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Decentralising Zimbabwe's water management: The case of Guyu-Chelesa irrigation scheme

Rashirayi Tambudzai [a], Mapedza Everisto [b,*], Zhou Gideon [a]

[a] University of Zimbabwe, Department of Political and Administrative Studies, P.O. Box MP167, Mount Pleasant, Harare, Zimbabwe
[b] International Water Management Institute (IWMI), Southern Africa Office, P. Bag X813, Silverton 0127, Pretoria, South Africa

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ABSTRACT

Smallholder irrigation schemes are largely supply driven such that they exclude the beneficiaries on the management decisions and the choice of the irrigation schemes that would best suit their local needs. It is against this background that the decentralisation framework and the Dublin Principles on Integrated Water Resource Management (IWRM) emphasise the need for a participatory approach to water management. The Zimbabwean government has gone a step further in decentralising the management of irrigation schemes, that is promoting farmer managed irrigation schemes so as to ensure effective management of scarce community based land and water resources. The study set to investigate the way in which the Guyu-Chelesa irrigation scheme is managed with specific emphasis on the role of the Irrigation Management Committee (IMC), the level of accountability and the powers devolved to the IMC. Merrey's 2008 critique of IWRM also informs this study which views irrigation as going beyond infrastructure by looking at how institutions and decision making processes play out at various levels including at the irrigation scheme level. The study was positioned on the hypothesis that 'decentralised or autonomous irrigation management enhances the sustainability and effectiveness of irrigation schemes'. To validate or falsify the stated hypothesis, data was gathered using desk research in the form of reviewing articles, documents from within the scheme and field research in the form of questionnaire surveys, key informant interviews and field observation. The Statistical Package for Social Sciences was used to analyse data quantitatively, whilst content analysis was utilised to analyse qualitative data whereby data was analysed thematically. Comparative analysis was carried out as Guyu-Chelesa irrigation scheme was compared with other smallholder irrigation scheme's experiences within Zimbabwe and the Sub Saharan African region at large. The findings were that whilst the scheme is a model of a decentralised entity whose importance lies at improving food security and employment creation within the community, it falls short in representing a downwardly accountable decentralised irrigation scheme. The scheme is faced with various challenges which include its operation which is below capacity utilisation, absence of specialised technical human personnel to address infrastructural breakdowns, uneven distribution of water pressure, incapacitated Irrigation Management Committee (IMC), absence of a locally legitimate constitution, compromised beneficiary participation and unclear lines of communication between various institutions involved in water management. Understanding decentralization is important since one of the key tenets of IWRM is stakeholder participation which the decentralization framework interrogates.

1. Introduction

Integrated Water Resource Management (IWRM) has been central in the post-Dublin management of water resources in sub-Saharan Africa (Global Water Partnership, 2000, 2003; van der Zaag, 2005; Jonker, 2007; Merrey, 2008; Molle, 2008; Swatuk, 2005). Some of the key tenets for IWRM according to Gleick (2002) in Mapedza and Geheb (2010) are:

(1) Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment.
(2) Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels.
(3) Women play a central role in the provision, management and safeguarding of water.

* Corresponding author. Tel.: +27 (0)12 845 9100/11, mobile: +27 (0)79 8816 209.
E-mail addresses: E.Mapedza@cgiar.org, Mapedza@yahoo.co.uk (M. Everisto).

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(4) Water has an economic value in all its competing uses and should be recognised as an economic good.

This study looks at tenet number 2 of IWRM and interrogates how small holder irrigators in Guyu-Chelesa are managing water resources using the decentralization lens. A number of studies have critiqued IWRM with the hope of improving its application in the developing world (Merrey, 2008; Molle, 2008; Swatuk, 2002, 2005). The remainder of this paper will delve into decentralization as a mechanism for understanding the smallholder's participation in IWRM using decentralized irrigation management as an entry point.

1.1. Decentralization

Conyers (1999, p. 6) defines decentralization as "a process of change in which functions previously undertaken by government institutions at national level become the responsibility of government or non-government institutions at sub-national level". Asserted in the definition is that decentralization involves the centre devolving its powers to the periphery in order to engage the governed in the governance process. This conception resonates with those of Rondinelli and Cheema (1983) who argue that decentralization allows for the disaggregation and tailoring of development plans and programs to the needs of the heterogeneous regions and groups (Mulwafu (2010) on Malawi). Mamdani (1996) also adds that decentralization offers people a 'citizenship status' rather than a 'subject status' since citizens have rights to exercise while subjects have no rights. Other proponents of decentralization such as Ribot et al. (2006), Agrawal and Ribot (1999) justify it on the grounds of increased efficiency, more thorough going equity and greater participation and responsiveness of government to citizens. These sentiments are also shared by Wekwete and de Valk (1990) who notes that decentralization increases speed, flexibility and more efficient use of existing resources. Ribot et al. (2006) further note that it is only downwardly accountable decentralization, that is more likely to result in positive outcomes. They further argue that decentralization which is upwardly accountable to central government is best described as de-concentration of the central state.

However, while decentralization is applauded for increasing citizen participation, in most Latin American states and Asian countries only a few elite individuals are the ones who participate in the process rather than the majority poor. In Zimbabwe as noted by Makumbe (1998) Village Development Committees (VIDCOs) and Ward Development Committees (WADCOs) were meant to facilitate grass roots participation at a local level in 'decision making processes for development planning and implementation' in their localities. However, these committees as postulated by Makumbe, failed to execute their mandate due to various reasons which among others include lack of authority to raise resources, lack of capacity and the requisite skills (Makumbe, 1998). Merrey (2008)'s critique of IWRM has relevance here in that power dynamics have to be understood within decentralization. The fact that 'decentralization' is being implemented will not necessarily produce positive outcomes.

Decentralization policy has been used in local and natural resources management since the 1960s. In Zimbabwe, decentralization efforts can be traced to the Prime Minister's Directive of 1984 which sought to establish local authorities hence the promulgation of the Urban and Rural District Councils Act of 1985. The Water Act of 1998 was also enacted with the view of promoting decentralized water management in Zimbabwe. Embedded in the Integrated Water Resources Management discourse which is also captured by the Water Act is the notion of broad based user participation—including previously disadvantaged communal and small-scale, predominantly African farmers (Gumbo, 2006; Fatch et al., 2010). Governments in some countries for example Tanzania and South Africa have also gone a step further in decentralizing irrigation management by promoting farmer managed irrigation schemes so as to ensure effective management of community based land and water resources (van Koppen et al., 2004; Mudau, 2010). Irrigation is viewed as a mechanism for reducing the impact of climate change and climate variability (IPCC, 2007; Ncube et al., 2011; Chikozho, 2010; de Hamer et al., 2008; Love et al., 2006; Van der Zaag et al., 2010).

Decentralized water management in irrigation schemes is commended by various authors including Manzungu and van der Zaag (1996) who postulate that future irrigators had to be involved right from the planning stage. In a paper by Food Agricultural Organisation (FAO, 2000) it is noted that poverty alleviation will be effected when the position and status of poorer and smaller farmers is strengthened by their active participation in the management of their own development process. Peter et al. (2008) further argue that participation in irrigation is also gendered. Allowing farmers to be active participants in the management of irrigation schemes will enhance the longevity and productivity of the scheme. Conyers quoted in Wekwete and de Valk (1990) observed that the reason for this is that decentralization increases the sense of responsibility of the people (in this case the water users) and therefore their involvement and commitment to the irrigation scheme will be boosted. Manor (1999) equates this to democratic decentralization seeking to engage citizens in order to reduce rural poverty.

A critical aspect of the supporting policy frameworks for the water sector is a focus on irrigation (Comprehensive Assessment of Water Management in Agriculture (CAWMA), 2007). This stance is evidenced by the number of established smallholder irrigation schemes throughout Zimbabwe. The study therefore sought to address the following objectives:

- To analyse how the Guyu-Chelesa irrigation scheme is managed.
- To evaluate the different powers and responsibilities that the Guyu-Chelesa IMC has.
- To proffer recommendations on how to strengthen the irrigation scheme and enhance its productivity.

1.2. The case study

The Guyu-Chelesa irrigation scheme is located 40 km south of Gwanda town in Guyu-Chelesa communal area in Ward Fourteen (14). Ward Fourteen (14) consists of six villages with an estimated population of seven thousand three hundred and sixty-two (7362). The villages are Nhlamba, Paye, Sengezane, Sizhubane, Bethel and Ntanye with a total estimated hectarage of 33,125 including schools, households, clinics, dips, fields, stores, paddocks and irrigation schemes.

The Guyu-Chelesa irrigation scheme lies in Matebeleland South as indicated in Fig. 1. Guyu-Chelesa receives rainfall that is below 500 mm per annum and with high temperatures that lead to increased crop water requirements. The irrigation scheme started as a research station which was later resuscitated in 1995 into an Irrigation scheme by farmers who sought to improve their livelihoods. The Guyu-Chelesa irrigation scheme seeks to strengthen the status of poor smallholder farmers in the community by affording them an opportunity to participate in the management of their development process.

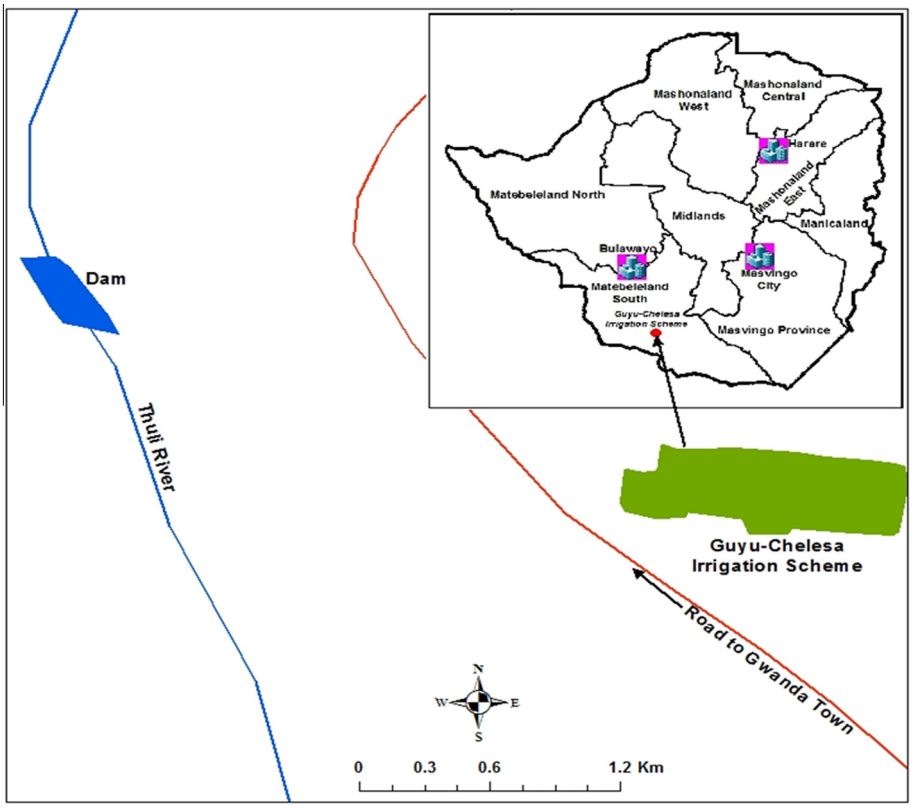

Fig. 1. Map of Zimbabwe showing the location of Guyu-Chelesa irrigation scheme.

2. Methodology

2.1. Introduction

In order to operationalize the research objectives a number of methods were used. Firstly, a description and justification of the sampling procedures will be made. Then the methods which were meant to triangulate the different data sources will be presented. The approaches used include the case study approach, secondary literature review and field data collection (field observation). It is important to note that qualitative field observations were central to understanding the social interactions within and beyond the IMC. The study asked questions on how the irrigators were represented through the Irrigation Management Committees (IMCs), what powers the IMC had and how the farmers were holding them accountable. Questions were also asked on how the irrigators were participating in decision making within their irrigation scheme.

2.2. Study sample

Williamson et al. (1977, p. 107) stipulates that 'when we sample we gather information about a few cases and select to make judgments about a much larger number of cases and select to make unbiased or representative sample.' Guyu-Chelesa irrigation scheme was selected as a case study that represents Ward 14 consisting of six villages. Simple random sampling was utilised due to the fact that all other smallholder irrigation schemes in Matabeleland, which fall within the Limpopo River Basin, were given an equal chance for selection hence a reduction of bias and an increase in representativeness.

The sample size for the study was calculated using the fundamental two thirds maxim so as to avert bias and ensure the representativeness of the sample. A stratified simple random sampling was used to determine the sample size. The total population of the irrigators is 119. The population was divided into gender strata so as to ensure that all genders are included into the sample in order to incorporate the views from both. One third of 119 (total number of irrigating farmers) which is 39 is the number of farmers who were included in the study sample. The other 36 respondents were selected from the non-irrigating farmers surrounding the Guyu-Chelesa irrigation scheme. Key informant interviews were conducted with key informants who included the Gwanda (Department of Agricultural, Technical and Extension Services) AGRITEX officials, the Zimbabwe National Water Authority (ZINWA) and Gwanda Rural District Council. The non-irrigators were interviewed using the face to face interviewing approach. Stratified random cluster sampling was used to make decisions as to whom to include in the sample population from the general villagers. Random stratification was perceived as enabling the selection of different profiles of respondents as opposed to pure random sampling.

2.3. Secondary literature review

Secondary literature review consists of written literature in the form of professional and academic journals, books, published and unpublished articles, documents and meeting minutes. This approach helped address the first objective which aimed to analyse how the Guyu-Chelesa irrigation scheme is managed. The researchers made use of the Zimbabwean Water legislation (Zimbabwe Water Act 1998 and the related Zimbabwe National Water Authority Act of 1998). Guyu-Chelesa irrigation scheme's meeting minutes, register, documents were also reviewed. The review of minutes helped address the second objective which was to evaluate the different powers and responsibilities that the Guyu-Chelesa IMC has. Minutes helped to understand the various powers and how decisions were made in the absence of the research team.

2.4. Field research

Field research comprises the collection of primary empirical evidence through the use of survey methods such as, questionnaires, interviews and observations. This approach helped address the first objective which was to analyse how the Guyu-Chelesa irrigation scheme is managed. Field research took into cognizance the value of triangulation in data gathering as both qualitative and quantitative data collection methods were exploited in the salient study. These included questionnaires, in-depth interviews, key informant interviews and observations. Field observations were also central in understanding the power dynamics and further probe on decision making process. The last objectives on recommendations on the way forward, this made use of all the methods in order to offer insights for improving irrigation management.

2.5. Data analysis

The data analysis entailed the use of bar graphs, pie charts, tabulations, averages to represent data. This basic tabulation was carried out using the Statistical Package for Social Sciences (SPSS). These were important to triangulate and complement the qualitative data collected through key informant interviews and participatory observations. Historical Trend analysis was carried out in addition to generic benchmarking in Guyu-Chelesa. This is a social science approach which maps out key events in any development such as an irrigation scheme. Thematic analysis was also carried out where key informant interviews are analysed based on key themes such as powers held by the IMC and how they were accountable to the irrigators. A literature review of irrigation schemes in countries such as South Africa and Tanzania helped to enrich the Guyu-Chelesa study.

3. Results and discussion

3.1. Management of Guyu-Chelesa irrigation scheme

The Guyu-Chelesa irrigation scheme (GCIS) is a farmer managed entity with the irrigators in control of the operations of the scheme. The state was responsible for maintenance of the infrastructure but this role has recently been passed to the farmers due to the limited state resources. This has been a major challenge faced by decentralization in smallholder irrigation schemes in Zimbabwe from the late 1990s to the present. The state was literally forced to dump its responsibilities to the irrigators.

3.1.1. Background

Guyu-Chelesa is made up of irrigators. Each irrigator has 0.2 hectares of land under irrigation. The total land holding is 85 hectares with the non-irrigated area using the remaining 53 hectares for a dairy project. Crops grown in the irrigation scheme include maize, wheat, tomatoes and groundnuts. Tuli River is the source of water which is pumped through the sand water abstraction method. The irrigation scheme is responsible for pumping the water but they have to pay the Zimbabwe National Water Authority (ZINWA) for use of water as per the Water Act of 1998. The agreement between Guyu-Chelesa irrigation scheme and ZINWA signed on the 14th of July 2009 stipulates that water will be paid at the rate of US$5 per mega litre. The irrigation scheme falls under the Shashe Sub Catchment Council which lies in the broader Mzingwane Catchment which forms part of the Limpopo River Basin.

3.1.2. Constitutional framework

Guyu-Chelesa irrigation scheme operates on the basis of a constitution. This constitution was adopted in 1995. The existence of this constitution is in line with the national standards which uphold the existence of a constitution in each and every organisation or institution. The Guyu-Chelesa irrigation scheme's constitution is the supreme law that governs the activities and operations of the scheme. The constitution provides for the general management of the scheme which captures issues of strategic planning which are essential for the smooth governance of the scheme hence enhancing its productivity. As a governance tool the constitution provides for the establishment of the committees that are meant to ensure the effective administration of the scheme.

However review of the constitution point to several defects. While in theory the plot holders should be between 18 and 65 years, there are no youths in this scheme for reasons beyond the scope of the constitution itself. The absence of the youths in the irrigation scheme was attributed to migration to the neighbouring South Africa and Botswana. The age of plot holders stretches over 65–70 years. This age profile compromises the scheme's productivity because most irrigators are of old age.

Chapter 2 (section 9(d)) of the Guyu-Chelesa irrigation scheme constitution stipulates that the farmers should adhere to farming procedures postulated by the scheme. The above provision illustrates the role of the constitution as a management tool. The constitution in question falls short in identifying and providing for the penalties to be imposed to those farmers who do not adhere to stipulated farming procedures. Interviews carried out with the irrigators revealed that some farmers are operating contrary to the stipulated farming procedures and that there are no penalties imposed on them. The AGRITEX officials also reiterated the sentiments expressed by the irrigators concerning the absence of penalties imposed to farmers who do not adhere to stipulated farming procedures. Furthermore the constitution does not make provisions on what should be done to those who do not participate in the scheme works. Neither does the constitution provide for the code of conduct that should act as a guiding principle for the behaviour and accepted standards of the farmers. As noted in Bjornlund (2004) the absence of a constitution that lays out the necessary action to be taken against law defaulters and which does not capacitate the IMC to punish these law defaulters is a major threat thwarting the productivity of smallholder irrigation scheme and consequently result in its decline. There is need to amend the constitution so that it captures the necessary provisions for the success of the scheme. A code of conduct should also be included in the amended constitution that will enable the farmers to be held accountable for their actions or inactions.

3.1.3. Institutional framework

Guyu-Chelesa irrigation scheme also operates under an IMC whose establishment is provided for in the constitution of 1995 Section 20(a). It stipulates that the IMC shall have seven (7) members that are democratically elected to office by the General Assembly (GA). These members shall consist of the Chairperson, the Vice Chairperson, the Secretary, the Vice Secretary, the treasurer and the two committee members. The IMC is viewed as the 'Board' of the scheme. There are also sub-committees that operate as an extended arm of the IMC by executing the duties delegated to it by the IMC. These include the disciplinary committee, the cropping committee and dairy committee. They report directly to the IMC.

The constitution mandates the IMC to call for general meetings, recommend the suspension of a member from the scheme, and develop work plans for the scheme. One hundred per cent (100%) of the responses from questionnaires administered to the irrigators established that the IMC's responsibility is the general

administration of the scheme with emphasis on planning, organising, leading and coordinating (POLC) various activities within the scheme. It is clear that the IMC's performance has a direct impact on the performance of the entire scheme. If strategic planning is carried out, communicated to the entire people and implemented successfully the scheme will be successful in fulfilling its food security objectives.

Clearly revealed by the interviews conducted with two AGRITEX officers was the issue of illiteracy among the members of the IMC, hence their failure to discharge their duties as expected. Of the seven members of the IMC, only one has tertiary education. This compromises the leadership and management of the scheme. Since their election into office in 2009, they have not managed to produce even a single strategic plan, financial statement and monthly reports. The councillor for Ward 14 substantiated the above, noting that though the IMC has undergone a training process they are yet to appreciate their roles. A Weberian bureaucracy is being advocated for whereby one holds position based on merit. However this might be a challenge to the concept of decentralization as it advocates for the empowerment of the communities, thus if merit is adopted as a selection criteria only a few will be selected into the IMC hence enjoying the monopoly of the management of the scheme at the expense of other irrigators. In order to promote inclusiveness and plurality, capacity building programmes should be launched at the scheme that will incorporate everyone so that all have an equal chance of being elected into the IMC.

The IMC is struggling to resolve conflicts that arise within the scheme and apply the disciplinary measures required. Funder et al. (2010) point out that water conflicts have to be viewed within the broader governance within the Integrated Water Resources Management. Seventy-one per cent of the irrigators (20 irrigators) and two AGRITEX officers supported the need to capacitate the IMC. The IMC does not punish those who do not attend the scheme's works, those who have long overdue outstanding debts within the scheme as well as those who do not follow stipulated farming procedures. Other reasons for this failure to punish law defaulters is associated with, lack of provisions from the constitution that empower the IMC to punish, social relationships that are in existence as well as fear of being 'bewitched.' This incapacity to manage conflicts within the scheme of the IMC contributes to the poor performance of the scheme as there is no stringent application of penalties and conflict is left to stir discord within the scheme.

Accountability, as defined by Manzungu (2008), is taking responsibility for one's actions and being answerable for the consequences. Moreover it was highlighted that in smallholder irrigation schemes it is easy to hold the IMC accountable because they are locally elected hence the social pressure to be accountable. Thirty per cent of the irrigators' questionnaire respondents outlined that the IMC does not fulfil its obligation of being accountable to the general assembly. Issues of transparency were raised that the IMC's transparency is questionable since the general assembly is sidelined most of the times in knowing what would be happening within the scheme. Lack of financial accountability was mentioned as a major drawback of the IMC. However 50% of the irrigator respondents argued that the IMC is transparent and fulfils its obligation of being accountable since before or after taking a particular action or decision the general assembly is consulted or a report given as to why the action or decision has been taken. Twenty percent of the irrigator respondents were not sure as to whether the IMC is accountable or not.

These views are consistent with the views gathered from the key informant interviews. The respondents asserted that the IMC might not be very consultative in nature but it does report back any action to the GA. Lack of financial accountability however is a major drawback to the scheme's success since the GA's resultant attitude is mistrust and suspicion toward the IMC.

3.2. Maintenance of the scheme's infrastructure

The Department of Irrigation and Agritex are supposed to offer technical support to the farmers which rarely happen. The general maintenance of the scheme's infrastructure is now, by default, being performed by the farmers themselves through collective efforts. At the moment each farmer is supposed to contribute US$2 per month. Despite the fund that was set for the maintenance and repairs of the infrastructure, engines and pumps breakdowns are still prevalent within the scheme. The fund rarely if at all has adequate financial resources because most of the irrigators do not fulfil their obligation of contributing to it. Hence the scheme is incapacitated to maintain and repair the engines and pumps that draw water to the plots. Continuous breakdown of engines and pumps poses a great threat to the productivity of the scheme and its financial position. The financial status of the scheme remains unbolstered and the food security threatened since the cycle for irrigating the crops will be compromised. The farmers agreed to meet regularly to ensure cleanliness and proper maintenance of the scheme's infrastructure. However these are not properly organised since only a fraction of the entire farmers meet this obligation.

The essence of decentralization is to ensure that decentralised entities are capacitated to augment their resources so as to ensure sustainability of the entity. The scheme is not able to raise sufficient resources that will ensure its sustainability. Only a quarter of the irrigators contribute towards the maintenance fund. In light of the above the scheme applied for a loan in 2011 from the Rural Electrification Agency (REA) in order to repair and purchase a new engine. However this loan becomes a burden to the irrigators since they are supposed to pay it back.

3.3. Water allocation processes

Water is extracted from Thuli River using a sand abstraction process. One engine is stationed by the river where it pumps water to the tanks situated within the scheme. Within the scheme there are two engines that pump water from the tanks to the fields. One individual ensures that the engine situated by the river is switched on in cases where power would have been cut. There is a pump minder who is stationed within the scheme to ensure that water is reaching the fields.

Irrigators purchased PVC pipes and gate valves, lined them up to regulate the water distribution process. The field is divided into blocks, with each block consisting of five plots. Each plot holder follows an agreed irrigation schedule, with all plots being irrigated at once. Such water distribution seems even and equal to all plot holders since each plot holder has 6 h of irrigating. When interviewed, eighty per cent (80%) of the irrigators and the AGRITEX officials were of the view that there is fairness and equity in the water allocation process since everyone has equal 6 h access to water for irrigating their plots although there is a technical fault in the infield layout which has resulted to low water pressure at the tail end. However, 20% of the irrigator respondents' were dissatisfied. They argued that the water allocation process was uneven and inequitable because some of the plots receive low water pressure. This issue seems to be a major concern and has a tremendous effect on the irrigators as it reduces the yields and often results in conflicts between members. AGRITEX was aware of the existence of low pressure problem as they mentioned that a mistake occurred during the design layout of the infield work. There is need to revisit the design layout of the infield work within the scheme so that the pressure problem for the tail end irrigators

is rectified and equity issues addressed since they lie at the core of decentralisation.

3.4. Participation

Decentralisation as a concept seeks to enhance participation among different stakeholders. Guyu-Chelesa irrigation scheme as a decentralized entity is meant to be representative of all the villages in ward fourteen. Seventy per cent of the irrigators pointed out that, villages such as Ntanye, Paye, Sizhubane, Nhlamba and Bethel are spatially dispersed. As a result, one village, Sengezane ends up monopolizing the scheme which is located within this village. However, 30% of the irrigators viewed the scheme as representative and allows all villages to participate. The scheme was meant to promote a decentralised approach to the use of local scarce resources but considering the above the scheme ends up being concentrated in one village hence downplaying the concept of decentralisation. Agrawal and Ribot (1999) note that oversight from the centre is still required to make sure benefits are spread out equally. Noteworthy is the fact that all villages were given an equal chance of participating in the scheme but some villages are located far from where the scheme is located hence making it difficult for the villagers to foot to the scheme on a daily basis hence compromising broad participation of the villages. Some irrigators from distant villages would temporary reside at the lodgings within the irrigation scheme.

Emerging from the interviews carried out with the irrigators, ZINWA and AGRITEX officials is the participatory role of the Zimbabwe National Water Authority (ZINWA), the Shashe sub catchment council, AGRITEX and the department of Irrigation and Engineering in the operations of the scheme. The Guyu-Chelesa irrigation scheme's constitution stipulates that the Department of Irrigation acts as a technical advisory arm to the scheme though most of the times the irrigators do not get the necessary support. Located within the vicinity of the scheme is the Agritex officer whose task is to offer technical advice pertaining to the type of crops to cultivate soil management and monitoring adherence of the farmers to proper farming procedures. The extension officer is at times faced with defiance from the farmers who deliberately disregard adherence to proper farming procedures and resist adopting and embracing a paradigm shift in terms of cultivating cash crops rather than food crops. In response to the above the irrigators noted that at times they defy the stipulated procedures due to limited funds to purchase inputs for the stipulated crop. Moreover issues of food security were indicated as the major reason for resisting a paradigm shift to cash crops.

Gumbo (2006) stipulates that the role of ZINWA and the sub catchment council in the participation of water management is intricately intertwined. If a consumer is drawing water from a ZINWA dam they should have an agreement with the supplier (ZINWA) and be levied on a monthly basis. Whereas if a consumer is not drawing water directly from a ZINWA dam as in the case of Guyu-Chelesa irrigation scheme, a permit shall be acquired from the sub catchment council and be levied after every harvest. Noteworthy, is that the irrigators had been issued with both a permit and an agreement hence resulting in their fiscus being heavily drained such that up to date they still owe ZINWA $3000. It is clear that between the two institutions lines of communication were closed and unclear hence laying the burden of financial strain on the irrigators. In order to produce effective broad participation by these institutions effective communication should be upheld because it creates a mutual understanding environment between the participants hence eliminating disorder and enhancing productivity and efficiency. The Shashe sub catchment council and ZINWA are supposed to have open communication lines pertaining to the operations of Guyu-Chelesa irrigation scheme pertaining to water use and levying strategies.

3.5. Benefits to the community

Despite the shortfalls that have been discussed above pertaining to the operations of the scheme, the scheme still remains beneficial to the community at large. Out of the 36 non-irrigating villagers interviewed, 80% of them said irrigation is important to the community. It is, however, important to note that irrigators were more knowledgeable about the irrigation operations than non-irrigators. It was also important to note that irrigators had better livelihood assets than non-irrigators. One hundred per cent of the irrigators indicated that the irrigation scheme is of great use to the community since the community at large is catered for through the selling of food to them and employment creation in exchange of food. This way household food security is ensured for both the irrigators and the community at large. Twenty per cent of the villagers (non-irrigators) observed that the scheme is producing very low yields therefore it becomes difficult for the irrigators to sell the produce to the non-irrigating villagers. Despite the overwhelming concurrence that the scheme is beneficial to the community, the villagers and the irrigators observed that the scheme is not performing to its maximum due to threatening factors such electricity power cuts, constant engines breakdown and the uneven water pressure. These factors should be addressed in order for the scheme to perform at its maximum as a tool of poverty alleviation.

Eighty per cent (80%) of the respondents asserted that the scheme was offering positive impacts to the community because in instances of food scarcity due to poor rainfall the community can purchase food from the irrigation scheme. Moreover the scheme's operation acts as an employment creation avenue whereby the villagers can be engaged in the scheme during harvest and weeding in return for food. On the contrary the view held by 20% of the respondents portrays the scheme as a failing entity that is not beneficial to the community at large because the produce is minute such that it is even insufficient for the irrigators and their households.

The irrigators's overwhelming confidence relating to the benefits the scheme offers to the community is due to the fact that in Ward 14 there are no reported instances of households with severe food insecurity. The above statistics suggest that despite various challenges faced by the scheme, it is managing to fulfil one of the major objectives of smallholder irrigation schemes (SIS) of food security. The existance of SIS in Malawi, Zimbabwe, South Africa and other African countries was mainly positioned on ensuring food security within the localities. Also the Guyu-Chelesa irrigation scheme's constitution stipulates that food security is one of the scheme's objectives and the statistics above suggest that this objective is being met though coupled with various challenges.

3.6. Challenges faced by the scheme

Since its establishment, Guyu-Chelesa irrigation scheme has been facing several challenges. Frequent electricity power cuts are the most threatening factor to the existence of the scheme. One hundred per cent respondents from the irrigators, villagers and the AGRITEX officials concur on the issue of power cuts being a huge drawback to the performance of the scheme. During the data collection period, the scheme's activities were at standstill for two weeks since there was no electricity. Fig. 2a and b below indicates pictures with crops when they were being irrigated and the other two weeks later without being irrigated.

Due to the frequent electricity cuts and the resulting inability to pump water for irrigation, the yield of the scheme at the end of the

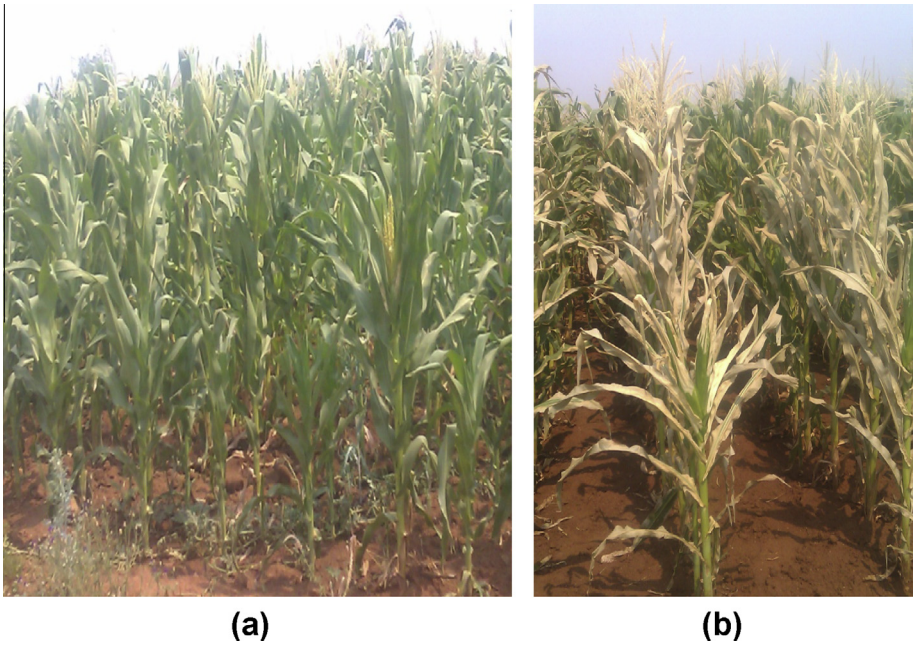

Fig. 2. (a) Crops when they were irrigated. (b) Withered crops due to water shortage.

season is low. This reduces the farmer's income such that they are unable to pay for electricity bills, water and maintenance levy. In light of the above, it is imperative for the scheme to craft and draft a new strategy that will counter the power problem. Solar energy as a strategy to counter the power crisis should be adopted because of its affordability. However, the feasibility of this need to be assessed first and lessons could be drawn from the European Union project which has implemented some solar powered irrigation pumps in Zimbabwe.

The scheme also lacks a comprehensive constitution that directs its operations in a productivity oriented manner. As has been noted earlier, the constitution should be amended and disseminated to all the irrigators in order to improve the operations of the scheme. Research findings also point to the administrative incapacity of the IMC, lack of capacity to repair and maintain the scheme's infrastructure among others. The amendment of the constitution coupled with the entire scheme's capacity building projects will result in a successful scheme which is in compliance with the decentralised model. The constitution should be written in the local Ndebele language to be better understood by all irrigators.

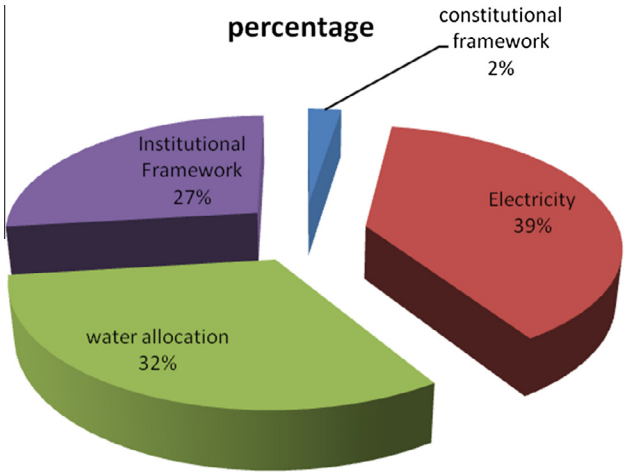

Fig. 3. Pie chart presenting components of the scheme that needs improvement according to irrigators.

Fig. 3 shows the response to the question on what the irrigator respondents considered as the major problems facing the Guyu-Chelesa irrigation scheme which needed to be addressed.

The major thrust of SIS in Zimbabwe and Africa at large (Ofusu et al., 2010) is to ensure food security within the localities. In order for the above objective to be accomplished several components of the scheme has to be strengthened. The above statistics reflect that 39% of the irrigator respondents indicated that resolving electricity issues should be a priority to the scheme. Indicated above are the severe power cuts that affect the productivity of the scheme therefore a need to implement a long term strategy to curb the problem. Water allocation processes ranked second as 32% of the irrigator respondents expressed concerns that the process should be revised to ensure equity within the scheme. This view is important in that water lies at the core of irrigation and therefore the irrigation scheme depends on water for its survival. Twenty-seven per cent of the respondents noted that the institutional framework of the scheme should be strengthened since it is the 'board' of the scheme that is concerned with management issues of the scheme. A weak institutional framework results in a failing scheme because important issues like water management, discipline within the scheme, financial accountability will be poorly administered. Two per cent of the irrigator respondents observed that the constitutional framework should be strengthened as well in order to capture important management issues that are not captured by the current framework. The reason for a low 2% response is a result of illiteracy. Most irrigators were not even aware of the existence of the constitutional framework and its importance.

3.7. Comparative analysis

Review of cases in other countries reflects almost the same experiences as those gathered from Guyu-Chelesa irrigation scheme. The Domasi smallholder irrigation scheme in Malawi as in the case of Guyu-Chelesa irrigation scheme is faced with issues of administrative incapacity since only 13% of the farmers had received training. Mupawose (1984) cited in FAO (1998), notes that

some smallholder irrigation schemes in Zimbabwe have failed dismally and are performing below capacity utilisation due to lack of farming knowledge and experience by the irrigators and poor management skills. Bembridge (2000) cited in a dissertation by Mudau (2010) indicates that the failure or near collapse of South African smallholder irrigation schemes can be attributed to a combination of lack of funds, poor management of the scheme, lack of a comprehensive legislation that empowers the IMCs to make decisions pertaining to 'bad' farmers and poor maintenance of infrastructure hence resulting in low productivity and poverty.

These scenarios are inconsistent with the downwardly accountable decentralization model which stipulates that a decentralised entity should increase efficiency, more thorough going equity and greater participation since the State, which is viewed as a constraint to efficiency, will be empowering the communities. Envisaged also in the decentralisation model is the notion that, allowing farmers to be active and manage the irrigation schemes will enhance the longevity and productivity of the scheme, Conyers quoted in Wekwete and de Valk (1990). The survey findings gathered from Guyu-Chelesa irrigation scheme and the experiences from other Sub-Saharan African countries reflect a decentralisation model which is not properly implemented as evidenced by their poor yields and poor management of the irrigation schemes.

Despite the above mentioned impediments to the viability of smallholder irrigation schemes in Africa, these schemes together with the Guyu-Chelesa irrigation scheme remain of paramount importance as they endeavour to comply with what is envisaged in the decentralization literature on food security. This study contributes to the literature on IWRM and how water users (irrigators) can participate in decision making as advocated by the 1992 Dublin Principles.

4. Conclusions

One of IWRM's key tenet is that water users have to participate in water use and its management under the Dublin Principles. This study used the decentralization lens to understand how irrigators in Guyu-Chelesa are participating in water management and with what outcomes. The findings from this study further demonstrate that whilst it is important to have decentralised management in the Guyu-Chelesa irrigation scheme, it is also important to understand what out comes result from the management structure. This is clearly in line with what Agrawal and Ribot (1999) talk about decentralization resulting in positive outcomes. The second finding was that different powers had been devolved to the Guyu-Chelesa irrigation. The devolved powers are, however, meaningless if they are not linked to increased resources at the local level. For instance, the irrigators were asked to take over more responsibilities because the central state was running out of funds from the late 1990s. Thirdly, in order to enhance decentralized irrigation governance, the study recommends that the state should decentralize powers but also provide an oversight role to make sure there is equitable development at the local level. Such oversight role will legitimate the local institutions and capacitate them for sustainable irrigation schemes. Participation of water users through decentralized irrigation management should not be naively viewed as a panacea for irrigation management challenges. Participation is one of the several aspects of water and its political-economy context which need to be understood to help inform successful IWRM in Zimbabwe.

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