and Iloilo mpya. The scheme is registered as Mkilima under ministry of home affairs with registration number SO 14034 of 2005 under the Cooperative Society Ltd. with registration No. 197 of 1995 with 522 farmers. The scheme has already acquired water user permit.

METHODOLOGY

The article uses case study design for an in-depth understanding of Magozi Irrigation Scheme; it examines the goals and strategies used for moving away from food aid dependency. The researchers approached the village by gaining entry from Iringa District Council to the village leaders. The food condition of the village was narrated; it was found out that the villagers were suffering, having food aid that could not sustain them before the Magozi Rice Irrigation scheme was created. The study used interpretive methods (Geertz, 1994) which helped to why stakeholders' engagement was necessary for Magozi villagers in resolving food aid dependency, and how stakeholders' engagement was practiced to utilize irrigation for attaining food security. This is guided by the main question; what is the linkage between stakeholders' engagement, irrigation and food security? The specific questions were:

- (1) How can stakeholders' engagement theory be used to realize Magozi Rice Irrigation Scheme goals?
- (2) What role does stakeholders' engagement play in Magozi Rice Irrigation Scheme?

(3) What lessons can be drawn from stakeholders' engagement in Magozi Irrigation Scheme?

(4) How has the scheme improved food security and poverty among communities in Magozi village?

Data collection

Qualitative approaches of focus group discussions (FGDs) and key informant interviews were used for data collection. Two FGDs comprising village leaders and farmers were conducted in December 2017 to get information and data on production, food security, and poverty before and after the irrigation scheme. The participants of FGDs narrated the state of food insecurity prior to the commencement of the irrigation scheme in 2008. They disclosed that people used to get food aid from government and churches (the Anglican Church). FGD participants described the key steps that village leadership took to engage stakeholders in addressing food problem.

Four key informant interviews were conducted in the village followed by two supplemental interviews with District Agricultural Officers using an interview guide. Participants were selected from amongst farmers based on the criteria of rich information and the key role they performed in the scheme. The interviews were conducted for gaining an in-depth understanding of the Magozi Rice Irrigation Scheme. Data collected included the historical background of Magozi Irrigation Scheme, food insecurity, income and poverty level before and after the scheme. The data collected from interviews were triangulated with the Iringa District Agricultural and Irrigation Council Officers and desk reviews. The data were detailed on stakeholder engagement, livelihood in the village, success stories and challenges. In addition, online library search was completed to triangulate the information obtained from FGDs and interviews.

DATA PRESENTATION AND DISCUSSION

Stakeholders' engagement literature (Mitchell et al., 1997; Sinclair, 2011) describes stakeholder engagement process from problem definition, planning, resource mobilization and implementation. Magozi village as the

primary stakeholders were involved in the problem identification. They were also engaged in identifying Ruaha water resources to overcome their problem.

Stakeholders' identification and engagement

Knowing their economic status, communities in Magozi convened a meeting and deliberated to visit various stakeholders requesting for financial support in the construction of the scheme. A number of stakeholders identified included: Non-governmental organization called CONCERN Worldwide, Faith based organization called Anglican church, local government authority and Central government through the Ministry of Agriculture, Food security and cooperatives. Other stakeholders include the River Basin Management and Smallholder Improvement Project (RBM SSIP) and the Tanzania Social Action Fund (TASAF)

Faith based organizations contribution

Communities in Magozi village used to get food relief from Anglican Church. The church through its partners organizations used to solicit fund for Magozi communities. The idea for Magozi Scheme was conceived by the villagers. The village councilor approached the Bishop and introduced the need for constructing the irrigation scheme; he said,

"We thank the church for continuous support, however, we think that it is time to give us fishing nets to engage in fishing rather than giving us fishes".

The bishop accepted the request and promised to solicit fund from the church partner organizations. The church contributed about 120 million shillings to the scheme.

It was reported that, "in the year 2000 the Ministry of Agriculture, Food Security and Cooperatives through its programme known as Agriculture Sector Development Program (ASDP), conducted a Participatory Rural Appraisal (PRA) in the village and listed village requirements. In the list of priorities, irrigation scheme scored number one and hence they promised to fund it". PADEP agreed to contribute 105 million shillings and the Iringa District Council contributed 40 million shillings for the irrigation scheme.

Stakeholders' engagement in practice

Taking an example of Magozi Irrigation Scheme, the ward leader took the initiative of mobilizing the community towards construction of the irrigation scheme. When asked how difficult it was in mobilizing communities

towards irrigation, he replied that, communities in Magozi were tired of being poor and persistence food insecurity for about 27 years, therefore, it was easy mobilizing them.

The ward leader at Magozi called up on the first meeting to list down all the available opportunities in their village, including land and water for irrigation. After knowing their opportunities, they agreed to participate in the construction of the scheme. Engaging community in construction of the scheme was easy because they were tired of poor economic status. Based on high poverty level of the people, their contribution was mainly in kind. During focus group discussion, participants revealed that they collected about 452 trips of stones as their contribution. One of the participants was quoted saying:

..... "We knew that stones will be required for construction of the scheme, each one of us participated in collecting stones as we had no money to contribute....."

Another participant added that:

....although the role of collecting stones was a bit tough, it was worth doing it as we were very eager to have our own irrigation scheme. We were tired of working as laborers in our neighbor's farms (Luganga and Mlengi schemes). They used to call us as "power tillers" because we worked hard and finished our portion in a very short time. This was because we wanted to work on large portions so as to get more money.

In view of this, engaging communities in the construction of irrigation scheme was very easy as this was their felt need, they wanted to see changes in their village with respect to high productivity and improved income at all levels. The ward councilor when asked as to whether he encountered challenges in engaging communities in the project, he said that there were no challenges at all; everyone wanted to see changes in terms of food security and income. The ward councilor added that, communities were not able to transfer the collected stones to the construction site and therefore they requested support from the Iringa District Council.

Outcome of stakeholders' engagement

Communities through their leaders were able to construct an irrigation scheme and therefore increased area for cultivation by 51%, from 264,388 ha in 2006 to 399,775 ha in 2012. The number of people using irrigation increased from 33,000 in 2005 to 1 million in 2012. The average paddy yield is 5 tons per hectare (Figure 3). The agricultural success is the result of Magozi irrigation development in the villages through various projects

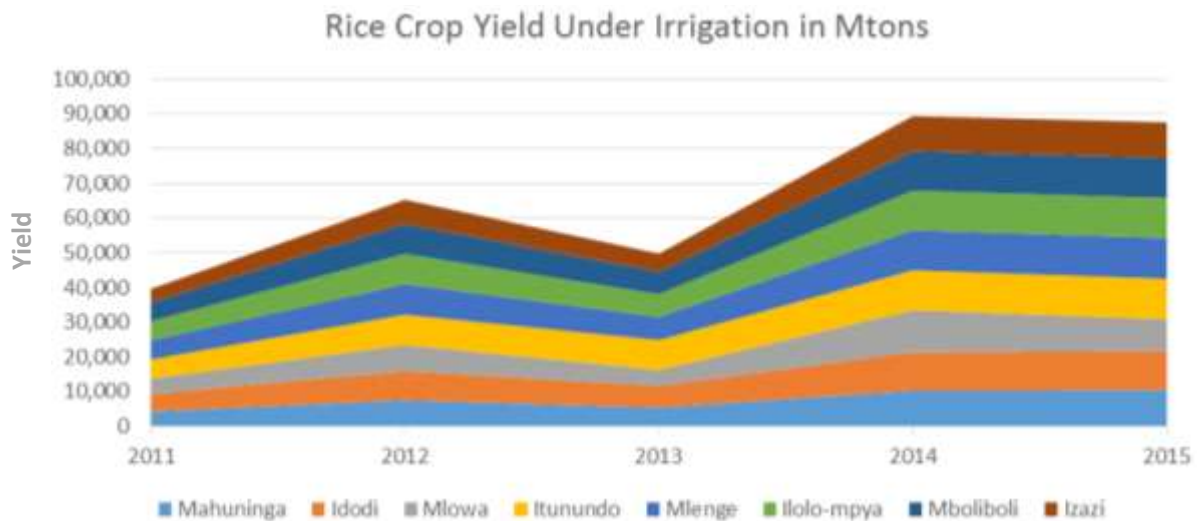


Figure 3. Effect of irrigation on rice crop yield.

financed by the International Development Association (IDA) in collaboration with other development partners throughout the past decade.

Narratives of food security from 2008-2017

It was narrated that there is no more food aid dependency. Villagers are able to produce enough food for household consumptions and surplus for sale. This has caused change in the livelihoods and improved iron thatched houses. One of the focus group discussant was quoted saying:

“We were beggars as we used to beg food from the government. Some of our men abandoned their family looking for green pastures”

Another key informant broadly said,

“We depended on food aid from the government, as it is known, food aid offered by the government is only a single or two-day meal, and the family cannot depend on such a source of food. For us (men) we had no respect from our wives, our livelihood status was poor, there was no even a single house roofed with corrugated iron sheets. There was no any single shop in this village”

The focus group discussant added that:

“We experienced high rural urban migration of youths who are energetic and can engage in agriculture. Our children moved to town where they were employed as wapiga debe at the bust stand! While our girls worked as house maids..... ”

Success stories from the implementation of Magozi Irrigation Scheme

Magozi villagers appreciate the introduction of irrigation scheme in the area when referring to the change in their livelihoods. A specific reference is pointed to an old grass thatched house (Figure 4) in the village that existed before 2010 and the first improved iron thatched house in 2010 (Figure 5), which was inaugurated by the National torch race leader, who also awarded five power tillers in recognition of promoting irrigation for increasing agricultural productivity.

Through DADPS and private owners, the village has a total of 45 power tillers used for cultivating farms in the village. This is a transformation from hand-hole to small-scale mechanization in rice farming.

The outcome is “No more food dependency”. Food aid was nicknamed “*Mbochero*” which is translated in the local vernacular as “shameful” for them because they have land, water (resources) and able-bodied people, yet they lived on food-aid. Eventually, this was transformed with the irrigation scheme; they are proud that they are no longer dehumanized by food aid. They can now afford 3 meals a day and pay for health and education costs for their households. Furthermore, some have bought motorcycles for small scale transportation business.

The unintended outcome is the reduced rural-urban migration. It was noted by the villagers, that they are proud of their young men and women staying and working on farms. They no longer migrate to urban centers as it used to be, because agriculture has attracted many youths to the irrigation scheme.



Figure 4. Magozi house before irrigation scheme.



Figure 5. Magozi houses after irrigation scheme.

Challenges in the implementation of Magozi Rice Irrigation Scheme

The challenges of rural irrigation schemes such as the Magozi rice irrigation include lack of technical expertise for managing water resources. This is for the government irrigation engineers as well as for the local community knowledge on water management (Dungumaro and Madulu, 2003). This was reported in the interviews with the key informants that the phase I construction of Magozi irrigation scheme had technical problems of narrow water intake and canals, which did not allow adequate water flows to farms. This was corrected by phase 2 at extra costs (Figure 6).

Another challenge is the scarcity of water resource during dry season. There are prolonged dry spell due to climate change. Although there are success stories, multiple challenges were noted as follows:

(1) Water irrigation scheme requires maintenance and so to speak, the scheme does not have sufficient financial capacity (money) for maintenance. This challenge threatens the sustainability of the rice production and therefore food security.

(2) There is a challenge of failure to abiding to the requirement of the National irrigation policy of paying 5% water user fee. First of all, farmers and water users are not aware and not willing to pay water user fee.

(3) There is also a challenge of adopting improved seeds SARO 5. Many farmers prefer rice varieties [Faya dume, faya jike, Zambia] which the business market wants

(4) Low level of using harvesting technology for cultivation, use of improved seed, fertilizer and weeding

(5) Post-harvest loss is also a challenge due to poor storage, transportation from farms, and drying

(6) Marketing- of rice is a challenge because during high demand season 100 kg bag sells at Tanzania shillings



Figure 6. Magozi reconstructed water intake.

120,000, but during harvest time price goes down to Tanzania shillings of 70,000 per 100 kg bag.

LESSONS, CONCLUSION AND POLICY IMPLICATION

The study provides lessons that stakeholders' engagement in development policy and food security programmes in particular has potential powers to overcome problems. Given the complexity, challenges and dynamics in development policy like addressing food security and poverty reduction, stakeholder engagement is very important. The Magozi Rice Irrigation Scheme represents a prototype of the required agricultural transformations that uphold stakeholder engagement. It also provides possible ways of restructuring and eliminating poverty in various Tanzania's district councils that have similar conditions for irrigation. It is important for the Agricultural sector led ministries in Tanzania that include the Ministry of Agriculture, Water and Irrigation, and President's Office Regional Administration and Local Government to engage stakeholders working on community based irrigation schemes for food (rice, maize, beans) and cash crops (tea, sugarcane, coffee, etc).

The study sheds light to other African countries with similar food security and poverty problems that it is extremely important to engage various NGOs operating across the continent to work with communities to address food and nutrition security using water resources for

irrigation. The use of community mobilization, government and private engagement in irrigation schemes provides solution to the food insecurity in the continent.

The government of Tanzania agricultural transformations should therefore include the strategies for enhancing and supporting community driven irrigation schemes while engaging multi-sectoral stakeholders in the public and private domain. Despite having the policy framework and development framework including the National Irrigation Strategy (2016), Five Year Development Plan 2015/2016-2020/2021 and the newly launched Agricultural Sector Development Plan (ASDP-II) 2017/2018-2027/2028, irrigation development in the country (both small and large scale) is very low. This is attributed to the low-budgetary allocation for irrigation schemes, low research and development and underutilization of extension officers as technical support.

We also learnt that where stakeholder engagement on irrigation has started, there are positive indicators for great success of increasing food security. For effective stakeholders engagement and results, having clear policy goals is very crucial. Leadership must play role in setting up clear vision and goals as well as sharing it well with all stakeholders. This is the case of Magozi irrigation scheme, which had set a vision of eliminating food aid dependency and now is producing rice to feed Iringa region and beyond.

The sustainability of the Magozi irrigation is very important that it meets the needs of the present without compromising the ability of future generations to meet

their own needs (United Nations, 1987). The environment protection and conservation of Ruaha water sources should be in the village, district and national plans. Human kind socio-economic activities should be controlled in accordance to the Environmental Management Act, 2004 and reinforced by law. Villages should also enhance by enacting by-laws for protecting the environment and water sources. In addition, a special fund for development and maintenance of the water management in the scheme should be established by farmers and water users to make annual subscriptions at an agreed and reasonable rate.

This paper concludes that attaining food security and poverty reduction in areas with water resources for irrigation is a choice of success while implementing agricultural transformations. The lessons from Magozi irrigation scheme of stakeholder engagement should be expanded in the existing framework of public-private partnership policy.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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