

Challenges Affecting Productivity and Viability of Smallholder Irrigation Schemes in Zimbabwe's Arid Regions: A Case of Mlibizi Communal Irrigation Scheme in Binga District, Matabeleland North Region

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Abstract: Although the establishment of Mlibizi smallholder irrigation scheme was an endeavour to improve food security and livelihoods of the plot holders and communities in Binga district it has remained a pressing issue as a plethora of challenges continue to affect the performance and productivity of the scheme, hence impacting negatively on the general welfare of the farmers who continue to depend on non farming activities such as fishing, hunting and gathering of wild fruits to eke a living. The main purpose of this study was therefore to interrogate challenges crippling the general performance of smallholder irrigation schemes in Zimbabwe's arid and semi-arid regions, but with particular reference to Mlibizi irrigation scheme in Binga, one of the highly marginalised and impoverished districts of the country. The treatise tries to explore strategies and interventions farmers and stakeholders can adopt to boost smallholder irrigation agricultural productivity; a vehicle for community development and sustainable livelihoods. Although it interrogates the flaws associated with the technological and managerial systems that are coalescing against the objectives of such schemes the study establishes that unavailability of inputs was the main limiting variable, or causation for under performance of most smallholder irrigation schemes in the country. A sample of 60 respondents was purposively drawn from a population of 288 plot holders for the purposes of generating accurate data from rightfully informed participants. The study was grounded in qualitative methodology where data were collected via key informants interviews and questionnaires. Generated responses were analysed using descriptive statistics. Results revealed that though the government is trying to bring normalcy to the smallholder irrigation agriculture by mechanising and advocating for the immediate operationalisation of similar projects to uplift the livelihoods of the people in Binga, still a plethora of challenges continue to affect the enterprise hence rendering it ineffective as a panacea to food security. Chief among them being unavailability of inputs or untimely availing of such inputs to irrigation plot holders.

Keywords: Agricultural productivity, Community development, Intervention strategies, Irrigation agriculture, Sustainable livelihoods & Viability challenges

BACK GROUND TO THE STUDY

Smallholder irrigation development has shown throughout the developing world that it can be used as a key drought mitigation measure and as a vehicle for the long-term agricultural and macro-economic development of a country. Successful smallholder irrigation schemes can result in increased productivity, improved incomes and nutrition, employment creation, food security and drought relief savings for the government as cited by Nhundu and Mushunje, [1]. However assessments by the Zimbabwe Vulnerability Assessment Committee ZIMVAC [2], established that Binga leads a pack of districts in Matabeleland North province with alarming proportions of food insecure households estimated at 50% including those in irrigation schemes due to low levels of crop productivity. The initiative of establishing smallholder irrigation schemes was therefore intended to improve on food security situations in the drought prone district. However, it remains a pressing issue that diminishing

total physical products TPP/ Yields per hectare continue to be a common sight in most irrigation schemes raising fears among stakeholders of such schemes.

Mwendera and Chilonda [3] opine that the government of Zimbabwe views irrigation development as a means to ensure food security and provide affordable nutrition to rural communities as well as a key drought mitigation strategy in its drier regions. The sad situation is however that, Mlibizi smallholder irrigation scheme in Binga, though established to alleviate food insecurity challenges resulting from incessant crop failure due to perennial droughts has never made any meaningful and significant contributions in that regard, forcing plot holders to revert to their traditional survival strategies of fishing, hunting and gathering hence exerting unwarranted pressure on the existing natural resources base. The scheme is associated with a sad history of underperforming and failing to deliver the desired

outcomes of adequately providing cereals which constitute the main diet in the district and catapulting people from famine and abject poverty.

World Food Programme (WFP) [4], defined food security as the availability of adequate supply and access to enough nutritionally balanced food by all individuals through purchase, production and or barter trade. Therefore failure by, Mlibizi irrigators or households to access adequate food items bears testimony that the management of irrigation schemes in Binga district require a paradigm shift in strategies through which inputs and resources are mobilised and disbursed among plot holders to curtail quagmires emanating from partisan nepotism leading to unfair distribution systems. Such porous distributive mechanisms have seen the bulk of inputs finally landing on the hands of traders who shipped and stocked inputs such as fertilisers and seed in retail outlets elsewhere/ particularly high rainfall areas with a comparative advantage over crop productivity where they fetch exorbitant prices. Such has incapacitated irrigation farmers and made them perform below minimum targets of cereal crop productivity set for irrigation schemes, and plot holders by the department of agriculture Agritex of 7 tons/ha maize and 4 tons/ha winter wheat respectively. Such levels of cereal crop production ensure adequate supply of grain at household level and sale of excess to other communities for income generation.

Mwendera and Chilonda [3], assert that promoting smallholder irrigation agriculture ensures adequate provision of the much needed raw material base for the manufacturing sector in developing nations with struggling economies which stabilises employment creation and cushions rural communities from the catastrophic effects of the current phenomenal trends of climate change and variability. In support of this Madyiwa, Siziba and Yekeye [5] cited that, smallholder irrigation schemes if properly managed have the capacity to transform for the better the life-styles of the rural folks in marginalised counties, as the irrigators become active participants in meaningful income generating projects. They assert that increased crop yields and quality, year round as a result of irrigation would positively improve food security situations in most rural communities, hence reduce exposure of human lives to famine and poverty.

Ngigi [6], however refutes the assertion as he argues that the majority of existing irrigation schemes are failing to make an impact on people's livelihoods as they are characterised with inefficiencies and underperformance due to a plethora of challenges ranging from deteriorating infrastructure, management capacity of irrigators and stakeholders, governance problems, political interferences in distribution of inputs to unwillingness of farmers to adopt new technologies which have proved elsewhere great

potential to boost productivity, in preference of traditional indigenous technologies. This research therefore seeks to reveal challenges affecting viability of communal irrigation schemes in arid and marginalized regions of Zimbabwe and explore opportunities available to achieve desired outcomes on food security and sustainable livelihoods of the rural populace. Thus the study craves to present a comprehensive picture of small scale irrigation farming as an integral venture with potential to transform and sustain rural livelihoods of irrigators in disadvantaged communities. Thus it aims to unpack the politics surrounding the production processes including management, mechanization as well as issues surrounding disbursement of government inputs and their implications on production and sustainability of the irrigation scheme in question as well as their much projected goals of enhancing rural livelihoods through poverty reduction, employment creation, addressing food insecurity and income generation issues. It is therefore premised on the following research questions, what are the social-economic challenges confronting irrigators? What are the implications of these challenges on production? And, how can the challenges affecting the irrigators are solved?

Statement of the Problem

Food security is one of the four main objectives in the Zimbabwe Agenda for Sustainable Socio – Economic Transformation (Zim –Asset) programme that can enable the country achieve economic growth [7]. Communal small holder irrigation schemes can be pivotal in that regard if they operate to capacity and attain set yield targets for dry land crop productivity averaging 6 tons/ha for maize and 2.5tons/ha for small grains to cushion the country's perennial food deficits and improve food security status among the rural poor. However, it has remained a pressing issue for the government as diminishing yields and returns continue to characterise most smallholder irrigation schemes in drier regions leading to distressed and miserable livelihood patterns being experienced by most irrigators. This research therefore seeks to reveal challenges affecting viability of communal irrigation schemes in arid and marginalized regions of the country and explore opportunities to exploit to accomplish desired outcomes in food security and sustainable livelihoods of the rural populace. Thus the research craves to present a comprehensive picture of small scale irrigation farming as an integral venture with potential to transform and sustain rural livelihoods of irrigators in disadvantaged communities, with special focus on Mlibizi smallholder irrigation scheme in Binga district of Matabeleland North province. The study unpacks the politics surrounding the production processes including management, mechanization as well as issues surrounding disbursement of government inputs and their implications on production and sustainability of the irrigation scheme in question as well as their much projected goals of enhancing rural livelihoods through

poverty reduction, employment creation, addressing food insecurity and income generation issues.

Objectives

The study had two objectives, to examine challenges confronting smallholder irrigation agriculture in Zimbabwe's semi-arid and arid regions with special focus on Mlibizi smallholder irrigation scheme in Binga district and, to analyze the implications of these challenges on the production process and the livelihood patterns of the rural populace.

RESEARCH METHODOLOGY

A sample of 60 respondents was purposively drawn from a population of 288 plot holders for the purposes of generating accurate data from rightfully informed participants. The study was grounded in

qualitative methodology where data were collected via key informants interviews and questionnaires. Generated responses were analysed using descriptive statistics. Results revealed that though the government is trying to bring normalcy to the smallholder irrigation agriculture by mechanising and advocating for the immediate operationalisation of such projects to uplift the livelihoods of the people of Binga, still a plethora of challenges continue to affect the enterprise hence rendering it ineffective as a panacea for food security. Chief among them being unavailability of inputs or untimely availing of such inputs to irrigation plot holders

RESULTS AND DISCUSSIONS

Years of membership in the Mlibizi irrigation scheme

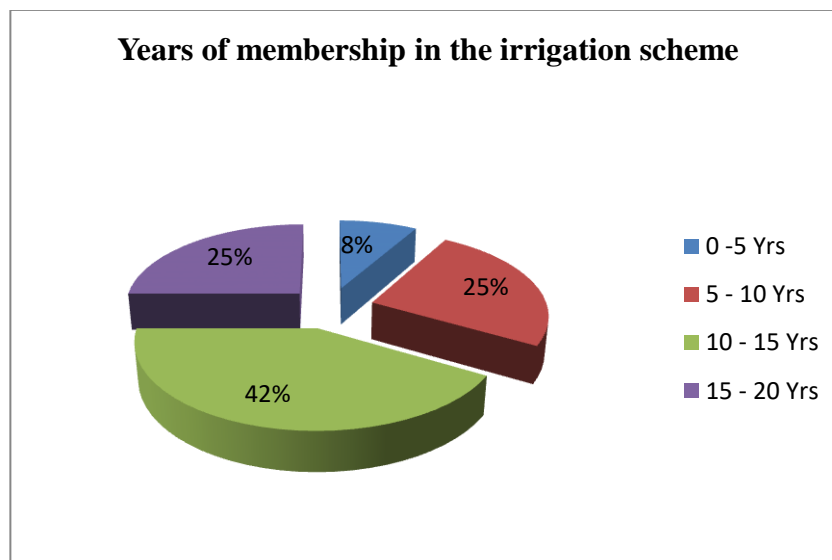


Fig-1: Years of member in the irrigation scheme
Source: Survey Data 2015

Figure 1 shows that new entrants particularly youths are not much interested in partaking irrigation agriculture as a viable venture or an option for cushioning the catastrophic effects of unemployment which is so prevalent in the district. Interviewed youth participants however echoed that there is no free entry in to the schemes as management committees which mainly comprise old members demand a joining fee which is so deterrent for beginners without a stable source of income. As a result they find themselves engaged in less rewarding but risky activities such as hunting, fishing and gold panning using un-prescribed methods which expose wildlife to threats of over exploitation, and the environment to massive degradation. The field work established that a few with relatives in urban centres have migrated to try their luck in securing employment which in most cases is hard to

come by hence some finally find themselves engaging in morally unacceptable activities such as prostitution thus exposing them to the risk of contracting the deadly HIV and AIDS pandemic. It has been observed that irrigators who have stayed longer, mainly women constitute a significant proportion of reliable membership to most irrigation schemes in the district, this however presents a situation where, farming suffers in terms of time budgeting as women have other chores to perform on a daily basis hence allocate less time for agricultural activities. It has also been established that the longer the members have stayed the more reluctant they become in adopting new innovations and technologies which they perceive opposing their traditional indigenous technologies which are proving less effective in coping with demands of the current trends of climate change and variability.

Household asset ownership/status in the study area

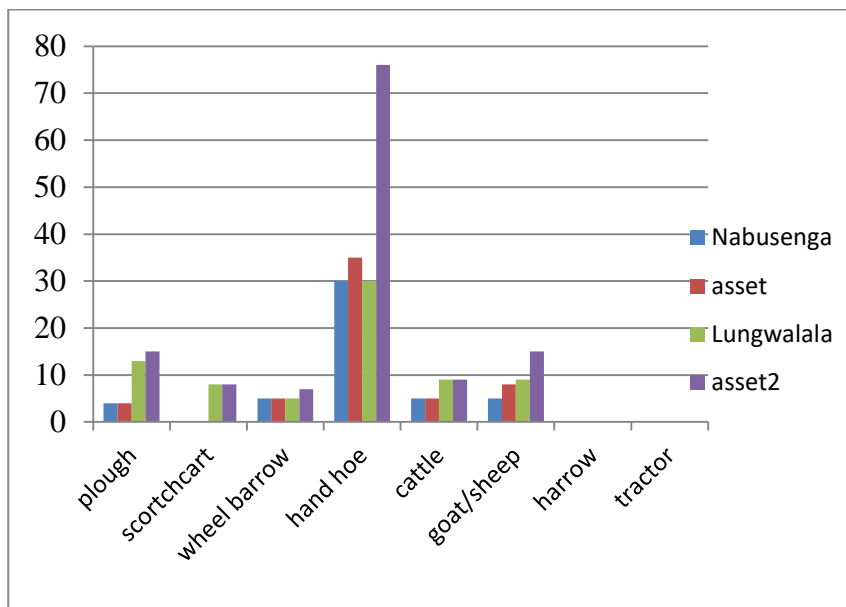


Fig-2: Assets purchased as a result of irrigation agriculture
Source: Survey Data 2015

Asset ownership signifies wealth and is a determinant of status in most African societies, Chisango *et al* [8] noted that livestock particularly goats represent small bundles of cash and serves as a buffer against food insecurity and liquidity challenges in drier parts of the country. Figure 2 shows that asset ownership among the irrigators principally livestock and machinery is low suggesting inadequacy on the part of the disposable income generated from the irrigation farming. Most of the participants retorted that failure by stakeholders to avail inputs on time is crippling their operations hence affecting productivity and viability of their venture, as they finally realise narrow margins which even fail to sustain their daily basics as the majority thrive on hand to mouth. Ownership of small hand tools considered primitive in the modern agriculture signifies dominance of operations inclined

to subsistence agriculture as these cannot sustain intensive farming systems which require high levels of mechanization. Irrigators cited that failure by stakeholders to mechanize irrigation agriculture in the district is derailing operationalization efforts of such schemes; an agenda pushed by the government of Zimbabwe through its Zim-Asset blue print. As operations are done using such simple tools farmers are exposed to drudgery of performing difficult tasks manually and productivity is badly affected as it never surpasses the standard yield targets set by Agritex for the area.

Cereal Crop productivity with particular reference to maize in the study area

Cereal production

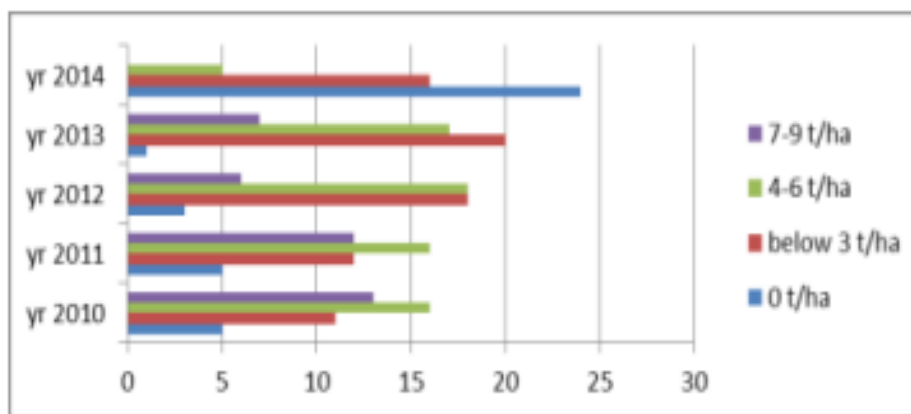


Fig-3: Maize production levels from 2010 to 2014 in the study area
Source: Survey Data 2015

Retrieved archival data from the department of agriculture; Agritex Binga district reveals that the area under study attained its last optimum yields in 2010, when a significant number of irrigators constituting sixty – five percent (65%) of the farmers attained yield levels in the range of 5-9 tons/ha hence had enough to meet their food requirements and some surplus to dispose for income. The preceding years particularly 2014 were however marked with misfortunes as, production levels started to decline and only eleven percent (11%) of the households managed to obtain average yield levels of 2.5-3 t/ha of maize only enough to sustain an average household of six individuals for a season, implying that eighty – nine percent (89%) of the irrigating families were victims of severe food shortage hence had to depend on donor and government food aid. And as Zimbabwe had been experiencing a sharp decline in agricultural productivity since the launch of the Fast Track Land Reform program in the year 2000, such situations would mean the country would never reposition itself and regain its original status of being the bread basket of the region but remain a perennial net importer of food items in the sub-region.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Agriculture performance has declined in communal smallholder irrigation schemes due to a plethora of challenges which have impacted negatively on the general performance of irrigation agriculture in the arid regions of the country. The results from the study revealed that membership composition which comprises mainly aged women who sideline youths from active participation by demanding deterrent joining fees is a recipe for poor performance by most irrigation schemes in the district. It has been established that as women have other chores to perform for the daily upkeep of their families farming always suffers as less time is budgeted for it. Period of stay in irrigation schemes particularly by old members brings with it the reluctance by members to adopt new innovations and technologies which boost production as such members have allegiance to their traditional indigenous technologies, which however lack the capacity to match demands of the current trends of climate change and variability.

Failure by stakeholders to avail inputs on time and the porous distributive system which is on partisan lines has also been noted to be a major obstacle crippling operations, productivity and viability of smallholder irrigation agriculture in Zimbabwe's marginalised areas. The study therefore opines that failure by stakeholders to mechanize irrigation schemes in the district is derailing operationalization efforts of irrigation agriculture as outlined on the government's Zim-Asset blue print which advocates for provision of adequate nutrition as an outcome of sustainable livelihoods. It has been established that as the country continues to experience a sharp decline in agricultural

productivity, this is a clear testimony that Zimbabwe will continue to struggle to reposition itself and regain its original status of being the bread basket of the region.

Recommendations

- Stakeholders should work towards establishment of an agricultural training institution for the irrigators and local youths so that they appreciate the significance and role of irrigation agriculture in addressing food deficit challenges and sustaining their livelihoods.
- Government representatives should advocate for integration of youths in irrigation schemes to facilitate adoption of new technologies and curb unlawful survival strategies devised such as poaching, panning and prostitution a vehicle for the spread of the deadly HIV and AIDS pandemic in the entire district.
- Composition of membership has to be gender sensitive, the dominance by females who spread their time on other non-farming household chores deprives agriculture the time it deserves and as a labour intensive venture some tasks require male participation.
- Availing inputs on time and fair distribution systems which are non partisan should be put in place to motivate the hard working irrigators.
- To operationalize the schemes and make them operate to capacity, mechanisation is pivotal as it reduces the drudgery of human labour but boosts on efficiency and productivity of such schemes.

ACRONYMS

Agritex	-Department of Agricultural Technical and Extension Services
AIDS	-Acquired Deficiency Immune Syndrome
CAADP	-Comprehensive Africa Agriculture Development Programme
FAO	-Food and Agriculture Organisation
GoZ	-Government of Zimbabwe
Ha	-Hectare
HIV	-Human Immune Virus
NEPAD	-New Partnership for Africa Development
NGO	-Non- Governmental Organisation
USAID	-United States Agency for International Development
WFP	-World Food Programme
Zim-Asset	- Zimbabwe Agenda for Sustainable Socio – Economic Transformation
Zim-VAC	- Zimbabwe Vulnerability Assessment Committee

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