Piped Water Schemes for rural water supply in Zimbabwe: Reviving a forgotten chapter. A case of Rusere Piped Water Scheme in Zaka District.

By

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A dissertation submitted in partial fulfilment of the requirements of the Bachelor of Arts Honours Degree in Development Studies at Midlands State University.

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DECLARATION

I, Desire Muneri, Registration Number R121985Y declare that I am the author of this dissertation. This has never been submitted in any academic institution by me or anyone for a degree or any other related academic activity.

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APPROVAL FORM

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DEDICATIONS

This work is dedicated to my mum, who always stood by me and to my late father. I am forever indebted to you.

ABSTRACT

The main thrust of the research was to analyse the revival of the once defunct Rusere Piped Water Scheme. The study also sought to bring out the opportunities and challenges that are faced in the revival of community owned and managed schemes. Qualitative research approach was used to carry out the research and data collection tools included questionnaires and interviews from key informants such as the DWSSC and local leaders. Field observations were also carried out to ascertain the impact of the piped water scheme on the community. The researcher discovered that the scheme had brought considerable benefits to the Rusere Community such as the availability of safe water within a safe distance and in right quantities. There has also been improvement in community participation, community based management of local resources has been boosted and women participation and empowerment have been realised through the scheme. The research also highlighted the challenges faced during the rehabilitation and operation of the scheme and these include lack of funds for expansion and political patronage on the schemes. After the analysis of the data from the field, the researcher discussed possible measures that can be employed to make the rural piped water schemes a sustainable water supply system. The formation of Public-Private Partnerships in rural water supply proved to be the way to go in realising safe water supply in rural communities.

ACRONYMS

CBM	Community Based Management
DDF	District Development Fund
DWSSC	District Water and Sanitation Sub-Committee
IRWSSP	Integrated Rural Water Supply and Sanitation Programme
EHT	Environmental Health Technician
MDG	Millennium Development Goals
NAC	National Action Committee
PPP	Public-Private Partnership
RDC	Rural District Council
RWP	Rural WASH Project
UNICEF	United Nations Children's Fund
WASH	Water, Sanitation and Hygiene
WHO	World Health Organisation
WPC	Water Point Committee
WSP	Water and Sanitation Program
ZINWA	Zimbabwe National Water Authority

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INTRODUCTION

The availability of clean and safe water for human consumption remains a challenge in many developing countries. As the Millennium Development Goals (MDGs) come to a close end of 2015, it is worthwhile to note that the developing countries are still having challenges in providing water to their citizens. According to the United Nations Children's Children Fund (2010) 344 million people in Africa are without access to an improved source of water for clean and safe water. Zimbabwe has seen an influx of funds mainly towards the attainment of MDG goal on access to water and sanitation but water supply is still a problem in rural areas. With the adopted Sustainable Development Goals on the September 2015 United Nations General Assembly meeting and water supply among the goals it is imperative to look at other alternative ways of supplying water to the rural areas.

Piped water schemes were adopted soon after independence by the government in a bid to improve rural water supply. These were introduced in selected rural communities and growth points. The long term view of this move was to expand the service to cover more rural communities. However with the advent of the Economic Structural Adjustment Programme (ESAP), government reduced its spending on public services and rural water supply was no exception. This affected the growth of piped water supply schemes in rural Zimbabwe. Most of the established piped water supply schemes in rural communities died a natural death due to lack of involvement of government structures and unclear ownership and management structures of the schemes. Currently left are piped water supply schemes at growth points where the rural district councils are maintaining them.

The Rural WASH Project (RWP) implemented by the government and UNICEF starting from 2012 realized the importance of piped water schemes. NAC (2012) pointed out that the project had the task of rehabilitating one piped water scheme per district. Districts were also given the chance to trade some of their borehole drilling targets with piped water schemes. The project has breathed life into the water supply technology that had been neglected in rural Zimbabwe. The research was an in-depth study of the Rusere piped water scheme in Zaka District which is owned and managed by the local community. Zimbabwe has been affected and continues to be affected by water related epidemics like cholera and diarrhoea. Studies have shown that lack of access to safe water and sanitation can negatively affect development.

Background of the Study

Despite the United Nation's recognition of access to clean and safe water as a human right, Africa still lag behind in the provision of the same. Most governments are prioritizing other sectors like defence at the expense of the water and sanitation sector. According to UNICEF (2010) Rwanda in 2007 cut spending in service provision as the focus shifted to conflict response and poverty reduction and that had negative impact on rural water supply and sanitation. Rural populations are the ones that suffer most in cases of neglect of the Water, Sanitation and Hygiene (WASH) services by the government.

Worldwide, access to clean and safe water remains a problem especially in the developing countries. UNDESA (2010) quoted UN MDG Data as pointing out that only 49% of the population in developing countries has piped water in their dwellings. The figure is further lower in Sub-Saharan Africa where only 5% of rural households have access to piped water. UNDESA (2010) further pointed out that over a quarter of the households in Sub-Saharan Africa need over 30minutes per every trip to fetch water. This is a clear indication that safe water is scarce in most Sub-Saharan Africa.

African countries are using different technologies in the supply of water to the rural communities. Cheng et al (2012) pointed out that in the Darfur region in Sudan, communities are making use of wells to access water. These wells mostly have been improved by NGOs in the areas to provide clean water for communities. The case has been different in most central and northern African states where they have embraced piped water supply in rural areas. Hoang et al (2010) noted that countries such as Rwanda, Benin, Burkina Faso, Niger, Mali, Uganda, Senegal, Kenya and Mauritania have around 17% of their rural population depending on piped water. Other African countries mainly make use of boreholes and deep wells to obtain safe water though most sources are not protected.

In Zimbabwe the provision of safe water and sanitation especially in rural areas is still a problem. This has greatly resulted in the spread of water borne diseases such as cholera which claimed around 4000 lives and affected over 100 000 people in 2008 to 2009 (NAC, 2012). The problem dated back from the colonial era where the minority government concentrated WASH utilities in the urban areas thereby relegating rural areas. The government has failed to close the gap between rural areas and urban areas in terms of access of water.

Currently in Zimbabwe only a few rural communities have access to piped water. Most communities rely on boreholes and sometimes unprotected sources of water. The government has indicated that it wishes to shorten distance to safe water sources by 500m. The National Action Committee (2014) noted that only 2.6% of rural communities in the five provinces of Masvingo, Midlands, Matabeleland North and South and Mashonaland West have access to piped water into their yards. This clearly shows that the government's dream to shorten the distance to an improved water source can only be achieved through piped water schemes which have the ability to reach many homesteads.

NAC (2014) reported that of all the piped water supply schemes in rural Zimbabwe, only 15% are functional. The rest have since long broken down and due to not clear ownership structures they have not been attended to. This has greatly affected water supply in rural areas and notably some rural service centers. Zimbabwe was failing to adapt to climate change because no alternatives to traditional modes of water supply in rural Zimbabwe have been introduced. It can be noted that surface sources of water are under increasing evaporation due to high temperatures and as such exposing thousands of rural communities at risk of water shortages.

The Rural WASH Project (RWP) which is a government of Zimbabwe project funded by the United Kingdom's Department for International Development (DfID) and Swiss Development Agency (SDC) is spearheading the revival of piped water schemes in rural Zimbabwe. The project is being implemented in 33 districts across five provinces in the country. The project is aiming at reviving one piped water scheme per district which is managed by the community. The project provided all the necessary materials needed in the rehabilitation of the schemes and the communities provided labour.

The Rusere piped water scheme was the one chosen for rehabilitation under the Rural WASH Project in Zaka district. The scheme was rehabilitated in 2012 when the project commenced. CARE International in Zimbabwe as the Implementing Partner of the government in Zaka district played an important role of assisting the community during the rehabilitation of the scheme. The scheme targeted the Rusere community including the local primary and secondary schools.

Statement of the Problem

Access to safe water in most rural areas in Zimbabwe is still a dream that is yet to be fulfilled. This is despite the influx of funds from international organizations and foreign governments into the water supply sector. Focus has been mainly on drilling of boreholes and sinking of wells. Attention has not been paid on the potential that is presented by the revival of piped water schemes in rural water supply. Safe water supply is essential for human survival and therefore there is need for investment in various water supply technologies such as piped water supply systems so that all rural communities can access safe water.

Conceptual Framework

Water supply

Water supply for the purposes of this research focused on the availability of water for domestic use in rural areas. In this context water supply involves the availability of water sources in the communities. The water source should be one that produces safe water for human consumption. The distance from the water source to the point of use should also be less than one kilometer and the trip to the water point should be accomplished within 30 minutes. The research revealed that water supply in the district was problematic. The unprotected wells posed a health hazard to the local populace. Some of the boreholes have become seasonal due low rainfalls and retreating water tables and that posed a huge challenge to communities.

Piped Water Scheme

Piped water scheme is the supply of water through the use of pipes from the source which may be a deep high yielding borehole or a dam or river. In the case of the study, the scheme relied on a high yielding borehole for water supply. The onus on the installation of these piped water schemes lies with the rural district council, District Development Fund (DDF) and the government. Piped water schemes were brought to the scene in rural areas by the government soon after independence but most of them later collapsed due to a number of factors. Chief among the factors that made the schemes not sustainable was the aspect of ownership of these schemes which was not clearly spelt out (NAC, 2006). The RWP have embarked on the revival of piped schemes that are community owned and managed. The main idea is to seek the sustainability of these schemes in the long run.

Research Aims and Objectives

Aim

To evaluate the opportunities and challenges that are associated with the revival of the once defunct community owned and managed piped water schemes in rural Zimbabwe.

Objectives

- To give an overview of the rural water supply in Zimbabwe.
- To examine the contribution of the Rusere Piped Water Scheme in providing water supply to the Zaka community.
- To identify challenges associated with community owned piped water schemes to rural water supply and ways to make the schemes sustainable.

Research Questions

- What is the general overview of rural water supply in Zimbabwe?
- What role has been played by Rusere Piped Water Scheme in providing water supply to the Zaka community?
- What are the challenges of reviving piped water schemes?
- What can be done to make rural piped water schemes sustainable?

Significance of the study

The research is of paramount importance as it sought to analyse a water supply technology which is being under utilized in rural communities. Water supply in rural Zimbabwe has remained a problem throughout the 35years of independence and as a result there is need to find sustainable sources of water supply. The study sought to bring out the water supply situation in the ward thereby providing policy makers with an insight on the experiences of communities.

The Sustainability Development Goals (SDGs) also point out lack of access to safe water as one reason behind underdevelopment. It is against such background that the study sought to provide the government and development partners in the water supply sector alternative ways of delivering water to rural communities. Zaka district has been deviled by water shortages as supported by the findings of Zimstat in the 2012 census that unprotected sources of water are still being used as main sources of drinking and cooking water. The District Council stand to

benefit from the study as the positive and negative impacts of piped water schemes will be analyzed in depth.

Furthermore the study provides recommendations of making piped water schemes sustainable. This would assist both the communities where the schemes are in use as well as the development partners to increase funding in different technologies that seek to improve rural water supply. Sustainable development has become the flavor of the moment and the research brought out sustainable measures that are needed in the rural water supply sector.

The study is also of essence as it explored how different groups in the community benefit from the scheme. This would guide funders and policy makers on how to assist the community in the drive towards community development. This also acts as a yardstick on how future initiatives are to be carried out.

Literature Review

It has been noted that water demand will grow by over 40% by 2050 while currently over 1.8 billion people are still using unprotected sources of water for consumption and domestic use (Chen et al, 2012). It has been noted that the most affected by water scarcity are the rural dwellers in developing countries. UNDESA (2010) pointed out that when clean water is not easily available, much time would be spent fetching water and less time would be given to ensuring adequate nutrition for the family. This would increase levels of poverty in a household. Vulnerability levels to shocks are also high in communities without adequate access to water. This is supported by UN Office of the High Commissioner for Human Rights (OHCHR) (2010) which pointed out that a household that is deprived of access to adequate water at the right distance is prone to shocks and can be termed poor as it has no decent livelihood. This shows that lack of access to safe water is greatly linked to poverty. Therefore there is need to find solutions to rural water woes in order to achieve development.

According to the Cheng et al (2012) access to water and sanitation is linked to the achievements of most other MDGs. This serves to show that access to safe water is linked to other various human rights. For example the girl child's right to education is undermined when she is made to travel long distances to fetch water instead of attending school. Long distances to water sources may expose the girl child and the women to sexual abuse along the way. Access to safe water is linked to the achievement of the MDG goal on reducing child mortality through the reduction of water borne diseases. World Health Organisation statistics

show that diarrhoea is the second leading cause of death after pneumonia for the children less than five years of age. Therefore according to this indication, a rise in the access to water would reduce under-five mortality. This serves to show that there is great need to find solutions to rural water problems so that prominent global problems can be addressed.

Access to water can play a significant role in bringing out levels of gender inequality in societies. Cheng et al (2012) pointed out that in Kuma Garadayat in North Darfur it is the role of women to collect water from the only well in the area which takes most of their time. This shows that lack of access to water exacerbates gender inequalities in developing countries. Traditionally women in Zimbabwe are responsible for fetching the bulk of water being used in households. Due to high levels of poverty women would be carrying 25litre bucket with an extra 5litre container in the hand for more than one kilometer for more than one trip. This clearly proves that water scarcity bring an extra burden to the women.

According to the World Bank as quoted in UNDESA (2010) piped water supply in most rural communities of developing countries still remains a dream. It further pointed out that UN MDG data shows that only 49 percent of the population in developing countries has piped water in their dwelling. However most of the percentage is taken by urban population. In Sub-Saharan Africa UN MDG data shows that only 5percent of the rural population has access to piped water in their dwelling or yard (UNDESA, 2010). This is clear evidence that water supply is still problematic in most rural communities in the developing world. The failure by governments in developing countries to fully take into consideration piped water schemes for rural water supply calls for an investigation into the strengths and weaknesses of the technology.

OHCHR (2010) pointed out that rapid assessments on water quality carried out by WHO and UNICEF in eight countries showed that drinking water obtained from piped water supply sources was 90percent in compliance with the WHO drinking water quality standards. Other sources had between 40 and 70 percent compliance with the WHO standards. These findings by WHO and UNICEF shows that piped water schemes are the most reliable source in providing safe water. With water accessibility established as a human right, the onus is to make sure that the population has access to safe water that meets the standards set by WHO. Piped water has proved to meet these standards and that calls for its adoption in the developing world to enhance rural development.

Zimbabwe's water sector is characterized by malfunctioning and broken down water points. NAC (2012) pointed out that in Zimbabwe water coverage was 75% in rural areas in 1999 but by 2007 over a third of the rural population had no access to improved drinking water. Most water points are characterized by constant breakdowns. Most of Zimbabwe's water infrastructure is generally old and as such expensive to maintain. The rehabilitation of the already established water supply system can prove beneficial considering that the government is cash strapped. The piped water schemes cover a lot more ground as compared to other water delivery technologies. It is important to study the role that can be played by these piped water schemes in easing the problem of water shortages in rural Zimbabwe.

Climate change is adding other stresses on the already volatile water situation in Zimbabwe. According to Chagutah (2010) Zimbabwe is now receiving medium to low rainfall as a result of climate change. This in turn can explain why most water points are now seasonal. This means that rainfall is decreasing thereby creating water stress to the communities that rely on surface sources of water which are rain fed. NAC (2006) pointed out that with climate change befalling the WASH sector, there is need to find sustainable means of water supply in rural Zimbabwe. Climate change is threatening traditional water sources and thus the need for investment in various water supply technologies.

Research on piped water schemes has been minimal in Zimbabwe but there are documented cases of the piped water supply schemes throughout Africa. Mwangi (2014) carried out a study in Nyandarua County in Kenya with the Kangui Water Scheme as his case study. The study looked only on the sustainability factors associated with piped water schemes in rural area. The study on Rusere looked on the impact of the revived piped water scheme on the livelihood of the local population and at the challenges associated with the resumption of the schemes. The research also suggested sustainability measures to rural schemes. The research addresses the rural piped water schemes in a Zimbabwean context.

Various organisations have carried out researches on the viability of piped water schemes in Africa over the years. It is however important to note that most of the research focused on central Africa and Zimbabwe was not included. Hoang et al (2010) carried out a research in seven African countries of Burkina Faso, Benin, Niger, Mali, Mauritania, Senegal and Rwanda on how rural piped water schemes can be maintained for the benefit of all communities. They further pointed out that 17% of rural population in the study countries depend on piped water supply schemes. Kenya, Senegal, Niger and Rwanda has 1 200, 1 260,

850 and 850 rural piped water supply schemes respectively. Piped water schemes seem to have worked in these countries. There is need for an investigation on rural piped water schemes in Zimbabwe to ascertain if the experiences can be replicated here.

Zimbabwe has failed to fully utilize the piped water supply schemes for rural water delivery. Zimstat (2013) through the 2012 national census show that only 4.2% of the rural population have access to piped water in their communities. The census also showed that in Masvingo province only 3.7% of the rural population has access to piped water in their communities. This shows that the local authorities and the government have let the once promising piped water schemes die a natural death. NAC (2012) pointed out that Zimbabwe boasted for about 533 rural piped water supply schemes but however lamented the fact that nearly 90% of the schemes are not functional or are functioning below their full capacity. These statistics calls for a deeper investigation on as to why the communal piped water schemes have not received adequate attention.

Previous WASH intervention programmes neglected the piped water supply schemes in their projects scope. According to NAC (2011), Zimbabwe Water, Sanitation and Hygiene (ZIMWASH) had the purpose of having improved access to water and sanitation in rural Zimbabwe. The project lacked any room for the introduction and revival of other water supply technologies. This is in contrast with the Rural WASH Project which called for the revival of 33 piped water schemes in five provinces. This goes to show that piped water schemes though neglected by the government and other local authorities still pose considerable potential in the rural water supply sector.

Research Methodology

Approach

The researcher employed the qualitative research methods in exploring how the piped water scheme in Rusere has changed the lives of the local community. The qualitative approach helps in getting the attitude of the Rusere community to the piped water scheme. Qualitative approach allows the researcher to get an inside perspective on the subject. The research focuses on finding the impact of revived piped water schemes and that could be best brought to light through qualitative means which allowed for the unstructured views of the respondents.

The qualitative approach is also more flexible. The method made the research more interesting as it enabled the researcher to interact with the respondents in a less formal way. The researcher was able to probe issues that would need further clarification and respondents felt free to elaborate further in detail their experiences and attitude. The approach also took into consideration both the illiterate and the literate members of the society as it gave room for clarification of questions. Development calls for the inclusion of all people despite their education and the qualitative approach does just that.

Sampling

Purposive sampling was made use of in the research on how the revived piped water scheme has impacted on the lives of people in Rusere. Purposive sampling was used to pick respondents from the DWSSC, CARE Zimbabwe and NCU. Convenience sampling was also employed in picking respondents from the community. Zaka District is composed of 34 wards but the study focused on ward 10. The district was chosen because it is one of the driest districts in the country which experience water shortages and there is need to come up with ways to address that problem of water shortages. Ward 10 was specifically chosen because it is one of the wards in the country that house a revived piped water scheme. The study was focused on revived water schemes and Rusere is a good example of a once collapsed piped water scheme which has been brought back to life.

Data Collection Tools

Interviews

The researcher made use of the semi-structured and in-depth interviews. The interviews allowed the researcher to take note of non verbal communication cues and further probing was made possible. Interviews also allowed the researcher to communicate and get the views of all people including the illiterate. Key informants interviewed were 2 District Water and Sanitation Sub-Committee members (DWSSC), 2 Water Point Committee (WPC) members, one village head, one school head and one member of the National Coordination Unit (NCU). The researcher also interviewed 8 household members from the four villages in Rusere community since more households were covered through the questionnaires. The DWSSC members were specifically chosen for their knowledge of the water supply system in the district and the WPC members for their hands on experience on the running of the scheme. The community members were needed for sharing of their experience on the scheme.

Interviews also allowed the researcher to get in depth understanding of the views of the community and the authorities on the piped water scheme. This tool also allowed the researcher to interact with even the illiterate members of the community. It the result of these benefits that the researcher employed interviews as a data collection tool. Interview questions were divided into two sets that is one for the authorities (DWSSC and NCU) and the other for the beneficiaries (WPC, village head, school head and households).

Questionnaires

Semi- structured and unstructured questionnaires were used to gather data on the impact of the revival of the Rusere piped water scheme on the community. These set of questionnaires were chosen as they allowed freedom of the respondents on answering and helped in bringing out how the community felt about the piped water scheme. They are also free from bias since the respondents were not given any answer to choose from. Questionnaires assisted to obtain data from the members of the community that do not always participate in public gatherings due to culture and societal norms like women and children. The respondents had the freedom to answer alone without any hindrances and without fear of being judged for their responses.

The questionnaires were grouped into two sets for the key informants. The first set was for the service providers tasked with providing water to the communities. The questionnaires were distributed as 5 to the DWSSC, 2 to CARE Zimbabwe and 1 to NCU. The other set of 20 was for the beneficiaries of the scheme that is the local community. Purposive sampling was made use of in the distribution of the questionnaires targeting people with knowledge of the scheme.

Observation

Observation enabled the researcher to have a photographic knowledge of the situation on the ground. Observation entails the viewing and describing behaviours of the members of the study area. Observation allowed the researcher to have first hand information on the area under study. The researcher made use of the participatory observation whereby the researcher viewed the events from the community's perspective. Here the researcher was able to see the trends of who obtained water from the taps and made an appreciation of the scheme's infrastructure. Pictures were also taken through this data collection tool. Observation greatly assisted the research since information found was first hand and therefore reliable.

Desktop Review

Desktop review mainly refers to information or data gathered earlier for other purposes but could be used to shed insight on the subject under study. The researcher used information from other sources such as textbooks, reports, internet, scholarly articles, journals and census. The secondary sources therefore assisted the researcher in having base information about the topic on rural water supply. These sources enabled the researcher to have a clear picture of what is happening in the rural water supply sector throughout the world and in Zimbabwe.

Limitations

The research required considerable amount of funding to cater for typing, printing and transport costs to visit Zaka which is far from Gweru where the researcher is stationed at Midlands State University. The researcher countered these challenges by using purposive and convenience sampling techniques in selecting the respondents. This resulted in saving time in the field thereby also saving funds. The researcher made use of funds from family and friends to cover the expenses associated with the research. It is through these ways that the researcher addressed the problems faced during data collection and as a result credible results were obtained.

Delimitations

The research was confined to the Rusere community which is in ward 10 in Zaka District.

Ethical Considerations

The study adhered to the widely accepted ethics in the research fraternity. Confidentiality was of paramount importance in the research and identities of the respondents were protected. The questionnaires were designed in such a way that no names of respondents were required. The obtained data was only used for the sole purpose of the study. To guard against plagiarism the researcher referenced all the works that were used in the research by making use of the Harvard Referencing System. This meant that all texts used were acknowledged both in the text and at the end of the research. The researcher was also abiding by safety procedures during the research and that ensured that no respondent was hurt during the research.

Structure of the Dissertation

The dissertation will be presented in three chapters. The first chapter details the rural water supply situation in Zimbabwe. It traces the history of the sector up until the contemporary setting. The second chapter is about the Rusere piped water scheme and brings out the findings from the research. The third chapter will focus on the sustainability of the revived piped water schemes in the long run in order to ease the problem of water scarcity in rural areas.

CHAPTER 1

RURAL WATER SUPPLY IN ZIMBABWE SINCE 1980

1.1 Introduction

This chapter focuses on the efforts made by the government and development partners in the provision of clean and safe water in rural Zimbabwe. The chapter points out the progress that has been made as well as challenges in rural areas accessing clean water in Zimbabwe. The researcher will highlight the agreed international standards on the provision of safe water in rural areas. The chapter also discusses the various technologies used in water provision in rural Zimbabwe. The chapter also looks at the legislation governing water supply in the country as well as efforts by the international community in helping rural Zimbabwe to access safe water.

1.2 Efforts made in Zimbabwe to provide water to rural communities since independence

The settler regime concentrated its efforts on water delivery in urban areas while neglecting the rural communities. This resulted in uneven development of water delivery infrastructure between the rural and urban areas with the rural areas disadvantaged. This was the structure that the government inherited upon independence. The government was faced with a mammoth task of addressing the inequalities that had been left by the white minority rule. Some of the water points had been destroyed during the liberation war of independence. There was also the shifting of global standards in the water delivery system that the government had to catch up with. All this was expected from a government that also had the task to rebuild from the destructive war. The problem was further compounded by the rapidly growing urban population which also needed additional water supply infrastructure.

Upon independence the government took a socialist stance and was the one providing for the needs of the communities. The first step taken by the government was to create responsible authorities for the provision of safe water to communities. The government recognised the need to have an organised way of delivering water and such the formation of the National Action Committee (NAC) in 1985. NAC's responsibility is to ensure the provision of clean water and basic sanitation in the country. NAC was chaired by the then Ministry of Health and Child Welfare and had the mandate of managing the Integrated Rural Water Supply and

Sanitation Programme (IRWSSP). NAC also has the responsibility of coordinating all water supply projects through its secretariat, the National Coordination Unit (NCU).

The IRWSSP was guided by the National Master Plan for Water Supply and Sanitation (NMPWSS) in its operations. It aimed at providing guidance to the availability, reliability and quality of national water resources (Makasi (1998) as cited in Machiwana, 2010). According to Machiwana (2010) the Ministry of Water Resources and Development pointed out that the IRWSSP had the main aim of providing the entire population in the communal and resettlement areas with access to safe and adequate water supply by 2005 through affordable means. This was to be achieved through 576 piped water schemes at growth points and selected communities and primary water supplies. Butcher (1990) as cited in Machiwana (2010) pointed out that the target population was 330 000 people living in rural areas with a target of implementing and upgrading 36 000 primary water supply sources such as boreholes and protected wells and springs. The table below shows the progress made by the IRWSSP. The time frame ends in 1999 because that is where the government last provided funds for the program.

Table 1: IRWSSP physical achievements by 1999

Facility	**Planned Number**	**Facilities by 1985**	**Facilities by 1999**	**IRWSSP Achievement**	**1999 Rural Coverage**
Sources of safe water	36 000	9 000	34 000	25 000	90%

Source, Robinson (2002)

The government also set up a number of institutions to achieve the goal of having countrywide access to water and sanitation. The Ministry of Water Resources Development and Management was established with the aim of having an oversight of water resources in the country. The Zimbabwe National Water Authority (ZINWA) was formed with the aim of providing technical support to the ministry of water and local authorities in the provision of water. The Ministry of Local Government, Urban and Rural Development had the responsibility of providing water to both rural and urban population through the local authorities. District Development Fund (DDF) was established to boost the provision of water in rural areas as well as maintenance of the water supply infrastructure.

It is of paramount importance to note that despite the creation of all these institutions, the rural water supply sector is still having problems. There has been lack of clear cut boundaries on the roles and duties of these various stakeholders in the provision of water in rural areas. This has resulted in some institutions neglecting their roles on the pretext that they belong to another institution. According to Manyanhaire (2009) the water supply sector has encountered problems because numerous and sometimes not necessary institutions which make the governing of the sector problematic. Lack of clear cut roles limited the success of the IRWSSP in achieving its goals.

The government used the supply driven approach in providing water in rural areas. As mentioned earlier the government adopted socialist ideals upon independence and as such it was supplying everything to the communities. This saw the boreholes drilling, dam construction, sinking of deep wells and establishment of piped water schemes in rural areas. The government together with development partners such as the Norwegian Development Agency embarked on ambitious projects of drilling boreholes countrywide. There were also a number of donors that provided funds for the provision of water. It is therefore reasonable to note that access to water in the country reached its highest during this period.

Another project implemented by the government was the ZIMWASH project was implemented in the country from 2006 to 2011. The focus of the project was to improve access to water and sanitation in six districts across the country. The project aimed at rehabilitating broken down water points, boreholes drilling and construction of piped water schemes. UNICEF (2011) pointed out that the project improved access to safe water to around 218 751 people in the targeted districts. This goes to show that both government and the third sector have been actively involved in the provision of safe water to rural communities.

The government changed its development approach in the second decade after independence. Socialism had proved to be costly and the government had to move way form socialism in order to source funding from the international community. The Economic Structural Adjustment Programme (ESAP) which was adopted by the government in the 1990s meant that public spending had to be reduced significantly. The rural water supply sector was heavily affected along with all other sectors that used to receive huge government support. The district councils were left to cater for their communities and most of them found it hard to provide clean water for all their communities.

The lack of access to safe water sources in rural areas has been witnessed in recent years. The unforgettable cholera outbreak in 2008 is a constant reminder of how lack of access to safe water can do to a nation. This shows the far reaching consequences of lack of access to safe water. Research shows that 55 out of the 62 districts in the country were affected by the outbreak including the researcher's study area, Zaka District. Such an outbreak indicates that interventions in rural water supply faced various challenges which limited their successes.

1.3 External cooperation in water supply

The efforts of the Zimbabwean government in improving levels of access to safe water in communities have been complimented by various external organisations. Foreign governments, NGOs and multi-lateral institutions have played an important role in the water supply sector in Zimbabwe. The German, Australian, British and the Swiss governments have injected large chunks of funds in the rural and urban water supply in Zimbabwe. AMCOW (2011) pointed out that Germany through its technical arm, GIZ has provided around US$6 million for water supply projects in the country while African Development Bank (AfDB) through its African Ministers Council on Water (AMCOW) has assisted the country. The World Bank through its Water and Sanitation Programme (WSP) has also played a role. Organisations such as UNICEF and World Health Organisation have also been heavily involved in water supply projects across the country.

1.4 Sphere standards on Water Supply

The United Nations has enshrined the access of clean and safe water as a fundamental human right. Zimbabwe in 2010 was among the 122 countries that voted in favour of the UN General Assembly resolution recognizing access to clean water as a human right. The resolution called for states and international organisations to provide funds, enhance capacity and provide technology mainly to the developing world, in scaling up efforts to provide safe, clean, accessible and affordable drinking water for all (UN, 2010). This follows the realisation that most people especially in developing world were not accessing water. Water is necessary for human, animal and plant survival and as such should be made accessible to people. The OHCHR (2010) have indicated that it plans to make the right to water legally binding for all nations that are signatory to the resolution.

According to NAC (2014) accessible means being within a safe physical distance, affordable and the law should spell the people's right to water. It further point out that a water source

should be within 1 kilometre of place of use and that it should be reliably possible to obtain at least 20litres of water per each household member per day. There is still a lot to be done in order to fulfill this human right as most local authorities prioritise other projects such as road construction at the expense of water provision to rural communities.

The UN as quoted by the Ministry of Water Resources Development and Management (2012), stipulates that trip to a water point should be made in a within 30minutes. World Health Organisation (WHO) stipulates that standard time at a water source should be less than 15minutes. Research however shows that most water points in rural Zimbabwe are characterised by long queues. With the responsibility of fetching water mainly on children and women, most of their productive time is lost while fetching water. People are spending at least two (2) or more hours on fetching water for household use.

The MWRDM has also set standards for water supply in the country. Deep wells and boreholes are supposed to serve not more than 150 and 250 households respectively in rural areas. This was done so as to reduce breakdowns of water points. The Water Policy of 2012 stipulates that a down time allowed for a broken down water point should be less than 72 hours. This is the period that is expected to be served by reserved or stored water in households. Should these standards be adhered to, rural communities would be able to access safe water on a regular basis. This has not been the case in the country as boreholes are serving far more households than they are designed to cater for and that has translated in constant breakdowns.

WHO also stipulate that water samples have to be taken from water points once every 6 months for quality testing. Water quality testing is important as it provides the status of water being consumed. Should any anomaly be noticed, necessary measures would be put in place. In some instances water points would be condoned from the public in order to protect the people. This however is still lagging behind as some boreholes in Harare were later discovered to be spreading cholera (NAC, 2012).

1.5 Policy and Legislative Framework Governing Water Supply in Zimbabwe

Water supply in Zimbabwe is governed by a number of policies and legislation. These assist in bringing out how water resources are shared and used in the country. The National Water Policy of 2013 stipulates the use and management of water resources in the country and is based on the Water Act (20.24) (MWRDM, 2013). The Zimbabwe National Water Act of

1998 (ZINWA Act) was also enacted. The Environmental Management Act (20.27) is there to protect water sources from pollution by different industrial and agricultural activities in the country (NAC, 2011). The Local Authorities Act, section 183-187 and the Rural Districts Act (29.13) gave RDCs the responsibility of providing water and organising the communities to maintain their water points to the rural district councils (NAC, 2000). The Acts are however numerous and that tends to create confusion upon implementation. Calls have been made for the harmonisation of the laws for the betterment of the water supply sector.

1.6 Current Water Coverage in Zimbabwe

Zimbabwe has employed a number of technologies focusing on eradicating water shortages throughout the country. Coverage of water supply differs by region's rainfall patterns. Most of the drier parts of the country experience water problems because water tables tend to be extremely low in such areas. NAC (2012) pointed out that there are 533 Village Piped Water Schemes in the country but around 90% of these schemes are not functional at the moment. This is due to destruction by floods and lack of capacity by local communities to manage them. The country also boasts of around 80 000 Bush Pump boreholes though 60% are broken down at any given time (NAC, 2012). Some communities depend on deep wells especially in regions with high rainfall.

The source of water for any given area solely depends on the rainfall patterns and soil types. Boreholes have proved to be ineffective mostly in the dry parts of the country notably Matabeleland North and South provinces (NAC, 2012). This has been attributed to low rainfalls and very low water tables. In some of these areas the water is salty thereby making boreholes ineffective and here an average borehole broke down for at least thrice every year. Time spent at a water point increases from the stipulated 15minutes to more than an hour. It is in such areas that piped water schemes have come in handy in addressing the water woes of the rural communities.

Water coverage in the country differs by region however the rural areas tend to have lowest coverage. Recent researches in water supply sector have supported this observation. The average percentage of the country's access to water in 2014 was pegged at 76, 1% which was an increase from the 70% in 2009 (Zimstat, 2014). It must also be noted that the huge percentage of water supply coverage is taken by urban areas in the respective provinces. The table below shows the water supply situation in the country and how the service is better in the metropolitan provinces as compared to the predominantly rural ones.

Table 2: Water supply coverage in Zimbabwe

Province	Water coverage (%)
Mashonaland Central	65,9
Mashonaland West	68,5
Mashonaland East	81
Harare	97,2
Midlands	71,5
Manicaland	78,9
Masvingo	64,3
Matabeleland North	69,1
Matabeleland South	73,1
Bulawayo	98,9

Source, Zimstat (2014)

The policy in terms of rural water supply in Zimbabwe has moved from supply driven approach to demand led approach. The government has recognised that the supply approach that was in place from independence cannot be sustained. This has resulted in the government providing education to the communities so that they would finance their own facilities. This is in line with the global trends whereby communities that are empowered with knowledge on the importance of safe water facilities are taking the initiative in maintaining and sustaining the facilities on their own.

1.7 Challenges faced in rural water delivery

The water supply sector has been on the downfall in the second decade of independence of Zimbabwe because of various reasons. It is ironical to note that the end of the UN Decade of safe drinking water (1981-1990) also signalled the drop in water supply standards in Zimbabwe. NAC (2012) pointed out that access to safe water started dropping from around the early 1990s.

The colonial legacy of putting urban areas first before the rural communities continued even after independence. Scholars like Moore (2005) argue that though the government tried to correct the historical imbalances between rural and urban areas, it failed to close the gap. The rural areas were once again only given second preference to urban areas. Water supply coverage was low in rural areas during the colonial era and continues to be low as compared to urban areas in post independent Zimbabwe. Manyanhaire (2008) argue that in rural areas

access to water was politicised in that best resources were used to reward loyal subjects thereby neglecting the rest. Prioritization of urban areas at the expense of rural areas in terms of water supply has been the country's biggest challenge.

It is imperative to point out that the government was using the top down approach in the provision of water services in rural areas. The lack of consultation of the local communities can be pointed out as one reason behind the limited successes of the IRWSSP. Most boreholes that were drilled during this time have since broken down (Joint Sector Review, 2011). Communities were used to the government and donors providing for them so when the water points broke down they waited for the donors to repair them. To the communities the water points belonged to the government (NAC: 2006). This resulted in the non-functioning of many boreholes, deep wells and piped water schemes in the country.

Water delivery services in the country have come under threat on numerous occasions from natural disasters. The country has been faced by numerous droughts over the past two decades notably in 1992 and in 2012. The country experienced floods in the new millennium notably cyclone Eline in 2000 and Cyclone Japhet in 2003 (Maguvu, 2008). The shortage of food made the government and the various development partners to focus on food security while neglecting the installation and maintenance of water supply infrastructure. The floods on the other hand led to the destruction of water supply infrastructure countrywide.

The economic and political crisis in the country since the turn of the millennium has also negatively affected water delivery in rural Zimbabwe. The country's vast revenue was used to finance other government policies such as the DRC war and war veterans' payouts thereby starving all other sectors of the country. The rural water delivery was no exception since departments such as DDF and ZINWA could not operate at full capacity. This had a negative impact mostly on Rural District Councils as they could not fully supply water to all communities without assistance from government departments.

The effects of the fast track land reform were also felt in the rural water supply sector. Most local authorities lacked the capacity to provide enough water and they need support from Non-Governmental Organisations (NGOs). The aftermath of the land reform saw many NGOs and organisations like NORAD withdrawing their support from the country. Most of the funds for rural water supply in Zimbabwe were coming from countries in the European Union and the USA. Funds dried out once Zimbabwe was slapped with sanctions in the early 2000s and that had negative consequences on water supply in rural Zimbabwe.

The production of sub-standard parts for water supply technologies has also been antagonistic to the achievement of national access to water. MWRDM (2012) pointed out that the IRWSSP led to mass production of water supply technology parts. The suppliers lacked supervision on the standards and that resulted in the production spares with varying measurements. This posed a huge challenge when repairs needed to be carried out. Mass production of spares was therefore responsible for the breaking down of water points.

The lack of full community engagement in the establishment and maintenance of water infrastructure led to limited success in the provision of water in rural Zimbabwe. Makuwe (1999) pointed out that the communities lacked necessary technical skills to maintain water supply infrastructure. The lack of a sense of ownership of the infrastructure is also credited as the reason behind communities' lack of interest in sustaining water supply infrastructure. The government failed to fully rope in communities to own the infrastructure and as a result people would wait for DDF to repair broken infrastructure instead of taking the initiative themselves.

The concept of Community Based Management was not entrenched into the communities. NAC (2011) defined community based management as a situation when the community is accountable and have authority and control over their facilities. The water points were just installed in the communities but the communities were never trained on how to maintain them. The people in the rural areas lacked capacity building on the expertise and knowledge needed to cater for their water points. The government and the NGOs involved in the water delivery sector failed to introduce the concept to the communities.

Another factor which undermined interventions to improve rural water supply is population growth. Maguvu (2008) is of the notion that the government and other development partners failed to take account of population growth during the IRWSSP. Due to population increase boreholes are now catering for far more people than they were designed to serve (250 households). However due to increase in population, boreholes are serving far more people and this has led to constant breakdowns. This clearly shows the threat that communities are facing in their daily lives in order to access safe water.

Gender inequality has also been credited as one of the reasons behind the failure of interventions by the government and NGOs. The management of water points had been solely a responsibility for men. This is despite the fact that water fetching in rural areas is considered a responsibility of women. Zimstat (2012) showed that more than 53% of rural

population is made of women. Men who led the management of water points did not share the burden felt by women when fetching household water. Water point breakdowns would go for days because men did not have the experience of providing water for household use. The exclusion of women in the water supply issues greatly affected sustainability of the water points.

Ageing infrastructure has also been one of the culprits behind the water shortages in the country. During the decade from 1990 to 2000, very little was done to the water supply sector by the government. This meant that infrastructure that was installed during the first decade after independence was still in use in the country. Such ageing infrastructure translated to constant breakdowns. The effectiveness of water points was being compromised by the available infrastructure which was old. Queues became a common feature at water points and the time spent fetching water increased.

The effects of low rainfalls over the years also have a bearing on the water supply in the country. Low rainfalls have relegated most surface sources of water to become seasonal. As a result communities would depend on the few protected sources of water for their animals and small gardening. This sole dependence of all activities on the few water points exerts too much pressure on the water source. Breakdowns have increased as a consequence and time spend collecting water has also been increased. Zimstat and ICF International (2012) support this by pointing out that 28% of the rural population spends more than 30minutes per every trip to collect water.

A lot still need to be done in order for the country to achieve total water supply coverage. Vast amounts of money and efforts are needed to ensure that all communities access safe water. AMCOW (2011) pointed out that there is an investment gap as huge as US$365 million per year for countrywide access to water. The funding is for upgrading existing ageing infrastructure. It is no secret that most people without access to safe water supply dwell in the rural areas. The distinctive imbalance between rural and urban water supply still need addressing.

1.8 Effects of poor water supply on rural communities

Access to safe water supply is pivotal for the development of any given society. World Bank (2010) pointed out that globally about one third of the population experience permanent water problems and that affect production and expose people to water borne diseases. Long

periods without access to water inevitably result in the spread of diseases and that is not conducive for development. This goes to show the essence of the availability of water on rural development.

Water is central to human survival and studies have shown that it is closely linked to the achievement of most of the MDGs. MDGs such as eradication of poverty and eradication of hunger can only be met should access to water be addressed. Time spent fetching water in rural Zimbabwe has greatly increased to more than an hour per trip. This means that time that could have been spent doing productive work is now spent on fetching water only considering a number of trips that must be taken to meet the 20 litres of water per each household member. Poverty would therefore be increased as a consequence of much time spent on accessing water. These long distances to safe water in some instances have resulted in some households resorting to unprotected sources of water such as rivers and wells that put their lives at risk. Time and resources spent on the sick again increase levels of poverty.

Lack of access to safe water is linked to spread of diseases and that has a negative impact on the development of a nation. According to UNICEF (2011) around 1, 8 million deaths worldwide per year are a result of diarrhoea and 90% are children under five years. Zimbabwe has also been hit by cholera which cost the country around 100 million British Pounds. Diseases such as typhoid are also affecting rural communities. These diseases are affecting communities' development due to funds and time dedicated to fight them instead of investment of the time and funds in developmental projects. Water should therefore be made accessible to rural communities in order to foster development.

Child mortality and maternal health can also be improved if access to water is realised. Cheng et al (2012) pointed out that diarrhoea was claiming more children than the deaths caused by HIV/AIDS, malaria and measles combined around the world. Improved access to safe water has proved to reduce child mortality. Pregnant women are particularly susceptible to water related illnesses and as such there is need for them to access safe water (Cheng et al, 2012). All this goes to prove that access to water is critical in eliminating global problems.

Research has also shown that improving access to safe water can have a positive impact on education in rural areas. Long distances to protected sources of water for safe water impact negatively on the studies of children and the girl child would be at risk of sexual abuse as they had to spend much time fetching water. Making these water sources accessible would increase time for studies and that improves pass rates. Access to water at school also assists

the girls especially during their menstrual periods and absence from school would be limited. Water accessibility therefore can be used to partly meet the MDG goal on the global access to education.

Moreso water accessibility can be used to address the problem of gender inequality that is predominant in rural areas. Women and children are the ones with the burden of fetching water for household use. Access to water would reduce time spend while collecting water. This would provide women with time for income generating projects and other off farm activities that would boost their revenue. Women would therefore not solely depend on men for income and their standing in the family would be improved. Security and dignity of women would be enhanced as they would not have to travel long distances and sometimes at night to collect water for household use.

1.9 Rusere Piped Water Scheme

The research was carried out on the Rusere Piped Water Scheme in Zaka District. The piped water scheme aims at providing safe water to the local communities. The scheme is community owned and managed and that is presenting many development opportunities for the Rusere community. The research sought to bring out the experiences of the community on the existence of the scheme and how it has changed the lives of the people. Piped water supply schemes have been put forward by NAC as one of the water supply technologies that ought to be employed in meeting the targets in water supply to rural areas of the country.

1.10 Conclusion

The rural water supply in Zimbabwe has been met with mixed fortunes since the time of the colonial government. Notably in both governments the rural side of water supply has always been second to the urban water supply. The post independence government has worked tirelessly to correct the imbalance that was left by the colonial government and vast improvements can be witnessed in the sector. The work by government and its partners in rural water supply has been affected by a number of problems chief among them lack of capacity building of local communities to maintain their facilities. Recently there has been a shift towards the inclusion of communities in the installation of water supply technologies and ownership is now vested with the communities. The move is aimed at sustaining the water supply system in the rural areas so that universal access to safe water is achieved.

CHAPTER 2
RUSERE PIPED WATER SCHEME: EXPERIENCES OF THE COMMUNITY

2.1 Introduction

In this chapter the researcher is going to discuss the Rusere Piped Water Scheme in detail. Under discussion will be how the scheme was revived and the role played by the community throughout the exercise. The chapter also brings out the benefits that have been brought as a result of the revival of the piped water scheme. The chapter further alludes to the challenges faced during the revival of the piped water scheme.

2.2 Background of the scheme

The Rusere Piped Water Scheme first came into operation in 1972 as part of the colonial government's efforts to provide water to the rural communities. The scheme like most rural infrastructure during the liberation war was vandalised. The vandalism was so severe that by the time independence was attained the scheme could no longer provide water to the community. The communities that used to benefit from the scheme started experiencing water problems since protected sources of water become scarce in the area.

The scheme obtains the water from a deep high yielding borehole which is situated about 300 metres from Rusere primary school. The borehole is 60 metres deep and technical analysis on the borehole showed that it could supply enough water for the whole community. The water is pumped directly to the storage tanks then to the villages. Water flows to the taps through gravity and the pipes were laid in such a way that all taps receive water. There is no need for treatment of the water since the borehole was certified by the Ministry of Health and Child Care to be yielding safe water.

2.3 Situation in Rusere before the revival of the scheme

The collapse of the scheme signified a great loss of significant investment in rural water supply sector. The sources of water after the collapse of the scheme in the area became shallow wells, river and two boreholes. These sources besides some protected wells and the borehole provided water that is not safe for domestic use. The sources with safe water were not near all the members of the community. For example people from Machaya village had to travel a little over two kilometres to fetch water from a nearby borehole. This was greatly in

contrast with the stipulations of WHO that a safe water source should be within 1 kilometre from the point of use.

Such a situation greatly placed the people of Rusere in great danger from possible outbreaks of water borne diseases. In the words of the local Environmental Health Technician, the ward was at the mercy of diseases such as dysentery and diarrhoea. The ward was also one of the worst hit by cholera in Zaka District in 2008 to 2009. The outbreak in the ward is clear indication of how the lack of safe water sources in the ward impacted on the health of the community. Though the outbreak was also compounded by the lack of sanitary facilities it is of importance to note that unprotected sources of water were also to blame for the disease.

Respondents from Marowa village pointed out that the waiting period on the borehole were over 30 minutes and that combined with travelling time amounted to nearly two hours. This was made worse with the need for sometimes more than two trips to collect adequate water for the household. The two boreholes in the four villages were fitted to deep wells and run dry usually from mid August till the rainy season. Safe water was only obtainable from one borehole year round but waiting time at the water point was unbearable. The woes of some of the villagers can be seen trough this as they had to queue for long periods and travel more than a kilometre to collect water. This resulted in some members of the community resorting to unprotected sources of water since they are much nearer as compared to safe sources. Respondents admitted to more often collecting water from Turwani and Nyamuzara rivers when their shallow wells ran dry during the dry season.

2.4 Rehabilitation of the Scheme

The scheme was rehabilitated in early 2012 under the Rural WASH Project. According to a respondent from the National Coordination Unit (NCU) the project is funded to a tune of around US $56 million by the British government's Department for International Development (DFID) and the Swiss Agency for Development and Cooperation (SDC). The project aimed at providing around 1,726,000 people with sustainable access to safe water. The project in Zaka was specifically funded by the SDC and Rusere Piped Water Scheme was one beneficiary. The project activities were being done by government structures responsible for water supply from national, province, district and ward level.

The rehabilitation of the scheme was done as a collective effort by various stakeholders. These included the local community, the DWSSC and the Implementing Partner that is

CARE Zimbabwe. Each stakeholder had a specified role to play in the revival of the scheme. A respondent from CARE Zimbabwe pointed out that the dedication of roles to different stakeholders was one of the reasons behind the success of the scheme since all stakeholders executed their roles to the letter. The rehabilitation of the scheme was valued around US$38 000.

The various stakeholders played different roles in the rehabilitation of the scheme. The community was mainly involved in raising the alarm on the need for comprehensive water supply solutions in the area. The DWSSC together with other higher government departments managed to secure funding for the revival of the scheme. The coordination of these various stakeholders made the difference in the revival of the scheme.

2.5 Coverage of the scheme

The Rusere Piped Water Scheme benefits the Marowa, Rusere, Padare and Machaya villages as well as Rusere Primary and Secondary Schools. The local business centre which is Padare also benefits from the scheme. The pipeline according to the Piped Water Scheme Committee covers a distance of 5kilometres. The scheme boasts of two stand pipes per each village and garden taps at the primary and high school as well as stand pipes at Padare Business Centre.

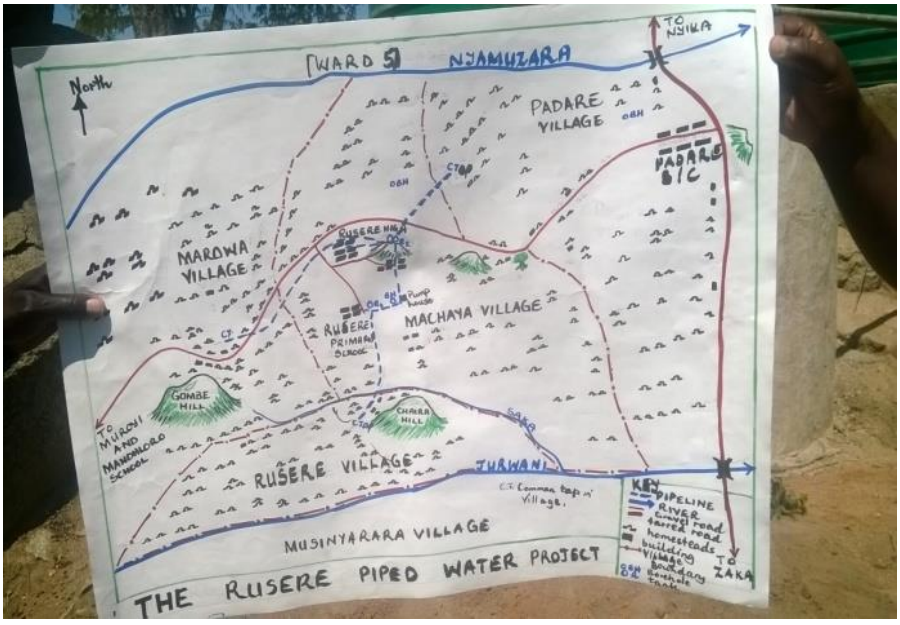

Figure 1: The above picture is a map showing the Piped Water Scheme's coverage and pipe layout.

2.5.1 Population Served by the Scheme

	Population			
Village	**Males**	**Females**	**Total**	**Households**
Machaya	113	159	272	76
Marowa	72	210	282	91
Padare	142	196	338	83
Rusere	196	224	420	98
TOTAL	**523**	**789**	**1 312**	**348**

Table 3: Figures Courtesy of the Rusere WPC

The table shows the villagers served by the piped water scheme. These members of the community directly benefit from the piped water scheme through the taps situated at various points in the villages. The figures obtained from the Water Point Committee shows that women make up the considerable number of people found in the villages. The household in the table stands for the family unit in the village. The village registers defined a household as a family unit that has separate cooking arrangements. As a result each married couple that live at the same premises as the husband's parents but with separate cooking facility was regarded as a household.

Population at Rusere Primary and High School

	Population			Households
School	**Males**	**Females**	**Total**	**Households**
Rusere Primary	324	361	685	18
Rusere High	299	339	638	26
TOTAL	**623**	**700**	**1 323**	**44**

Table 4: Figures courtesy of the Rusere WPC

The table above shows the population at the primary and high school. The data has been presented separately from the villagers because some of the school children had already been included in the statistics from the village registers. However they have been included because some pupils come from outside of the beneficiary villages and there was also need to include the teachers. The households here refer to the staff at the schools and their families. The pupil and staff enrolment at the schools signifies that a lot of people are benefiting from the

piped water scheme. Good hygiene practices are now being practised at the schools because water is readily available.

2.6 Management of the Scheme

The Rusere Piped Water Scheme is owned and managed by the community. The community chose the Water Point Committee members to oversee the day to day running of the scheme. According to the respondents these committee members were chosen in such a way that each village has a representative in the committee. The committee is made up of seven community members. The community has the final say in all important or major decisions concerning the scheme. The Water Point Committee acts on behalf of the community but when it comes to major decisions the committee has to call for the meeting with all members of the scheme. This according to the respondents has engraved the sense of ownership of the scheme on the community members.

The community is responsible for the cost associated with the running of the scheme. The community members therefore contribute towards the welfare of the scheme. The funds collected serve the purpose of buying spare parts for the scheme and to pay the pump operator. The community also contributes money towards the purchase of diesel since the pump is diesel powered. The contributions are made at the household level. The 392 households contribute US $4.00 monthly for the maintenance and fuelling of the pump. Of the 20 beneficiaries questioned, 16 said that the money was affordable and reasonable even for the poorer families. The remaining respondents pointed out that the amount was difficult to obtain especially for the child headed families and the elderly.

The contributions made by the community are kept by the WPC which has to regularly give updates to the community. The updates are usually given on village level during village meetings. The committee has opened up a savings account with POSB for the safe keeping of the scheme's funds. The money can only be withdrawn upon the signing of two members of the committee and this was done to avoid unilateral withdrawal of funds. Respondents approved the banking of the money but some lamented the bank charges.

The water is pumped as per agreed timetable by the community members. Water is available for five days in a week and this was due to the aspect of cost of fuel needed for pumping water. Of the 20 respondents, 13 pointed out that they were satisfied by getting water for five

days in a week. The remainder however said that they lacked storage facilities for water and as such would have enjoyed having water for the whole week.

The respondents however differed on the way the piped water scheme should be managed. 13 of the community respondents pointed out that the community should do more in the management of the scheme. They argued that managing the scheme was too heavy a task to be handled only by the seven members of the WPC. It is a result of these sentiments that the community is mulling the setting up of village water committees that would assist the main WPC in organising the community. This to the researcher showed the zeal that the community has in the smooth operation of the scheme.

The local leadership of the community plays an important role in the management of the scheme. The respondents pointed out that the traditional leadership such as the village heads plays the role of organising the villagers. Chief Nhema also agreed to of deal with errand community members. The councillor is also involved in the liaison with the Zaka District Council on operational issues that require the technical expertise. The Water Point Committee gives constant updates to the community leaders. This complementary relationship between the community and the local leadership has ensured that the management of the scheme is done in a transparent manner.

The water points that are the taps are protected from possible destruction. For this the taps are fenced using the locally available materials as well as security fence. This was done to make sure that the taps are protected from possible vandalism. They are locked at night and the households that are adjacent to the taps have the task to ensure security of the taps. This according to the respondents was done because normally public goods are prone to vandalism by rogue community members. The respondents however pointed out that so far there have not been any report of vandalism on the taps.

2.7 Development opportunities

The revived piped water scheme has contributed positively to the community. The availability of safe water in the area has translated into a number of benefits for the Rusere community. The respondents showed that the water scheme had greatly improved their lives.

Availability of safe water

Safe water is now available for all the members of the Rusere community. One respondent pointed out they no longer had excuses of drinking water from Turwani River. Findings from

the respondents showed that they were satisfied with their current source of water which is the piped water scheme. Access to safe water has been enshrined by the UN as a human right which states must work to fulfill. To the researcher the availability of water to the community is clear evidence that the state is working towards the fulfillment of fundamental human rights.

Figure 2: Shows carts used for water collection. Also in the background are water storage tanks in Padare village.

Distance to Safe water

The community members interviewed were satisfied with the distance that they now travel to collect water. The respondents pointed out that they were travelling a distance longer than 2kilometres to collect safe water from the borehole. With the revival of the scheme no family in the villages is travelling more than 500 metres to collect safe water. This to the respondents was a great improvement from their previous experiences. In the words of one respondent "…*mwanangu mvura yainetsa zvekuti taimukira hutonga husati hwatsuka kuenda kumupisi asi ikozvino yava pedo*…'' (...my child water was so scarce that we had to wake up early before dawn to go the borehole but now it is accessible...). This clearly showed that safe water was not readily available before the coming of the scheme. Short distance to a water source is one indicator of water accessibility and the scheme fulfilled that indicator.

Time Spent collecting water

Time spent collecting water has also greatly reduced since the revival of the piped water scheme. 12 of the 20 community respondents agreed that time spent collecting water has

significantly reduced to less than 30 minutes. The remaining respondents said that they were already near the water points and as such the time they spent collecting water was always short. They however noted that the waiting period at the water points have greatly reduced because people are now distributed among many taps in the villages.

Findings from the key informants' interviews show that community members now have time to engage in other productive work like gardening using water from the nearby Siye Dam. This is because even children can now fetch water from the nearby taps while the parents engage in other activities. To the researcher this showed that the scheme had not only provided safe water for the community but has also given them time to also engage in income generating projects without worrying for the long trips to fetch water. The respondents pointed out that they now attend to their fields during the rainy season without worrying about time to fetch water. This is because they now spent very little time collecting the water.

Improved Health

The availability of water have transformed into the improvement of hygiene in the community. Good hygiene is needed for the improvement of health of any given society and there is need for clean water. The community received hygiene training from the DWSSC upon the revival of the scheme and the trainings are bearing fruit. The researcher had a chance to witness the school children at Rusere Primary practising the safe hygiene methods of hand washing with the help of safe water from the taps. To the researcher this was an indication that the hygiene education had borne fruits.

Discussed earlier in the research were the consequences of lack of safe water which included spread of diseases such as cholera and diarrhoea. The respondents pointed out that the availability of safe water had a bearing on the health status of the community. They pointed out that the cholera outbreak of 2008 had taught the community a lesson on the importance of safe water. The Environmental Health Technician who is part of the community said that the down time spent whilst ill due to water borne diseases has greatly reduced in the community. The respondents also argued that cases of diarrhoea in the children under the age of five were now rare in the area. To the researcher this showed that more time could now be spent doing productive work because diarrheal diseases are now at their lowest. The scheme has therefore contributed to a healthy community by reducing the prevalence of water borne diseases.

Community Participation

Findings from the interviews show that the community was used to receiving donations from different organisations. The rehabilitation of the scheme was spearheaded by the beneficiaries themselves since they did much of the work. Respondents pointed out that the exercise required the villagers to organise themselves into working parties in order for the scheme to the light of day. One respondent pointed out that working together was not always easy and that they had to encounter a number of obstacles which at present moment have given them experience to work together in future projects in the community. The aspect of community participation was interpreted by the researcher as something good considering that development practitioners are calling for grassroots approach in development. With communities working together as exhibited on the scheme, future initiatives on rural development have high chances of surviving.

The community participation to the researcher also signifies the acceptance of the project by the community. Most initiatives focused on rural development have failed because the communities did not have any sense of ownership over them. An example where government erected fences alongside roads failed mainly because communities saw the fence as belonging to the government and thus vandalised it. The scheme was revived through the work of the community and they therefore have a sense of ownership over it. One respondent summed up the researcher's conclusion by saying that they (community) had the task of keeping the scheme for the benefit of their children.

The community have been brought together more through the piped water scheme. According to the community respondents, the villagers have been able to link the piped water scheme with other projects in the area. The community through their Burial Society initiative has purchased water storage containers for all villagers. This was done after the local EHT had noticed that the clean water could be contaminated in the house due to poor storage facilities. The community therefore agreed to spend some of the funds in their Burial Society to purchase two 20litre buckets per each household. This has eased the problem of water storage especially for the vulnerable households.

Women Empowerment

The respondents agreed that the scheme had greatly improved female empowerment in the community. One respondent from the community pointed out that it was no secret that only a

few women participated in community projects especially those that include men as part of the participants. The ability of the women to take part in the rehabilitation of the project is important because development requires the involvement of all members of the society. The respondents showed that women were included in the project from the start. The researcher noted that it is of essence to have the women participating since they are mainly the ones tasked with the supply of water in rural communities. The Rusere Piped Water Scheme Committee also has four women out of the committee's seven members.

The burden of collecting water for the households has been lessened on the women. All respondents agree that traditionally it had solely been the burden of women to collect water for the family. The burden was made worse as a result of safe water sources that were far away from the households. Respondents pointed out that the two boreholes which used to serve the community with water were far from most households especially Machaya village. Women had to make a trip of nearly two hours to collect water. With the advent of the piped water scheme, water is now available nearby. One female respondent pointed out that nowadays it is a usual sight to spot men collecting water from the village taps. This to the researcher means that women can now afford to take part in other productive jobs since time that used to be spent collecting water has been considerably reduced.

Figure 3: Shows one of the community taps showing both men and women collecting water

Impact on the elderly, sick and child headed families

The scheme has greatly improved the lives of the vulnerable groups in the society notably the sick, elderly and child headed households. The sick and the elderly had to rely on the

unprotected sources of water because they could not manage the distances to the safe sources of water. The child headed households had to rely on unprotected sources because the child family head would need to go to school as well as cater for the family. As a result they could not manage to travel the more that 1,5kilometres to fetch water before leaving for school. Village head Marowa pointed out that the scheme has been a saviour for this group of people since they were at the mercy of water borne diseases due to their consumption of water from unprotected sources.

Community Based Management

The concept of community based management (CBM) has been instilled into the Rusere community. The respondents from the service provider group indicated that the aspect of CBM was enshrined into the community through the various sensitisation meetings that were carried out in the area. To the researcher CBM is the acceptance and ownership of the scheme by the local community. The respondents from the community when asked who owned the water supply scheme indicated that it was their (community) scheme. This clearly showed that the community had accepted the project as their own and that will go a long way in the sustainability of the scheme. One respondent pointed out that it is the role of everyone in the community to see that no damage was brought to the scheme and as such the village heads had passed a by law that it was an offence not to report pipe bursts. Also the community has agreed that all the strips of land that the pipeline passed through was now community land and cultivation was prohibited. This act as a deterrent against possible pipe damage through the use of ploughs during cultivation. This was clear evidence to the researcher that the Rusere community have taken the ownership and management of the scheme.

Community Based Management has also allowed the community to successfully manage the scheme since its rehabilitation. The RWP only funded for the rehabilitation of the scheme and then commissioned it to the community. The community had the task to organise themselves in order to supply safe water to their households. The community is now in a position to echo what they are doing in the scheme to other areas such as community gardening and dip tanks according to one respondent.

Supporting the environment

The community served by the scheme agreed to utilise the scheme through the planting of trees in the area. Each water point has got its own tree nursery which is responsible for the

raising of seedlings. The seedlings are inclusive of both the exotic as well as the indigenous trees. These are then distributed to all members of the water point to plant at their homesteads and fields. The researcher also witnessed that at each water point there are trees that have been planted to act as shade during water point meetings. Also the trees have been planted parallel to the pipeline so as to mark the position of the pipeline. This initiative to the researcher is a welcome development as it is friendly to the environment. The scheme has therefore been used as a base to replenish trees that are constantly being depleted as a result for the need for firewood and building materials. This initiative by the scheme beneficiaries can be used to drive the aspect of forest replenishment in the area. This to the researcher is a clear indication that the Rusere community is playing its part in mitigating climate change and all this can be credited to the revival of the scheme.

Option to have taps at household level

The community has agreed that people who wish to extend the pipeline to their households can do that using personal funds. This was welcome to most of the respondents who showed willingness to take up the option. Such a move also eases the people using the community taps thereby significantly reducing the waiting period at the taps. This would also increase time for other productive work. So far there have been 10 households that have installed taps at their places of residence. To the researcher such a move show the acceptance of the scheme by the community and willingness by the community to realise maximum benefits from the scheme.

Skills Gained from the Revival of the Scheme

The interviewed community members cited that they gained various skills due to the rehabilitation and management of the scheme. Many youths were trained in the maintenance of the scheme and they said that they hoped to use the skills gained in order to find employment. The women interviewed said that the training in Village Pump Mechanics workshops now help them to obtain some income. The project made a deliberate move to train women as the pump mechanics so that they can have some income. One female pump mechanic said that, "…*ndaisava nebasa raindipawo mari asi nekuda kwekudzidziswa kugadzira pump yemvura handichamirira mari yemurume wangu asi ndakutounzawo mari mumba*…" Here a local woman was praising the scheme for giving them skills that are yielding income for her household. Also the members of the WPC commented that the skills

that they had gained in the management of the scheme would come handy in managing other developmental projects in the area.

The rise of small irrigation schemes

The respondents pointed out that the scheme set precedence on the need for irrigation schemes. The community members said that the scheme showed them that they were capable of operating their own pumps for agricultural purposes. In other words the scheme helped to demystify the notion that piped schemes were for the rich and affluent. Now there are groups of community members who came together and purchased small pumps to irrigate their gardens using water from Turwani and Nyamuzara rivers. One of the respondents argued that the scheme should be credited for making the community realise that they could manage their own irrigation schemes. This have boosted income levels for the community members who took the initiatives as they are now supplying their produce to Padare Business Centre, Rusere Primary and High School, Mandhloro Primary school and at Zaka DA's Offices and service centre. One of the interviewed respondents who happen to be a business operator at Padare Business Centre pointed out that cash flows are increasing since the revival of the scheme. The revival of the scheme has therefore opened the community to ideas that are improving their way of life.

2.8 Challenges Associated with Revival of the Scheme

The scheme has faced a number of challenges from its inception and during its operational time. These problems have been addressed by the community in a bid to see the continued existence of the scheme. Some of the problems arose as a result of community actions while others had nothing to do with the community. The problems have been discussed as they were presented from the community.

Interference from ZINWA on the ownership of the scheme

The first problem that faced the scheme was the claims by ZINWA that it was the owner of the scheme. These allegations threatened the revival process of the scheme. According to the respondents, they were afraid that if the scheme belonged to ZINWA they would not have any say in the management of the scheme and therefore there would be no need for their participation in the revival process. The interference according to the DWSSC members threatened the process of rehabilitation of the scheme which would have relegated the community to the use of unprotected sources of water. The allegations were later laid to rest

after the DWSSC proved that the scheme was indeed a community owned scheme. The respondents from the service providers' side pointed out that it is necessary to ascertain the ownership of the schemes before rehabilitation could be done.

Patronage by Political Leaders

Community owned piped water scheme is prone to the politics of patronage by influential people in the community. Six of the community respondents pointed out that there has been talk from some political leaders that the scheme belonged to them (political leaders). One respondent pointed out that, "…*chinonetsa munzvimbo medu ndechekuti kana taita maproject edu seino yemvura, vatungamiriri vezvematongerwe enyika vanouya voti ndivo vakaunza project saka vese vasiri vatsigiri vavo havana kodzero yekubatsirikana neproject. Izvi zvinotidzorera kumashure pakupinda mune mamwe maprojects anozouya kumberi*…" (the villager was lamenting political intervention in a community project that should benefit all despite their political affiliations) Such actions are a threat to the survival of the scheme because a community is not homogenous as it is made up of people with different political views. To the researcher such pronunciations may result in some members of the community resenting the management of the scheme due to differing political views. This would also have negative impact on the community participation in the activities of the scheme. The researcher fear that political intervention in the community owned scheme may result in some members with perceived different political views being denied water especially during election time. Studies have shown that politicisation of projects have negative consequences on the beneficiary community and may lead to the collapse of the scheme.

Clash with tradition

The scheme also faced the problem of clashing with the traditional beliefs. This was mainly during the process of designing the layout of the pipeline. The proposed pipeline to Rusere village was judged to be passing through a sacred place where some of the local area's ancestors were buried. That derailed the installation of the pipeline to the village. It was only after an appeasement ceremony that the laying of the pipes was carried out. This to the researcher showed that culture and tradition can stand in the way of development.

Limited Resources for expansion

The scheme also has limited resources for expansion in order to service neighbouring villages that have problem of water shortages. Respondents pointed out that money to expand the

service area of the scheme was not available. To the researcher this meant that the scheme will only continue serving the current population without serving the other needy villages. Such a limitation to the scheme is a drawback to the efforts of universal access to safe and clean water for all citizens.

Use of fossil fuel

The scheme is making use of a diesel powered pump. To the researcher this is a drawback in the world where global warming is taking precedence. Burning of fossil fuels has been blamed for the release of green house gases into the atmosphere and the scheme's usage of diesel is thereby contributing to global warming. Furthermore the community is at the mercy of the fluctuating oil prices which some day might affect the delivery of water in the area. The use of a diesel pump is therefore a limitation of the scheme.

Water rationing

Water is available only during the prescribed times on the agreed days of the week. Seven of the respondents pointed out that they were against the idea of water being only available for five days in a week. To them it was fine to increase the contributions per month so that water can be there all the time. Further probing by the researcher revealed that this group of people included those well to do families who could afford the raise in the monthly contributions. The discontentment of other members of the community may prove to be problematic in the long run. This move will create problems with the vulnerable and poor families who cannot raise more money. The idea of storing water at home has proved to be problematic as some of the households lack storage containers. If water is not properly stored that may lead to contamination and thereby defeating the purpose of the scheme.

Water only for human consumption

The scope of the Rusere Piped Water Scheme is only to provide water for human domestic consumption. The scheme is not providing water for gardening. Due to the expense attached to the fuel for water pumping the scheme can only provide water for cooking, drinking and other personal use. Domestic animals also benefit from the runoff water from the taps. The respondents interviewed were of the view that the scheme should have also included an allowance for water for small irrigation. The villagers felt that they will still travel considerable distance especially during the dry season to carry out gardening. They would

have appreciated also an allowance for small gardening in order to supplement their relish and income generation through the selling of the produce.

Reluctance by some households to contribute to the scheme

The scheme has been faced by the problem of other households that are reluctant to contribute towards the welfare of the scheme. The respondents from the community highlighted that there were some households that were against the contribution of labour and money towards the scheme. According to the respondents these people would argue that they would continue using the unprotected sources that they had been using all along. However when the scheme became operational they also wanted to collect water from the community taps. The problem was later addressed through taking such households to the traditional village courts where payments were later done.

2.9 Sustainability of the Scheme

Having discussed the problems that the scheme faced it is imperative to look into ways of how the scheme can be sustained. Sustainability involves the ability to meet present requirements as well as being in a position to meet future requirements. Most community led initiatives have been faced by uphill task to survive in Africa. It is a result of these problems that there is need to look at lessons learnt from successful initiatives and come up with measures that will ensure the sustainability of small rural piped water schemes. These together with community suggestions can help in coming up with sustainable ways of providing safe water to the rural communities in Africa.

2.10 Conclusion

The Rusere Piped water scheme has shown the power in the community led rural water supply initiatives. The scheme has witnessed a number of problems but the community has stood together in addressing the problems. It is a result of the community's actions that the scheme has presented some developmental opportunities that are yielding results. The scheme has shown that there is need for multi-stakeholder participation in order for the success of community led water supply systems. Maximum benefits from the rural piped water schemes can be realised through community engagement from initial stages, rehabilitation and management of the scheme. Acceptance of the scheme by the community is of paramount importance in the survival of the scheme. The research has shown that the Rusere community has accepted the scheme and is working towards the survival of the scheme.

CHAPTER 3
TOWARDS SUSTAINABLE RURAL PIPED WATER SCHEMES IN ZIMBABWE

3.1 Introduction

The rural piped water schemes have proved to be beneficial to the rural communities in providing safe water. There is need to find ways that can make the schemes sustainable in continuing to supply safe water to communities. The chapter will focus on what can be done to make the piped water schemes sustainable as a means of rural water supply. The researcher made use of the measures suggested by the respondents. The chapter also draws from measures employed in other parts of Africa in maintaining community owned piped water schemes. The measures seek to prevent the repetition of history that saw the collapse of the schemes.

3.2 Public-Private Partnerships

Studies across Africa have shown that Public-Private Partnerships (PPPs) are important in the survival of rural water supply systems. The PPPs are important especially in the operation and maintenance of the schemes. The private sector is the one responsible for the supply of spares and consumables in the operation of the schemes. Most communities are cash constrained and as such there is need for the spare parts to be closer to the communities to cut on distance travelled. The onus should be with water supply authorities to create demand of the materials in the communities through enlightening the community on CBM. Through the PPPs, both sides stand to benefit that is the community get spares nearby while the business operator gets readily available market for the merchandise. This would shorten the down time of the schemes in case of breakdowns because spares would be readily available. The functionality of the water supply system is critical in making it reliable and that usually translate into continued input by the community. It is through this way that PPPs can play an integral part in the sustainability of community managed rural piped water schemes.

Experiences from other African countries have shown that the private sector can be hired to run the schemes on behalf of the community. World Bank (2010) carried out a study in Mali, Benin, Burkina Faso, Rwanda, Mauritania, Senegal and Niger on the sustainability of small rural piped water schemes and came up with the general conclusion that PPPs are essential in the operation of the schemes. The study pointed out that Rwanda, Niger and Uganda each have more than 200 community piped water schemes under delegated management as of

2010. This shows that the inclusion of the private operators is beneficial in the provision of water. Operators negotiate contracts to run the schemes with the communities and the local authorities and the period to be covered depends on the negotiations. There is need however to ensure that the contracts' duration would ensure the operator to recover sunk costs. These have proved successful in north and central Africa and can be employed too in Zimbabwe.

The aspect of delegated management of the schemes though it considerably costly, research has shown that it has a number of advantages. One of the challenges faced by the schemes discussed in the previous chapter is lack of expansion. This could be rectified through the introduction of private operators to the schemes. These would have the much needed capital to expand the schemes since that would translate into increased bases of revenue. World Bank (2010) pointed out that in Niger the coverage of the schemes have greatly increased in the areas where private operators are in place. Household connections can also be effected through the operators and that would improve rural water supply. With household water connections available, it is difficult for the community to let the schemes collapse because of the benefits they would have felt. The inclusion of many community members in the scheme can make the schemes sustainable in this way.

The aspect of PPPs in the management of the piped water schemes is bound to bring professionalism and customer satisfaction in rural water supply. The private operator will basically be reporting to the community and the local authority and this means that there will be monitoring mechanisms in place to measure the performance of the operator. This would greatly influence service delivery since the operator would be under contract to fulfill conditions set by the community. The clear division line between service delivery and supervision would ensure satisfactory rural water supply. Interruptions in water supply will be limited since the operator will be driven by the need to generate income. The need for continued income generation by the operators will ensure that the system is cautiously maintained and that lead to the sustainability of the scheme. Private operators also ensure that operational decisions would be made without delay as would be the case with community decision making.

The community would however retain their power to make major decisions concerning the scheme. This can lead to the sustainability of the schemes because the community retains power over the scheme while the daily operation of the scheme would lie in private hands.

Experience with public managed institutions has shown that their sustainability is far below those that are privately run.

3.3 Community Participation

The lesson learnt from the research was that the piped water scheme should be the community's initiative and not imposition from the authorities in order to ensure sustainability of the schemes. Ownership of the scheme by the community is an important phase in the survival of the schemes. The schemes collapsed because in some instances they were imposed on communities that already had access to water and some communities felt that the schemes belonged to the government. One of the elderly lady interviewed pointed out that the Rusere Piped Water Scheme was destroyed during the war because people believed that it belonged to the colonial government. Now that the community is aware that the scheme belongs to them, it will be guarded jealously. Hoang et al (2010) pointed out that successful schemes in central and northern Africa had a very active community behind them. This serves to show that community participation is an important factor in the survival of the schemes and they should be left to decide whether they want the scheme or not before the installation or revival of the scheme.

3.4 External Support

There should be clear cut roles of external support to the schemes to ensure their sustainability. External intervention in the management of the scheme has been pointed out as one of the factors behind the collapse of schemes. Having established the community as the owner of the scheme it is imperative to give clear roles of external support in order to have a sustainable scheme. Support to the local communities should only be rendered upon the request of the communities and should be given after certification that the challenges are beyond the community's capabilities. This would help to guard against the dependency of communities on outside support. It was also the ceasing of support to the communities that resulted in the collapsing of the schemes in the first place. The external institutions should be involved in the capacity building of the communities to enhance the operation and maintenance of the schemes. Support could also be rendered during times of hardships such as disasters but should be to the best interests of the beneficiaries.

3.5 Accountability and Transparency

Another aspect that can result in the sustainability of the schemes is through good management of the scheme's funds. Community members' continued contributions towards the welfare of the scheme can only be realised when they are satisfied with the way the funds are being used. There is need for transparency and accountability in the management of scheme's financials. Here the external institutions can intervene to capacitate the locals on financial management. This would translate to the continuous flow of funds into the scheme which in turn would guarantee its survival. Management of funds may also be boosted through the representation of all groups in the community that is the youth, women, men and the people living with disability. This would prevent possible disgruntlement by other groups in the community.

3.6 Choice of Technology

The respondents from the service providers cited the need to adopt environmentally friendly water drawing technology. The Rusere piped water scheme is making use of a diesel powered pump. The pump is playing a part in the emission of the hazardous gases and there is need to change that. The respondents called for the use of alternative technology such as solar powered pump which ensure environmental sustainability. The solar powered pump will also cut on fuel costs. The cost will only be attached to the installation of the system. This to the researcher would prove a welcome development to the community considering that funds for fuel are not readily available. This would also come handy especially during times of economic hardships and disasters when the community would be faced by other pressing problems other than the supply of water.

3.7 Legal Framework

There is need for viable legal framework and regulation of the schemes. Strong legally binding laws should be created to manage the operations of the scheme. The problem of patronage by political leaders can be resolved through legislation which clearly stipulates the ownership and management of the schemes. This can be done at national level whereby the parliament passes the legislation governing the community piped water schemes and their autonomy. There should also be strong constitutions governing individual schemes. These constitutions would help to deal with the errand community members who would want to benefit at the expense of the whole community. There should be cooperation with the local

leadership during formation of the constitutions. This would help the community to deal with free riders and problematic personalities through the chiefs and village courts. All this would play a great part in the sustainability of the schemes.

3.8 Improved Sanitation

Research has shown that safe water supply work hand in hand with safe sanitation. The main aim of the need for clean water is to guard against the spread of diseases. This can only be completed through the practise of safe sanitation. For communities to be able to realise full benefits from the schemes there should be sanitation facilities in order to curb the spread of diseases such as cholera and diarrhoea.

3.9 Monitoring Mechanisms

There is also need for strong monitoring mechanisms in place to ensure the sustainability of the scheme. The schemes during the yester years suffered as a result of relaxed or lack of monitoring systems. The monitoring systems ensure that problems are diagnosed in their infancy and chances for their correction will be high. These can be carried out regularly by the local authorities and in this case the Rural District Councils which have the mandate of providing water for the communities. This exercise will ensure that breakdowns will be minimised and repairs would be done with the community able to foot the bills.

3.10 Income Generating Projects

The introduction of income generating initiatives solely for the funding of the scheme can also play an integral part in the sustainability of the schemes. Contribution of funds for huge repairs on the schemes may prove to be out of reach of the community especially in trying times like droughts and other disasters. An initiative like the creation of a garden that can be maintained using water from the scheme can provide market produce. The income from the sale of the produce can be used in supplementing the contributions by the community. Such an initiative would ensure that the scheme's account will always be furnished with funds for the operation and maintenance of the piped water scheme. There is also need for the introduction of other income generating projects for the community such as livestock and bee keeping which have proven profitable in the market. This would enable the communities to have disposable income which then can be ploughed into the piped water schemes.

3.11 Public awareness on government's policy

There is also need for awareness campaigns on the government's policy towards demand lead approach in rural water supply. The rural communities need to be educated on the policy shift by government to self supply. This will ensure that communities would not be expecting to receive any form of aid or donation from the government. Such an initiative would also mean that communities would be able to look after the schemes in their places of residence.

3.12 Conclusion

Sustainable water supply solutions in rural areas are needed so as to ease the problem of water scarcity in communities. Many piped water schemes in the rural areas have collapsed due to mismanagement and that need to be addressed for the realisation of comprehensive water supply solutions. The sustainability of the schemes can be guaranteed through continued stakeholder participation and taking on aboard success stories of community schemes from across Africa, notably the Public-Private Partnerships. These have proved a panacea to sustainability issues of community projects across Africa. It is through the implementation of the discussed measures that the sustainability of the rural piped water schemes can be achieved.

General Conclusion

Rural water supply in Zimbabwe has continued to be problematic hence the need for investigation into various sources of water delivery. The research has shown that rural piped water schemes have greatly improved the access to safe water for rural communities. There is need for involvement of various stakeholders in the water supply sector for the schemes to record successes. The community has benefited in various ways throughout the rehabilitation process as well as the operation time of the scheme. The revival of the scheme has lessened the burden of water collection on the women and children in the community. This is despite the fact that the revival of the scheme has been associated with a number of problems such as lack of funds and political interference. The RWP which spearheaded the revival of community piped water schemes can therefore be commended for the efforts. It is however important to note that the exercise also suffered from a number of setbacks. Firstly the project failed to fully take the aspect or rehabilitation of schemes aboard as it only provided funds for one scheme per district yet there are numerous schemes in the district. This is expected to be addressed in future initiatives given the success that the few revived schemes have exhibited. There need to take into consideration the success stories from across the globe on the sustainability of the schemes. Public-Private Partnerships have proved to be successful in the survival of piped water scheme and there is to take the concept aboard in Zimbabwe for the improvement of rural water supply.

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APPENDIX 1

MIDLANDS STATE UNIVERSITY

QUESTIONAIRRE FOR DWSSC, CARE AND NCU

My name is Desire Muneri. I am a final year student at Midlands State University undertaking the Bachelor of Arts in Development Studies Honours Degree. I am doing a study on **Piped Water Schemes for rural water supply in Zimbabwe: Reviving a forgotten chapter. A case of Rusere Piped Water Scheme in Zaka District.**Your assistance and cooperation is sincerely sought in answering the following questions to the best of your knowledge. I assure you that all the information gathered will solely be for academic use and will be treated with utmost confidentiality.

Section A. Socio and Demographic Information

a) Sex : male [ ] female [ ]
b) Age Group : below 25 [ ] 25-30 [ ] 31-40 [ ] 41 and above [ ]
c) Level of Education.....
d) How long have you worked in the rural water supply sector: 1-5years [ ] 6-9years [ ] 10years and above [ ]
e) Position in the organisation: Director [ ] Field Officer [ ] Project Manager [ ] Other (specify).....

Section B: Information on the revival of Piped Water Schemes

1) Who provided funds for the revival of the Rusere Piped Water Scheme?
   .....
2) Why was only one piped water scheme chosen for rehabilitation in Zaka District?
   .....
   .....
3) What kind of piped water schemes were targeted for rehabilitation
   .....

4) What was your organisation's role in the revival of the scheme?
   .....
   .....
   .....

5) What role did the community play in the rehabilitation process?

.....

.....

.....

6) What was the cost of the rehabilitation exercise?

.....

7) In your own view, how did the community benefit from the revival of the scheme

.....

.....

.....

8) Any major challenge that was faced during rehabilitation and how was it addressed

.....

.....

.....

APPENDIX 2

MIDLANDS STATE UNIVERSITY

QUESTIONAIRRE FOR THE RUSERE COMMUNITY

My name is Desire Muneri. I am a final year student at Midlands State University undertaking the Bachelor of Arts in Development Studies Honours Degree. I am doing a study on **Piped Water Schemes for rural water supply in Zimbabwe: Reviving a forgotten chapter. A case of Rusere Piped Water Scheme in Zaka District.**Your assistance and cooperation is sincerely sought in answering the following questions to the best of your knowledge. I assure you that all the information gathered will solely be for academic use and will be treated with utmost confidentiality.

Section A. Socio and Demographic Information

a) Please indicate your sex: Male [ ] Female [ ]

b) Indicate your Age : ☐

c) Occupation.....

d) Family Size.....

Section B

1) What was your main source of water before the scheme?
   .....
2) Was the source protected or not
   .....
3) How far was the protected source from your place of residence and how long did it take to walk to and from the water source
   .....
   .....
4) Whose responsibility in the family is it to collect water for the household
   .....

5) What role did you play in the rehabilitation of the scheme

.....

.....

.....

6) How much are you contributing monthly towards the operation of the scheme? Is the amount affordable?

.....

7) Are you satisfied with your current water source (the scheme) in terms of distance to the tap and time spent at the community tap? Explain

.....

.....

8) What benefits have the scheme brought to the community as a whole

.....

.....

.....

To women

.....

.....

.....

The elderly and the sick

.....

.....

Child headed families

.....

.....

APPENDIX 3

MIDLANDS STATE UNIVERSITY

INTERVIEW GUIDE FOR DWSSC, CARE AND NCU

1) What is your understanding on access to water supply
2) How important is safe water supply to the welfare of rural communities
3) What was the criterion used to select beneficiary schemes in the rehabilitation exercise
4) Why did the RWP focused on rehabilitating only one piped water scheme per district when there are a number of dysfunctional schemes?
5) Which stakeholders were involved in the rehabilitation of the scheme and what were their roles?
6) Could you explain the government's policy standing on the rural water supply sector.
7) In your opinion how well was the scheme received by the Rusere community.
8) What should be done to make piped water schemes more sustainable as a means of supplying safe water to the rural communities?

APPENDIX 4

MIDLANDS STATE UNIVERSITY

INTERVIEW GUIDE FOR THE RUSERE COMMUNITY

1) What was the water supply situation in the area before the rehabilitation of the scheme?
2) Who is the owner of the piped water scheme?
3) Is there any special group tasked with the running of the scheme? If yes, how are they chosen and what are their roles?
4) Whose responsibility is it to fetch water for household use?
5) What challenges did you face during the rehabilitation of the scheme and now during its operation? How are these problems addressed?
6) What benefits besides access to safe water have the scheme brought to the community?
7) What is it that you feel should be done to guard against the collapse of the scheme?