

**An Evaluation of the Impact of Domestic Water Supply and
Challenges faced by Women in Rural Zimbabwe: A Case
Study of Sigangatsha and Malaba wards of Matobo District**

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TABLE OF CONTENTS	Page
Table of Contents	i
Abstract	iv
Dedication	v
Quotation	vi
Proverb from Tanzania	vii
Acknowledgement	viii
List of figures and table	ix
List of abbreviations and acronyms	xi
Definition of terms	xii
CHAPTER 1: INTRODUCTION TO THE STUDY	1
1.0 Introduction	1
1.1 Background to the study	1
1.2 Statement of the problem	3
1.3 Justification of the study	4
1.4 Aim and objectives	4
1.4.1 Aim of the study	4
1.4.2 Objectives of the study	4
1.4.3 Formulation of the research questions	5
CHAPTER 2: THE THEORETICAL FRAMEWORK AND LITERATURE REVIEW	6
2.0 Introduction	6
2.1 The theoretical framework	6
2.1.1 Structuration theory	6
2.1.2 Actor oriented perspective	8
2.1.3 Gender and development	10
2.2 Global overview	11
2.3 Regional overview	15
2.4 Overview of water supply in Zimbabwe	16
2.5 Overview of water supply in Matobo	17
2.6 Approaches to rural water supply	18
2.6.1 Conventional communal sources	18
2.6.2 Self supply	19
2.7 Domestic water supply sources	19
2.8 Time spent collecting water	20
2.9 Distance to water source	22
2.10 Queuing time to collect water	23
2.11 Multiple uses of water	24
2.12 Responsibility for collecting water	26
2.13 Number of households per water source	28

2.14	Seasonal variability of access and use of water	29
2.15	Water Quality and Quantity	31
2.16	Management and Maintenance for water sources	32
2.17	Treatment of rural water for household use	33
2.18	The economics of domestic water supply	34

CHAPTER 3: METHODOLOGY OF THE STUDY **35**

3.0	METHODOLOGY	35
3.1	Introduction	35
3.1.1	Target population	35
3.1.2	Sampling method	35
3.1.3	Research Instruments	36
3.1.4	Data collection	36
3.1.4.1	Interviews	37
3.1.4.2	Finding women at home	37
3.1.4.3	Focus Groups	37
3.1.4.4	Questionnaires	38
3.1.4.5	Pre-testing of the research instruments	38
3.1.5	Data analysis	38
3.1.5.1	Quantitative data	38
3.1.5.2	Qualitative data	38
3.2	Ethical consideration	39
3.2.1	Informed consent	39
3.2.2	Confidentiality	39
3.2.3	Neutrality	39
3.2.4	Minimal deception	39
3.2.5	Professional neglect	40
3.3	Limitations of the study	40

CHAPTER 4: RESEARCH FINDINGS AND DISCUSSION **41**

4.0	Introduction	41
4.1.1	Age of respondents	41
4.1.2	Level of education of respondents	42
4.1.3	Marital status of respondents	43
4.1.4	Number of people in household	45
4.1.5	Domestic water sources	46
4.1.6	Number of trips to water source per day	48
4.1.7	Time spent collecting water	50
4.1.8	Distance to water source	52
4.1.9	Queuing time to access water	55
4.1.10	Multiple uses of water	57
4.1.11	Responsibility for collecting water	59
4.1.12	Number of households per water source	60
4.1.13	Seasonal variability of access and use	62
4.1.14	Water Quality and Quantity	66
4.1.15	Management and maintenance of water sources	67

4.1.15.1	Maintenance cost, management teams and challenges	67
4.1.15.2	Maintenance costs	68
4.1.15.3	Functions of the water point committee	69
4.1.15.4	Challenges faced with the management and maintenance of water sources	70
4.1.15.5	Women involvement in water management	71
4.1.15.6	Change realized with women's involvement in water management	72
4.1.16	Treatment of rural water for household use	73
4.1.17	The economics of domestic water supply	74
4.2	Policy framework for domestic water supply	77
4.2.1	The National domestic water supply and sanitation policy (of August 2008)	77
4.2.2	Zimbabwe Old Water Act (Act No 7 of 1976)	78
4.2.3	The Water Act (Act No 16 of 1993)	78
4.2.4	The New Water Act (Act No 31 of 1998)	79
4.2.5	The Zimbabwe National Water Authority Act (Act No 25 of 1998)	79
CHAPTER 5: CONCLUSION AND RECOMMENDATION		80
5.1	Conclusion	80
5.2	Recommendations	81
5.3	Implications for Social Work	85
5.3.1	Social work and women's participation	85
5.3.2	Community social relations and the Social Worker	85
5.3.3	Social work and women's education	86
5.3.4	Social work and community work	87
BIIBLIOGRAPHY/REFERENCES		88
Appendix I: Key Informant interview schedule		
Appendix II: Focus group discussion theme list		
Appendix III: Research participant interview schedule		

ABSTRACT

Water for domestic purposes is a scarce resource in the rural areas of Sigangatsha and Malaba wards, and the group mostly affected by this scarcity is women. This dissertation focused three objectives and the first objective was to examine the impact of domestic water supply on women in Sigangatsha and Malaba wards in Matobo district of Matabeleland South Province. The second objective was to identify the challenges faced by women in the two communities and lastly to identify implication for policy. In addition, the dissertation looks at aspects of domestic water supply problems that affect rural women, water supply sources, domestic rural water supply, approaches to domestic rural water supply and other aspects. The dissertation relies on the structuration theory propounded by Giddens (1984), the actor oriented perspective by Long (2001) and gender and development by Moser (1989).

The dissertation relied on three techniques of data collection, literature review, questionnaires and focus groups which were used to collect information on norms, values, and understanding of the local practice in these two rural communities. The information was gathered from a sample of 60 women who were members of water projects in Sigangatsha and Malaba wards. Additional information was sought from six (6) extension staff members of government departments working in the area as well as extension staff members of a local NGO working in the area on the implementation of domestic water projects.

The study revealed that policies are in place but the problem is with the implementation at the local level mainly due to limited financial resources to ensure that domestic water supply for rural communities is given a priority. The current National Domestic Water Supply Policy of August 2008 looks at both rural and urban areas. The study also revealed that there were multiple uses of water in the two communities. However, the study revealed a number of challenges that were being faced by women in accessing domestic water in Sigangatsha and Malaba wards. Among the challenges being faced by women were the time spent queuing for water and also the time spent walking for long distances meant that women had been deprived of the opportunity to engage in productive activities that could improve the well being of their families, Constant breakdown of boreholes were seen as a factor that was contributing to long distances women walked to access domestic water. The quality of water accessed, seasonal unreliability of the water sources and management of the water sources were also identified as challenges faced by women in accessing domestic water in Sigangatsha and Malaba ward.

DEDICATIONS

For my beloved father, (Solomon Chourombo) who never lived long enough to reap

the fruits of his labour.

Lord, open Thy arms to his soul,

and to all struggling women of the Third world.

QUOTATION

“When I give food to the poor, they call me a saint. When I ask why the poor have no food, they call me a communist”

Dom Helder Camara

PROVERB FROM TANZANIA

A gift for life

“A true friend, when you have nothing to drink, will bring you water”

“When you have water you dream many things.

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Lastly, the God Almighty, for creating the human being that I am, that He cares for and protects so dearly.

Any errors and or misrepresentation are, of course, my responsibility.

LIST OF FIGURES

Figure 1:	Percentage of rural population with access to domestic Water supply in comparison with the urban population	12
Figure 2:	Percentage distribution of access to domestic water supply in rural Communities	13
Figure 3:	World population without access to improved drinking Water source in 1990, 2004 and 2015 projection	14
Figure 4:	The Multiple use water ladder	26
Figure 5:	Percentage distribution of people who collect water at household level	27
Figure 6:	Marital status of respondents	43
Figure 7:	Distribution of water source by type	46
Figure 8:	Distribution of the number of trips to water source per day	48
Figure 9:	Reliability of water in the wet season	63
Figure 10:	Reliability of water in the dry season	64

LIST OF TABLES

Table 1:	Number of people per water source	29
Table 2:	Percentage distribution of respondents by age	41
Table 3:	Distribution of respondents by highest level of education	42
Table 4:	Distribution of respondents by marital status	44
Table 5:	Percentage distribution of respondents by household size	45
Table 6:	Percentage distribution of time spent collecting water	50
Table 7:	Percentage distribution of distance to water source	52
Table 8:	Average distance walked by women to water source per trip in the dry season	53

Table 9:	Percentage distribution of time taken queuing for water	55
Table 10:	Percentage distribution of water use in Sigangatsha and Malaba wards	67
Table 11:	Percentage distribution of income from domestic water use activities	74
Table 12:	Percentage distribution of household expenditure patterns	76

LIST OF ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
AOP	Actor Oriented Perspective
CBO	Community Based Organisation
CSO	Central Statistical Office
DDF	District Development Fund
GAD	Gender and Development
HIV	Human Immune deficiency virus
Ipcd	Litres per capita per day
MDG	Millennium Development Goals
MUS	Multiple Use Service
NGO	Non Governmental Organisation
SEWA	Self Employed Women's Association of India
SPSS	Statistical Package for Social Sciences
UNDP	United Nations Development Program
UNFPA	United Nations Population Fund
UNICEF	United Nations International Children Education Fund.
WATSAN	Water and Sanitation
WHO	World Health Organisation.
ZINWA	Zimbabwe National Water Authority

Definition of Terms

Social networks – A social network is any articulated pattern of connections in the social relations of individuals, groups and other collectivities. The relations concerned may be interpersonal relations or they may be economic, political or other social relations.

Community – The term has been used to refer to a group sharing a defined physical space or geographical areas such as a neighbourhood, village or hamlet. It is a group of people sharing common traits, sense of belonging and or maintaining social ties and interactions which shape it into a distributive social entity.

District – An administrative part of a region, which is subdivided into several divisions.

Women - For the purposes of this study, the term women was defined as an adult female person or a woman belonging to a particular category, in this case women residing in rural areas (Du Plessis, et al., 2008:1). The phrase women also carried with it children, particularly the girl child.

Ward – An administrative part of a district. It is smaller than a division and may contain up to 20 villages, with a population of up to 5,000 people

Village – Small administrative unit in a ward and may contain up to 60 households with a population of about 500 people.

Rural – The term “rural” was used in the study to refer to a community in a rural other than an urban area where tradition influences the attitudes of people regarding the acceptance of new ideas and the use of methods and techniques in solving problems in the psychological, social, and economic and health spheres. According to Blakerly (1984:1) major features previously used to define rural are simple life, agriculture, smallness and homogeneity, these include geographic isolation, distance from services and neighbours, higher degrees of

community cohesion and social conformity. More strictly defined gender roles and division of labour which are legitimized by the greater influence of religion and religious values; and the close knit character of small towns and rural communities within this framework. Rural life is also typified in terms of an ethic of self-sufficiency where independence and a rugged lifestyle are stressed. However, many of these factors are interwoven and inform the fabric of rural life. As this study was focusing on rural women it was relevant to have an understanding of what rural is and the set up of rural areas and location of water sources.

Social Change – The word, social change was used in the study to denote “the significant alteration of social structures – that is patterns of social action and interaction, including consequences and manifestation of such structures embodied in norms (rules of contact), values and cultural products and symbols”

Gender – Refers to a men’s and women’s roles and responsibilities that are socially determined. Gender is related to how we are perceived and expected to think and act as men and women because of the way society is organised, and not because of our biological differences.

Gender Equity – A situation where men and women have equal conditions for realising their full human rights and potential to contribute to and benefit from socio-economic, cultural and political development of a nation taking into account their similarities, differences, and varying roles that they play. It entails absence of discrimination on the basis of a person’s sex in opportunities and the allocation of resources or benefits or in access to resources.

Poverty – Subsistence or absolute poverty implies that there is a fixed basic minimum income below which physiological efficiency cannot be maintained based on the pioneering research of Charles Booth and Seebohm Rowtree at the turn of the nineteenth century. This approach entails the calculation of a poverty line based on the minimum necessities – such as

food, housing, clothing, fuel and some household sundries – required to maintain physical efficiency.

Policy – this is an official government statement that identifies areas where important improvements are needed and it defines goals and programs to achieve these aims. Goals are usually set within a defined time frame and include a planning period to mobilise resources, allocate budgets and generate public support for the programmes. Policy should be understood, as a government effort to meet specific needs of individuals and groups within a particular context.

Water Poverty - Water poverty is said to exist when a social entity that is confronted by an increasing level of water scarcity, fails to mobilize sufficient social resources with which to make the adaptation effectively (Turton and Ohlsson, 1999). Due to the lack of social capital, such an entity will be confronted by the consequences of the collapse of aquatic ecosystems, which will further exacerbate their existing developmental problems

CHAPTER 1: INTRODUCTION TO THE STUDY

1.0 Introduction

As an introduction, this chapter gives a background to the study and an outline of the aims and objectives of the study. The chapter also gives the statement of the problem, justification of the study and formulation of the research questions.

1.1 Background to the Study

Water is crucial for sustainable development. However, limited access to clean and safe water associated with poor water supply, hygiene and sanitation at the household level is widening the poverty gap, gender inequalities and increasing the prevalence of water borne diseases (Gender and Water Alliance, 2006). This is contributing to 3.7% of the total global disease burden and 2.2 million deaths each year, with women and children in the developing countries being the most affected (WHO/UNICEF, 2008). Although the Millennium Development goals (MDGs) 7(c) seeks to “halve by 2015 the proportion of people without access to safe drinking water and sanitation” (UNDP, 2006:46), it is anticipated that Sub-Saharan Africa will only reach the MDGs water target by 2040 (Sutton, 2008). But still, some 400 million of the people living in Sub- Saharan Africa will be left without access to safe water with a majority of them being women and children living in rural households (Sutton, 2008).

Competition for water has resulted in the collapse of water based ecological systems hence declining river flows and large-scale ground water depletion (UNDP, 2006). This is leading to an increased potential for conflicts within and between countries with the rural populations being the most affected (UNDP, 2006; Anand 2007). Even though the water crisis is observed as a general problem for the rural population, women bear the greatest burden because of their

socially engendered roles, which involve looking for and collecting water for their households (Buckingham, 2000; Rodda, 1993). Women as principal water collectors in households had their participation in education, income generating activities as well as in cultural and political engagements often compromised (Panda, 2007; Karl, 1995). Consequently, this leads to material deprivation for women, their lack of a voice, vulnerability to shocks and lack of capacity to cope with any form of crisis and hence widening the poverty gap and gender inequalities in developing countries (UNDP, 2004; Rodda, 1993). Therefore, ensuring easy access to adequate amounts of good quality water by extending the provision of water services to rural households in a coordinated and inclusive approach for all people is central to promoting access to clean and safe drinking water (Anand, 2007). Such a step will also contribute to the protection of natural resources which is also essential for environmental sustainability as one of the pillars of the MDGs (Lenton, et al., 2008)

Following the MDGs and the Zimbabwean constitutional provision on the formal right to water which states that “the right to water helps to improve access to water for the poor” (Anand, 2007), the Zimbabwean government, Non Governmental Organizations (NGOs) have been involved in the construction of conventional communal domestic water supply sources aimed at improving access to water for rural households in Zimbabwe (Davidson, et al., 1993; Anand, 2007). Despite these efforts, 44% of the people in rural households in Zimbabwe do not have access to clean and safe drinking water (Anand, 2007). This is an indication that the water problem is still persistent in rural parts of Zimbabwe and women are the most vulnerable group. Therefore, there is a need for more research to assess the water supply problem in the rural areas. There are a number of scientific studies that have been conducted on the state of water supply in Zimbabwe and how the country is trying to address the requirements of the MDGs water targets. However, there exists a gap in the evaluation of the extent to which the needs of

the disadvantaged groups especially women are met as they are the most affected group by the water crisis in rural areas. It is imperative, therefore, that research that incorporates such vulnerable groups especially women, their knowledge and needs be conducted to aid the achievement of sustainable solutions towards water problems and its impact on this vulnerable group of people in the rural areas of Zimbabwe. (Lenton, et al., 2008).

1.2 Statement of the Problem

Water is a scarce resource and physical access to it is a problem in rural Zimbabwe. The development of water sources that supply clean drinking water have lagged behind in rural communities in comparison to urban communities. This resulted in women in such areas as Sigangatsha and Malaba wards in Matobo district of Matabeleland South province having to walk long distances to collect water for domestic purposes. They have resorted to collect water from unprotected shallow wells, dams, boreholes and rivers. Boreholes which were sunk in the area by government and non-governmental organisations are no longer functional due to the non availability of spare parts, low water table levels during the dry season and lack of skills among communities to do maintenance work. Most of those trained in borehole maintenance were men. Women who are primary water collectors and users of water in rural communities have not been part of the decision making structures in as far as water management is concerned. Most men who have been trained in borehole maintenance have since gone to South Africa in search of employment leaving women with problems of accessing water for domestic use. The effects of global warming which have increased the frequency of droughts the world over including Zimbabwe has also resulted in the lowering of the water table thereby rendering water almost inaccessible through the sinking of boreholes and deep wells. Hence, women in Sigangatsha and Malaba wards were being forced to walk long distances to collect water thereby compromising

their time which could have been used for other productive purposes for the benefit of their households.

1.3 Justification of the Study

This study looks at the impact of domestic water supply on women in rural households in Zimbabwe with a specific focus on Sigangatsha and Malaba wards of Matobo district. There have been no studies on how domestic water impact on the lives of women in rural households in Zimbabwe. Studies that have been carried out in Zimbabwe concerning domestic water supply exemplify what Lipton (1977) termed the urban bias thesis in which most of the studies carried out have been focusing on water supply in urban areas. There is limited appreciation of the role that domestic water supply plays in the lives of women and the challenges that they face in rural households. There is need, therefore, to explore and gain a deeper understanding of the impact of domestic water supply on women and the challenges that they face in water provision in Sigangatsha and Malaba wards. It is also important to learn of success stories that have come out of the two wards as a result of the involvement of women throughout the domestic water supply chain. The study findings would be of value to government, local organisations working in the area on similar programs and policymakers. The findings would assist the government and policymakers to come up with policies on rural domestic water supply provision that will have a positive impact on the lives of women living in rural areas.

1.4 Aim and objectives

1.4.1 Aim of the study

To evaluate the impact of domestic water supply on women in rural Zimbabwe.

1.4.2 Objectives of the study

The purpose of this research was to have a better understanding of the impact of domestic water supply on women in rural Zimbabwe, to explore and to discover ways they could use their own capabilities to alleviate the challenges they were facing and to identify possible indigenous knowledge available to them as mitigation strategies. The following objectives were used to formulate the research questions.

- i) To assess the impact of domestic water supply on women in Sigangtsha and Malaba wards.
- ii) To identify challenges faced by women on domestic water supply in Sigangatsha and Malaba wards.
- iii) To examine policy and planning developments in rural domestic water supply in Sigangatsha and Malaba wards.

1.4.3 Formulation of the Research Questions

- What aspects of water impact on women?
- What are the social norms, values and practices governing water use at a local level?
- How does water affect women's live in these communities?
- What policies and or by laws govern domestic water supply in rural communities?

CHAPTER 2: THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.0 Introduction

This chapter looks at the conceptualisation of domestic water supply in rural communities and how it impact on the lives of women and the challenges they face. This section will start by giving an outline of the theoretical framework which is based on three theories and these are structuration theory, actor oriented perspective and gender and development. Thereafter, the global overview, regional overview, country overview and local overview will be given. This chapter will review studies done in other countries that illustrate the impact of water on women as they are the principal water collectors. In this regard it will review literature relating to; approaches to rural water supply, water sources, time spend collecting water, distance to water source, queuing time, responsibility of collecting water, number of households per water source, multiple uses of water, seasonal variability of access and use, water quality and quantity, management and maintenance of water sources, water treatment and lastly the economics of domestic water supply.

2.1 Theoretical framework

In an effort to evaluate the impact of domestic water supply on women in rural communities, the study employed the structuration theory by Giddens (1984), the actor-oriented perspective by Long (2001) and Gender and Development perspective by Moser (1989).

2.1.1 Structuration Theory

Assessing the impact of domestic water supply in rural communities entails a complex mixture of decisions and activities focused on acquiring, utilizing and managing the water resources and maintaining relationships in the context of vulnerabilities. In essence, the researcher was interested in the impact of domestic water supply on women and how the actor's survival and

their engagement with domestic water supply have changed their day to day activities. Giddens (1984:13) claims that structure and action are two sides of the same coin. Giddens (1984:13) argued that neither structure nor action can exist independently, both are intimately related. Structure affects human behaviour because of the knowledge that agents have about their own society. There is a stock of “mutual knowledge of how to go on” or how to get things done, (Ritzer, 1996). In this essence, the social actor’s are women who have knowledge of where to get water and if they run out of water at home, they are more knowledgeable on how they can survive without water at home. Agents know from what they have learnt how to go about their everyday lives and accomplish objectives

Due to challenges they face in accessing water in rural communities women have learnt ways of surviving with little water in executing household chores like washing, cooking and bathing. Giddens (1984:1-16) argues that the very concept of “agents” and “agency” involve people having the ability to transform the world around them through actions, as well as being able to reproduce it. Human action may well have consequences which were not anticipated by agents involved. Women may collect water from unprotected sources and this may cause household members to contract water borne diseases which they might not have anticipated. Women may also collect water from far away sources and might forego participating in development activities in their communities. Giddens (1984:17) argues that humans are constantly able to think about what they are doing and to consider whether their objectives are being achieved, then agents may start to behave in new ways, patterns of interaction may change and with them the social structure. On that note, these women might walk long distances, to get water that they use for their households. Should they decide that walking long distances and that the water is of poor quality and hence the water is not good, they can decide to use alternative sources and find other means of having access to domestic water supply. This theory therefore has allowed the

study to assess impact in terms of how women are now able to manipulate their situation and environment in relation to the available domestic water supply.

2.1.2 Actor – Oriented Perspective

The actor-oriented perspective by Long (2001:11) is used as an analytical tool for understanding the processes by which certain social arrangements emerge and are reinforced or reworked in women's everyday lives. Long (2001:13) argues that women's challenges in accessing water for domestic use can be overcome by their actions. Actors are agents who to an extent manipulate and deal with circumstances they are confronted with in an attempt to create room for manoeuvre. Agency thus implies certain knowledge ability where experiences and desires are accorded meanings, purposes and capability to command relevant skills, access water resources and engage in particular organising processes (Long, 2001:13).

At the heart of the actor-oriented perspective (AOP) is agency, which is the capacity of actors to process their experiences and learn from others experiences and then act upon them. Women as social agents exercise their agency as they learn how to intervene in the social environment around them. Domestic water is crucial in women's attempt to exercise agency. Giddens (1984:16) observes that assets, domestic water sources, are the basis of an actor's power to act and reproduce, challenge or change the rules that govern and control, use and transformation of the domestic water resources. Interface situations are explored in the study. According to Long (2001:13), the interface is a "critical point of linkage between different levels of social organisation (live Worlds), based upon differences of normative value, social interest, knowledge and power". Women have been able to manipulate the situation presented by development agencies to access domestic water. That social action such as fetching water is never an individual ego-centred pursuit. It occurs within social network of relations bound by

certain social conventions, values, norms and power relations within households. Social networks are a crucial resource in the provision of domestic water for rural households. Well functioning social networks can mitigate risks that are likely to be faced by women in the provision of domestic water to their households. Breakdown of social relations and social networks in some communities may have a negative effect on domestic water provision by rural women.

The network concept is particularly useful as it focuses on women using social roles and the crossing and manipulation of social and cultural boundaries (Hannerz, 1980 cited in Long, 2001). On one hand, social networks are seen as sources of popular agency that allow women to circumvent institutional constraints and structures of exclusion within the wider society, (Burawoy, 1985:23 cited in Long, 2001:16). On the other hand, social networks are seen as popular mechanisms that can reduce the challenges that women face in accessing domestic water by filling gaps in formal arrangements, particularly in the context of strategies that can be used to increase access to domestic water supply by women in rural communities. The concept of “localities” focuses attention on how organisational capacities of communities are shaped by the way in which they are embedded in the wider institutional framework of context. This highlights the question of whether particular networks develop within supportive institutional framework or in the context of state neglect or chaos. As Evans (1996:1129) points out, the state can shape networks in a variety of ways, either by supporting them, by neglecting them or by hijacking them for its purposes. In this case, domestic rural water supply development has been affected by the state relinquishing some of its duties in social services provision in pursuit of neo-liberal approaches to development. The focus on “linkages” highlights that way in which social networks are deployed in the process of social change. It encourages analysis to move beyond questions of connectivity and path dependence to a more dynamic assessment of the

diversity of networks in response to changing circumstances. Its relevance to women is illustrated through the various inter-linkages women develop in their effort to reduce the challenges they face in accessing water for domestic use.

2.1.3 Gender and Development approach

This approach focuses on gender rather than women in the development approach. Oakley and Rubin (1975) in Moser (1989) both noted that the problem of women were perceived in terms of their sex, namely their biological differences from men – rather than in terms of their general – that is, the social relationship between men and women in which women have been systematically subordinated. The gender and development approach (GAD) maintains that to focus on women in isolation is to ignore the real problem, which is their subordinate status to men. In this case, women's problems should not be viewed in isolation, but the focus should be on gender relations. The gender and development approach looks at the development of women and men as equal partners thus focuses on the relations between women and men. This approach views women's problems as emanating from unequal relations of power that prevent equitable development and the full participation of women. The goal of the approach (GAD) is to achieve equitable and sustainable development with both men and women as decision makers. According to Moser (1989) it will be interesting to see how women as a disadvantaged group in rural communities can be empowered thereby transforming unequal social relations in their societies. Moser (1989) argued that there is need to come up with strategies that identify and address women's practical gender needs and lastly address strategic interests of women through people centred development. This approach would therefore stimulate the study to unravel the impact that domestic water supply has imposed on gender relations and development issues and the gains that have been made in rural communities.

2.2 Global overview

The UNDP (2006:33) noted that at the start of the 21st century one in five people living in the developing world lack access to clean drinking water. Not having access to clean water is a euphemism for profound deprivation (UNDP, 2006:33). The UNDP (2006:33) indicated that this means that people live more than 1 kilometre from the nearest water source and that they collect water from dams, ditches or streams that might be infected with pathogens and bacteria. The UNDP (2006:33) noted that in Sub-Sahara Africa millions of people share their domestic water sources with animals or relying on unprotected wells that are breeding grounds for pathogens. In Tajikistan nearly a third of the population takes water from canals and irrigation ditches, with risk of exposure to polluted agricultural run-off. It was further noted that rural people have no choice and inadequate access means that women and young girls spend long hours collecting and carrying household water supplies (UNDP, 2006:33).

The UNDP (2006:34) noted that average water usage ranges from 200-300 litres per person per day in most countries in Europe to 575 litres in the United States of America. By contrast, average use in countries such as Mozambique is less than 10 litres per person per day. People who lack access to domestic water sources consume less, partly because they have to carry it over long distances and water is heavy (*ibid*). The UNDP (2006:34) noted that the international norm of 100 litres a day minimum for a family of five weighs some 100 kilograms, a heavy burden to carry for two to three hours especially for women and the girl child. The UNDP (2006:34) noted that WHO and UNICEF (2006:34) suggest a minimum requirement of 20 litres a day from a source within 1 kilometre of the household. It was noted that this amount of water is enough for drinking and basic personal hygiene. WHO and UNICEF (2006) both suggest that factoring in bathing and laundry needs would raise the personal threshold to about 50 litres a

day. The UNDP (2006) noted that at the end of 2004 still some 1.1 billion people or 18% of the world's population lacked access of domestic water. The UNDP (2006) further noted that of the 1.1 billion or so people in the world who live more than a kilometre from the water source, water use is less than 5 litres a day of unsafe water. These figures mean that one in five people in the developing world lack access to sufficient water to meet even the most basic requirements for their well- being. The figure below shows the percentage distribution of the population which do not have access to domestic water in rural areas compared to urban areas.

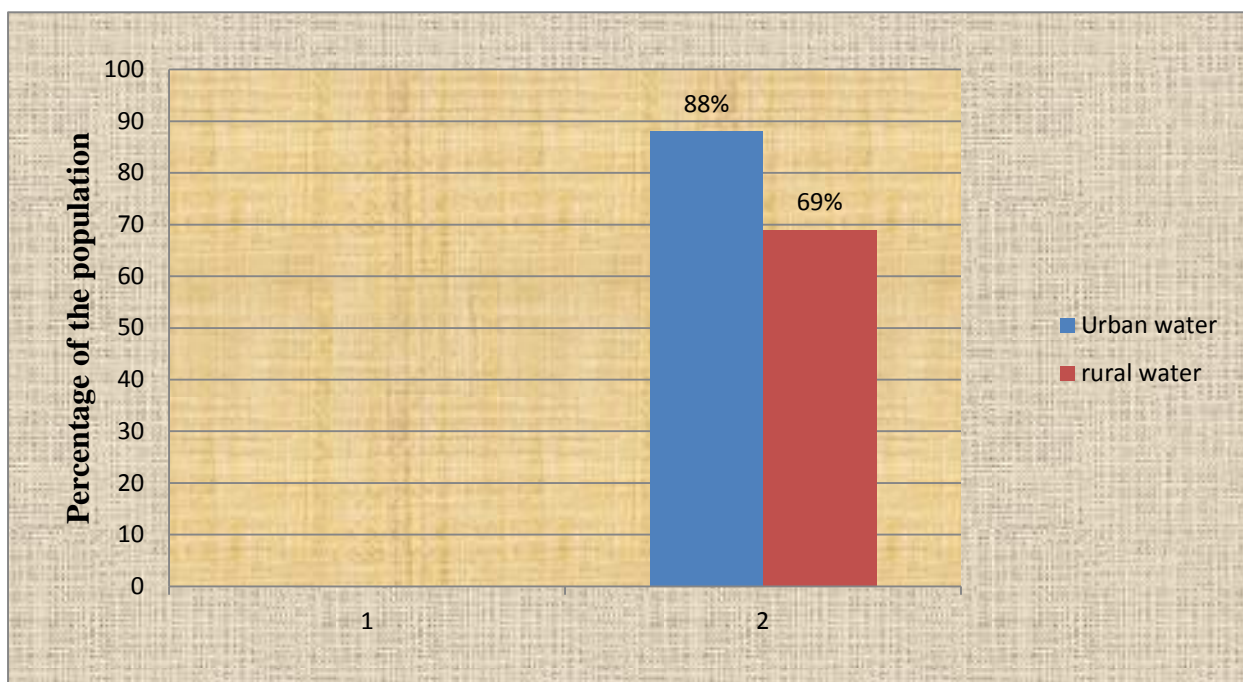


Figure 1: Percentage distribution of rural population with access to domestic water supply in comparison with the urban population

Source: World Development Indicators, 2005.

WHO and UNICEF (2006) both have noted that at the beginning of the “water for life decade” (2005 – 2015), about 1.1 billion people did not have access to domestic water. Of the 1.1 billion people, 84% of the population without access to an improved water source for domestic use live in the rural areas. WHO and UNICEF (2006) both have further noted that in 2004, 73% of the rural dwellers did not have access to a source of domestic water supply, only 3% have access to

piped water in their homes. Kebede (2007) noted that domestic water consumption is increasing at more than twice the rate of population growth. Kebede (2007) further noted that, at this moment one in six people worldwide or 1.1 billion people do not have access to domestic water supply. Figure 2, below shows the percentage distribution of the population with access to domestic water supply by region.

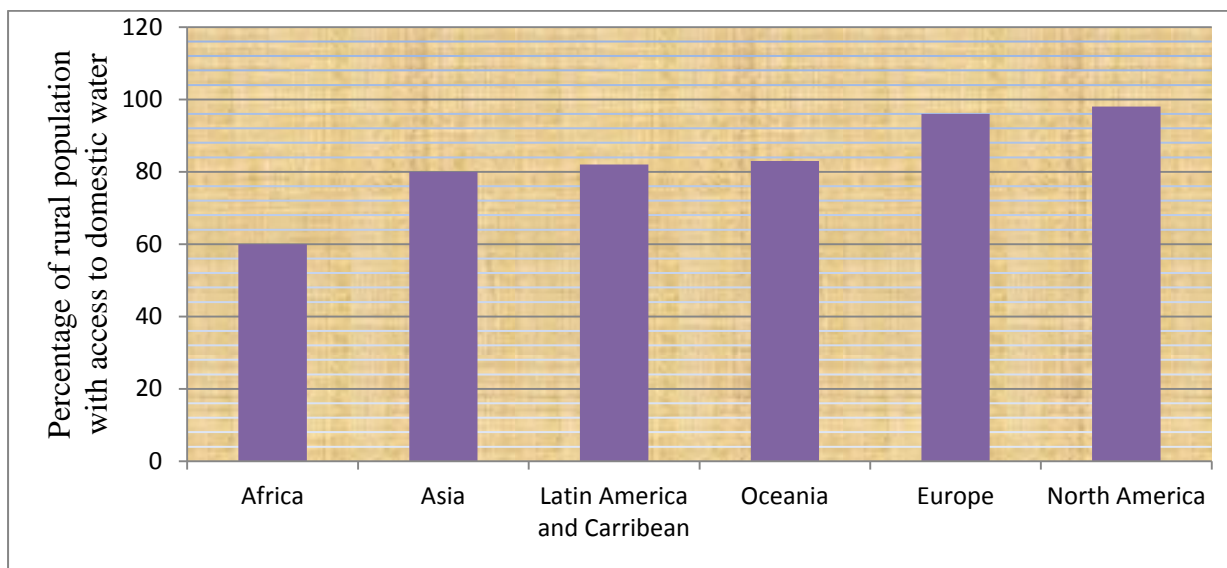


Figure 2: Percentage distribution of access to domestic water supply in rural communities by region

Source: WHO and UNICEF, 2006.

WHO and UNICEF (2006) have both noted that the figures shown above in figure 2 clearly show that Africa is lagging behind the rest of the world in the supply of domestic water to rural communities and at this pace Africa will not be able to meet the 2015 Africa Vision and Millennium Development Goal on domestic water supply provision. WHO and UNICEF (2006) both have further noted that this scenario is being necessitated by the fact that half of the population in Africa do not have access and should be served with water. WHO and UNICEF (2006) have both argued that about 270 million rural people in Africa will need to be provided with access to water for the continent to reach the 2015 target. WHO and UNICEF(2006) have

both noted that domestic water supply has an impact on the other Millennium Development Goals because, not achieving them, they argued, would result in African governments not being able to meet the targets for the other development goals. For example, WHO and UNICEF (2006) both have stated that by providing domestic water supply to communities would reduce the time the girl child is likely to spend accessing water and as a result she is likely to attend school. This therefore would increase the number of enrolments in schools resulting in meeting the goals for education (WHO and UNICEF, 2006).

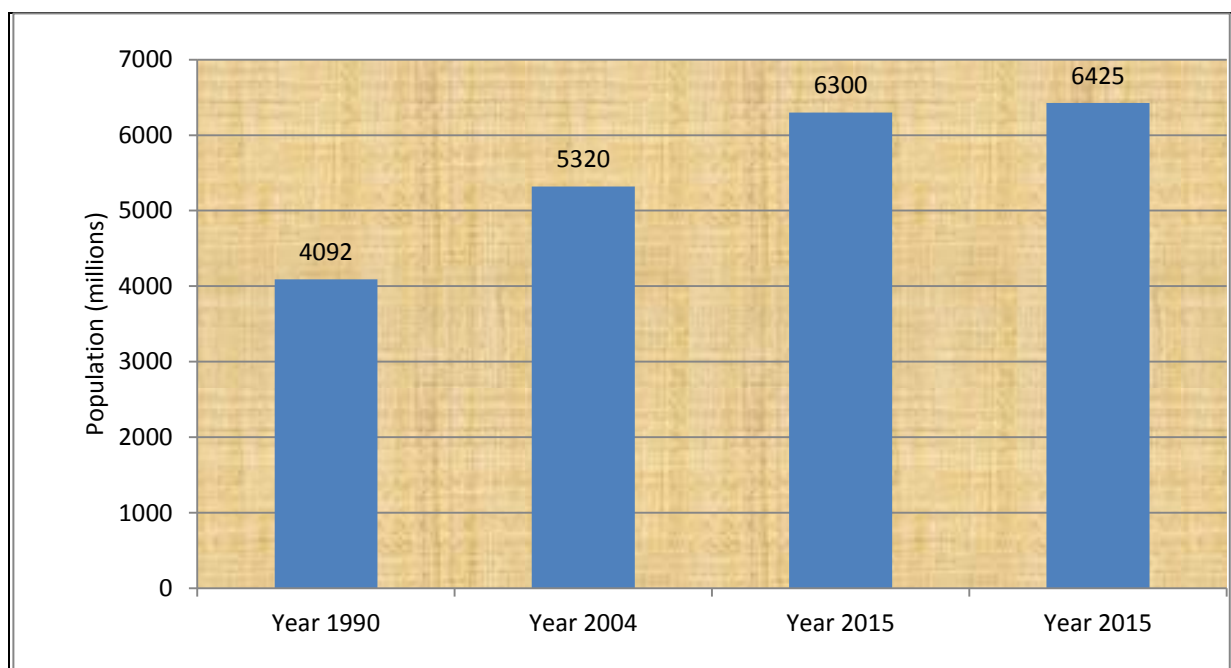


Figure 3: World population without access to an improved drinking water source in 1990, 2004 and 2015

Source: WHO and UNICEF Report, 2006.

The projection by WHO and UNICEF (2006) have both shown in figure 3 that by 2015 about 6425 million rural people will not have access to domestic water supply. WHO and UNICEF (2006) both have noted that there were 4092 million rural people in 1990 who had no access to rural domestic water supply and the number increased to 5 320 million by 2004, an increase of 30%. In the year 2004, the figures increases from 5 320 million and it is anticipated that by the beginning of 2015, about 6 300 million rural people will not have access to domestic water, an

increase of 18% from the 2004 figures (*ibid*). WHO and UNICEF (2006) have both argued that these figures show that besides various governments investing in rural water supply, access to clean drinking water is becoming more difficult for many people especially in Sub-Sahara Africa where the majority of people live in rural areas. These figures point to two important factors; inadequate funding mechanisms in rural water supply by various governments in Africa and secondly, there is unfavourable policy prescriptions that would enable adequate funding and implementation of viable domestic water programs in rural communities (*ibid*). The UNDP (2006:35) noted that some people with access to a water source within 1 kilometre, but not in their house or yard, consumption averages around 20 litres per day. A 2001 WHO/UNICEF study estimated that some 1.8 billion people were in this position.

2.3 Regional Overview

Watt and Wood (2001:2) both have noted that countries in Africa are already experiencing water stress; another 11 countries are expected to join them by 2025 at which time nearly 50 per cent of Africa's predicted population of 1.45 billion people will face water stress or scarcity. Nearly 51 per cent (300 million people) in Sub-Sahara African countries lack access to a safe supply of water (*ibid*). Watt and Wood (2002:2) both further noted that the semi – arid areas, especially in Sudano-Sahelian Africa and North Africa, are likely to be most affected by increased water stress. Underlying many of these problems is the fact that water is a finite resource, and there are increasing demands and pressure due to competing uses of water (*ibid*). It has been noted that this situation exacts a heavy toll on the health and economic progress of Africa countries. The UNDP (2006:33) noted that in Sub-Sahara Africa millions of people share their domestic water sources with animals or they rely on unprotected wells that are breeding grounds for pathogens. The UNDP (2006:34) further noted that average use of water in countries such as Mozambique is less than 10 litres. In Uganda average consumption in rural

areas ranges from 12 to 14 litres a day. Dry season use falls sharply as the distance to water source increases (UNDP 2006:36). The UNDP (2006:35) also noted that in the arid areas of the Sahel and East Africa dry season water availability can fall well below 5 litres a day. Lane (2004:5) noted that domestic water supply in rural areas of Africa were poor in the early 1980's. Coverage rate was typically 20-40 per cent. Most African societies were agrarian, but rural water supply was underdeveloped (Lane, 2004:5). Viewing domestic rural water supply as the duty of the governments, most African countries established large, centrally managed water supply programs (*ibid*). As the economy of many African countries declined domestic water supply infrastructure fell into disrepair, and users are unable or unwilling to maintain it themselves (Lane, 2004:5).

2.4 Overview of water supply in Zimbabwe

Mutizwa-Mangiza (1991) noted that on November 10 1982, the International Drinking Water Supply and Sanitation Decade was launched in Zimbabwe, two and a half years after its inauguration by the United Nations General Assembly. She noted that the national goals that were adopted for the decade were very much in keeping with the emphasis which the government of Zimbabwe had placed on rural development. The emphasis was reflected in the Master Plan for rural water supply and Sanitation which aimed specifically at improving domestic water supply and sanitation for rural communities. Mutizwa-Mangiza (1991) further noted that the importance of domestic water supply in developing countries cannot be questioned. One of the principle manifestations of the poverty that characterises many developing countries is poor health, which in turn is manifested through high infant mortality rates and comparatively shorter life expectation periods. She argued that most of the killer diseases in developing countries are directly connected with poor domestic water facilities. Such diseases are either waterborne or a result of inadequate use of domestic water for hygiene

purposes. Mutizwa-Mangiza (1991) further noted that most of these diseases include typhoid, cholera, diarrhoeal and intestinal infections and a variety of eye and skin diseases. Within Zimbabwe, good water facilities tend to be concentrated in urban areas, although the neglected rural areas frequently carry more than 83% of the national total population. Fortunately, the attempt to move away from emphasis on urbanisation towards an emphasis on rural development has resulted in amongst other things, significant efforts in the provision of domestic rural water supply facilities, an important basic need and indicator of health development (*ibid*).

2.5 Overview of water supply in Matobo

In Matobo, most of the inhabitants are ethnically Ndebele. For the Ndebele, water is a “God - given” resource just as the land is in which it is found. Similarly to land, water forms a central element in Ndebele worship hence the Njelele shrine in Matobo Hills where they go to appease their ancestral spirits so that they receive enough rainwater for their use. Water attains a religious dimension and becomes that natural “resource” the people receive when ancestral spirits are approached to intercede for a successful rainy season and which “ancestral spirits make available in certain rivers and springs even in the event of the mother of all droughts” (Mtisi and Nicol, 2003:3). Thus the custodian of water is the chief and his people. And the ultimate owners are the ancestral spirits. The collorary that traditional leaders and community have access to water because it belongs to them and their ancestors, which posits a conception of worship often at odds with outsider’s views of how the resource is perceived locally. Access to water is therefore gained (and governed) by acceptance as a member of the spiritual community, and willingness to respect the ancestral spirits of an area. Access to water through traditional institutions and associated narratives also gives water a transcendental quality that

links the livelihoods and religious aspects of communal area people (Mtisi and Nicol, 2003). The meanings of the resource are therefore as confused in terms of imported notions of what water “is” as are the meaning of community as commonly received by intervening agencies (Blench, 1998 in Mtisi and Nicol, 2003). The neat territorial definition falls down under this more complex notion of belonging and membership. This has important implication for accessing domestic water for rural women of Sigangatsha and Malaba wards of Matobo district.

2.6 Approaches to rural water supply

Carter, et al. (2005) noted that there are diverse sources of domestic water supply in rural areas. These are conventional sources and the self-supply sources. The conventional communal sources are justified for improved water quality and use of high level technology like drilled boreholes equipped with hand pumps, collection tanks and protected springs and aquifers (Carter, et al., 2005). Other mean scheme techniques include powered systems like submersible pumps and gravity flow schemes (*ibid*). It has been noted that the conventional communal facilities have proved to be unsustainable because of the high rate of breakdowns as a result of poor operation and maintenance, congestion, difficulty in operating the pumps and long distances because sources are too few and yet rural households are many and scattered through a given area (Brett, et al., 2007, Singh, et al., 2004).

2.6.1 Conventional Communal Sources

Conventional water sources have also been observed as grounds for social unrest within communities and are not funded enough to achieve the MDG’s water targets (Davidson, et al., 1993; Sutton, 2008). More still, though the coverage of facilities have increased in most parts of Zimbabwe due to NGO Water and Sanitation (WATSAN) programmes, some of these facilities have been abandoned by beneficiary communities due to high levels of iron or sulphur in the water. This poses a challenge to Zimbabwe with 83% of its population living in rural

areas (CSO, 2004). As a result, self supply initiatives have evolved as an alternative approach to water supply construction and management in rural communities (Sutton, 2008).

2.6.2 Self Supply

Self supply builds on the initiative of individual households or communities to improve domestic water supply through user investment in water treatment, source construction upgrading and management (Sutton, 2008). This is based on locally available and easily affordable technologies to the users in rural communities (Alford, 2007). Self supply initiatives are spearheaded by beneficiary communities who have the income and are willing to contribute towards the construction of domestic water supply sources (Carter, et al., 2005). Since most of the people who live in rural communities are poor, they sometimes mobilize their neighbouring communities to pull their resources together using local labour, materials and initiatives towards the construction of domestic water supply sources. It is worth noting that such sources are often associated with poor water quality and seasonal unreliability (*ibid*). It is worth noting that although the self supply initiatives are private, access and use of the domestic water source by other households is usually at no cost or for a small fee as a way of promoting social relations (Carter, et al., 2005). This is because water is seen as a natural resource and as a result the payment of a water fee in the rural areas is not acceptable (Shiva, 1989). This system can compromise access of water among the disadvantaged groups in society especially women who do not have the capacity and ability to construct and or maintain the domestic rural water supply sources (Alford, 2007).

2.7 Domestic water sources

The UNDP (2006:81) noted in a research it carried out in Cebu, Philippines, in 2006 that there were five patterns of water use among households. The UNDP (2006:81) noted that in rural villages, poor households draw water from a protected well for part of the year but then they are

forced to draw water from rivers or streams during the dry season. In this study it was noted that water drawn and used in any one day depended on factors such as availability and perceptions of quality. The UNDP (2006:81) further noted that the use of water sources varies temporarily and seasonally, due to changes in water quality and pressure. In some rural communities of Indonesia groundwater cannot be used for drinking because of salination or pollution (*ibid*). The UNDP (2006:81) noted that in such circumstances groundwater will be used only for cleaning or washing. What imaged from a large group of countries is that patterns of water use are far more complex and dynamic than the static picture presented in global reporting systems (UNDP, 2006:81). The real life patterns constantly adjust to take into account concerns of water quality, proximity and reliability (UNDP, 2006:81). It was noted that in most poor rural households' people get their water from a variety of sources, lakes, streams, springs, wells and rivers. Protected villages wells are the most common water sources (UNDP, 2006:87).

2.8 Time Spent collecting water

The UNDP (2006:47) noted that in almost all the countries the gender division of labour assigns women responsibilities that men do not share. The intra household division of labour interacts with problems in service provision to reinforce deep gender inequalities. The UNDP (2006:47) further noted that time spend collecting water represents a heavy burden on women. In Mozambique, rural Senegal and Eastern Uganda women spend an average of 15-17 hours week collecting water (*ibid*). The UNDP (2006:47) noted that it is uncommon for women to walk more than 10 kilometres during the dry season. Research in Uganda found households spending on average 660 hours in a year collecting water. This represents two full months of labour with attendant opportunity cost for education, income generation and female leisure time. The UNDP (2006:47) further noted that one estimate suggests that some 400 billion hours a year are spend collecting water in Sub-Sahara Africa which is a year's labour force for the

entire workforce in France. Reducing time for other activities such as child care, rest or reproductive work, the time spend collecting water reinforces time poverty, disempowers women and lowers their income base (UNDP, 2006:47).

The UNDP (2006:47) noted that in a research carried out in India by the Self Employed Women's Association (SEWA) demonstrates the interaction. Women engaged in a successful microenterprise project in a semi-arid area of Gujarat spend about 3-4 hours a day collecting water. During the summer months, when the time to collect water increased, by two hours a day, women adjusted by reducing the time spend on microenterprise work (*ibid*). SEWA calculated that reducing water collection to one hour a day would enable women to earn an additional US\$100 a year depending on the enterprise – a very large implied income loss for households in an area of high poverty. But it was not only the loss of income that was important. Women also emphasised the importance of income generation to their independence (UNDP, 2006:49). The UNDP (2006:87) also noted that in rural Benin girls ages 6-14 spend an average of one hour a day collecting water compared with 25 minutes for their brothers. In a study carried out in Malawi there were large variations in the amount of time allocated for water collection based on seasonal factors but women consistently spend four to five times longer than men on this task. The UNDP (2006:88) noted that time is an important asset for the development of capabilities. The UNDP (2006:88) argues that time poverty reduces the time available for participation in income generation limits the scope for women to take advantage of market opportunities and impedes their ability to expand capabilities and skills reducing future income returns (*ibid*). A study done in Pakistan indicted that poor access to water in rural Pakistan reduces the time that women devote to market oriented activities and increases the women's total work burden (Costa, et al., 2009:1). In another study done in Ghana among 190

rural communities it was found that 66% of women fetch water and most of them spend up to 15 hours a week doing so (*ibid*). Costa, et al. (2009:1) also noted that total women's working hours collecting water are fewer in communities provided with water and to those living closer to the water source. Hence, having access to water infrastructure can reduce the time burden on women. Costa, et al. (2009:1) noted that it is not implicit; however, that the time women save on water collection would be devoted to paid activities. They noted that additional policies are needed to achieve that goal, especially policies related to building human capital and provision of child care facilities.

2.9 Distance to water sources

The UNFPA (2002:1) noted that in some regions of the world, such as parts of Asia and Africa, women have to walk great distances to find drinking water. Cairncross and Valdmanis (2003:771) noted that in much of rural Africa a hand pump 500 meters from the household is a luxury. It was noted that as of 2000 it was estimated that one-sixth of humanity (1.1 billion) people lack access to an improved water supply within 1 kilometre of their home (WHO and UNICEF, 2010:7) The UNFPA (2002:1) noted that women and girls are usually responsible for this task. UNFPA (2002:1) noted that an average distance a women in the developing world walk to get water is 3.7 miles a day and she typically carries a load weighing 40lb. This is a long way to go and a lot of water to haul. The UNFPA (2002:1) further noted that one third of women in Egypt walk more than an hour a day to collect water, in other parts of Africa, women spend as much as eight hours collecting water. It further noted that the average distance walked by women in Africa in search of domestic water is six kilometres a day. Working in 334 study sites in Kenya, Tanzania and Uganda, Thompson, et al., (2001:42) found a mean distance from rural un piped households to their water sources of 622 metres. In Asia, an Indian national survey for UNICEF found that women spent an average of 2.2 hours per day collecting water

from rural wells far away their households. In a study done in Sri Lanka, which is considered to be well provided with water sources, found that 10% of women had to travel more than 1 kilometre to their nearest source (Merterns, et al., 1990:32). In a study on water supply and sanitation in Gouansolo village in rural Mali, 65 kilometres south of Bamako the national capital, Telmo (2002:71), noted in his study that average distance travelled to water sources is 44 metres, the closest is 3 metres and the furthest is 260 metres (Telmo, 2002:71). Telmo (2002:71) further noted that all households have access to water sources within 1 kilometre of the household compound (*ibid*).

2.10 Queuing time to collect water

The Sphere Project (2004:66) noted that excessive queuing times are indicators of insufficient water availability, either due to an inadequate number of water points or inadequate yield of water points. It further noted that excessive queuing time has potential negative results of reduced per capita water consumption, increased consumption from unprotected surface sources, and reduced time for water collectors to tend to other essential survival tasks. In a research done by WHO and UNICEF (2010:28) both have noted that those spending more than half an hour per round trip progressively collect less water, and eventually fail to meet their families' minimum daily drinking water needs. Additionally, the economic cost of having to make multiple trips per day and waiting for long in a queue to collect drinking water is enormous (*ibid*). Analysis of demographic Health Surveys conducted over the past four years show that water collection trips and queuing time of over 30 minutes are most prevalent in Africa as well as arid countries outside Africa such as Mongolia and Yemen (WHO and UNICEF, 2010:28). WHO and UNICEF (2010:28) both have noted that in various countries, most notably in Eastern Africa, more than a quarter of the population spends more than half an

hour per round trip to collect water. More than a quarter of the population in several countries of Sub-Saharan Africa takes longer than 30 minutes to make one water collection round trip.

2.11 Multiple uses of water

Sandys (2005) argued that domestic water supply is critical to the livelihoods and well being of the world's population but noted that millions suffer from lack of access to safe drinking water. Sandys (2005) further noted that domestic water supply is important as it assures a sustainable future for millions of people with vulnerable livelihoods in marginal environments such as those populations living in dry zones. This therefore means that domestic water can be used to irrigate small household gardens in those places that receive marginal rainfall. It is important to note that the poorest people and those disadvantaged groups such as women are disproportionately dependent on domestic water and vulnerable to a deterioration of their livelihoods when access to domestic water changes (Sandys, 2005). In a study done in Honduras, Espejo (1983) noted that women in low-income neighbourhoods of Honduras have taken on and managed their own licensed water vending points. Espejo (1983) further noted that vending was providing part time employment to poor single women with children. He further noted that surplus income was used to improve supplies. In this case the cash that was being generated by selling domestic water was being ploughed back to improve and increase the sources of domestic water by women in the poor rural neighbourhoods of Honduras. In the same study it was noted that domestic water is used to generate an income from beer brewing, teashops and launderette.

The driving principle that domestic water can be used for livelihoods refers to take peoples multiple water uses. Van Koppen, et al. (2009) argued that instead of one single end use, multiple use of domestic water should be guided by the desire to achieve multiple faceted livelihoods benefits from multiple water users. Van Koppen, et al. (2009) further noted that

important water related livelihood dimensions are health, freedom from domestic chores, food for family consumption and income. Van Koppen, et al. (2009) further noted that domestic water can have negative livelihoods impact, in particular through water related diseases or through the need for excessive labour or monetary costs of accessing water. They noted that positive livelihoods are gendered in that the positive benefits are distributed differently between women and men and the negative impacts are also felt differently.

According to Van Koppen, et al. (2009) domestic water supply is a contributing factor to livelihoods benefits and often a controlling factor when access to water is limited. To conceptualise the link between livelihoods driven domestic water use and water systems that provide physical access to water for homestead-scale Multiple Use Service (MUS), Van Koppen, et al. (2009) noted that there is need to borrow and critique the widely used ladder of water service levels in the domestic subsector, (WHO, 2008). This ladder assumes that water quantities of up to 100 litres per capita per day (lpcd) at near homesteads are exclusively used for domestic purposes. WHO (2008) hypothesised that it would be more realistic to recognise that water is used for productive purposes alongside domestic purposes as soon as water quantities exceed 20 lpcd that Howard and Bartram (2003) both define “basic domestic”, basic MUS”, “intermediate level MUS” and “high level MUS”. Figure 6 below presents that multiple use of water at household level.

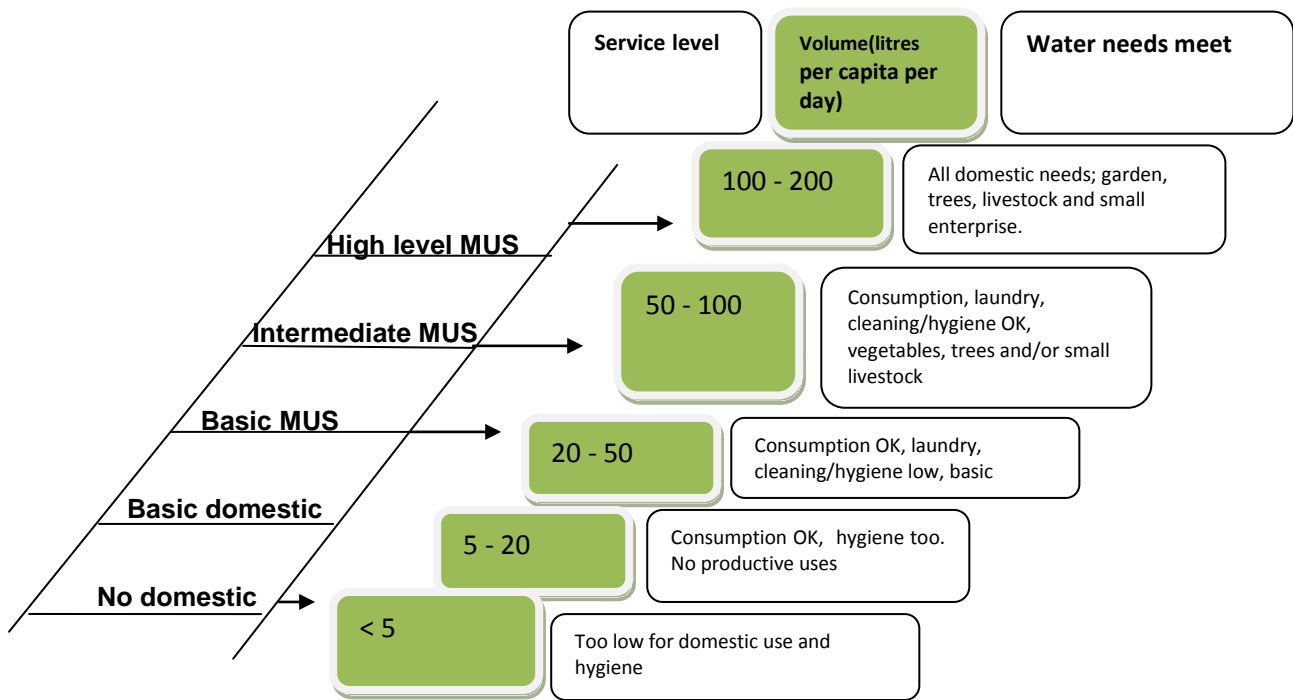


Figure 4: The multiple use water ladder

Source: Van Koppen, et al., 2009.

2.12 Responsibility for collecting water

Water Aid (2009:2) noted that the role of water collection in developing countries predominantly falls to women and girls, who can spend hours walking miles to collect water from unprotected sources. It further noted that the tragedy is that the water which they work so hard to collect is often dirty, polluted and unsafe to drink, coming from rivers, ponds or simply holes in the ground. Water Aid (2009:3) further noted that women can only carry a limited amount of water, their family will often have to survive on small daily rations, especially in the dry season when water become particularly scarce. Water Aid (2009:3) noted that accidents can also occur on the uneven paths that women walk down while collecting water. The Water Aid (2009:3) argued that constantly carrying heavy water containers, that weigh up to 20 kilograms, on the head, hip or back has severe health implications. In extreme cases spine and pelvic deformities can result causing problems in child birth. The World Health Organisation and

United Nations Children’s Fund (2010:29) both have noted that for families without a drinking water source on the premises, it is usually women who go to the source to collect drinking water. Surveys carried out by these two organisations from 45 developing countries show that this is the case in almost two thirds of households, while in almost a quarter of households it is men who usually collect water. Figure 5 below shows that women are principle water collectors in rural areas.

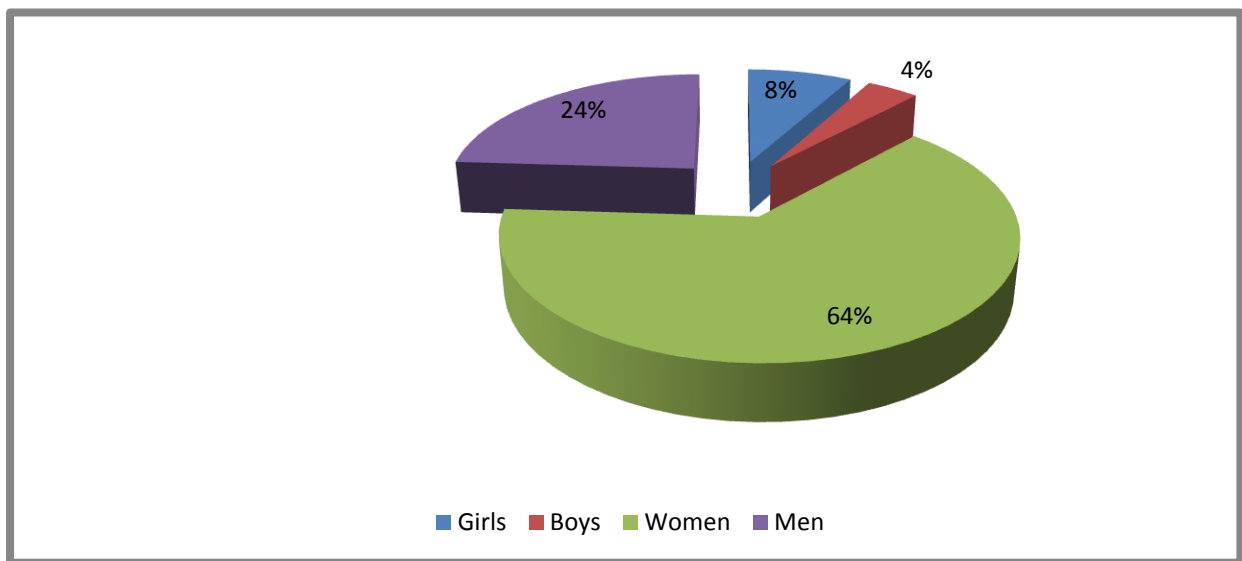


Figure 5: Percentage distribution of people who collect water at household level.

Source: WHO and UNICEF, 2010:29.

WHO and UNICEF(2010:29) both have noted that in 12% of households, however, children carry the main responsibility for collecting water, with girls under 15 years of age being twice as likely to carry this responsibility as boys under the age of 15 years. The real burden on girls is likely to be higher because, in many households the water collection burden is shared though not the main persons responsible often make several round trips carrying water (WHO and UNICEF, 2010:29). The United Nations Population Fund (2002:1) also noted that the role of water collection in developing countries predominantly falls to women and girls, who can spend hours each day walking miles to collect water from unprotected sources. In a research done by

Madulu (2000:7) in Mwanza district, Tanzania, he noted that the mean amount of water carried on a daily basis by individuals in the survey villages showed that the majority of this work is done by females aged 15 – 49. It was noted that twice as many females as males are engaged in carrying water, and amongst those who carry water, females carry twice the amount that the males carry. Although females bring into the household about four times as much water as males, the amount carried by males is not negligible particularly in the 15 – 24 age groups. It was noted in the study that a significant amount of water is carried by males in households that brew liquor compared with those which do not brew. It was noted in this study that more water is carried in the dry season than in the wet season by both sexes. It was noted in this study that altogether males carry 17% of water used in the household. It was noted that most women carry water throughout the year, but make more journeys to the source in the dry season than in the wet season. This was noted to have been caused by the increase in distance to source during the dry season where man labour is highly appreciated (*ibid*).

2.13 Number of households per water source

The Sphere Project (2004:85) noted that the number of people per water source depends on yield and availability of water at each source. For example, taps usually function at certain times of the day and hand pumps and wells may not give constant water if there is a low recharge rate (*ibid*). The Sphere Project (2004:65) suggested the guidelines shown below as the maximum number of people per water source in rural communities.

Table 1: Number of people per water source

250 people per water tap	Based on a flow of 7.5 litres/minute
500 people per hand pump	Based on a flow of 16.6 litres/minute
400 people per single user well	Based on a water source 12.5 litres/minute

Source: Sphere Project, 2004:65.

The Sphere Project (2004:65) noted that the above figures assume that the water point is accessible for approximately eight hours a day only and if access is greater than this, people can collect more than 15 litres per day minimum requirement. Watt and Wood (1979) as cited in Matindike (1982:14) argued that “experience has shown that with a good aquifer a single well can, at a pinch, supply the domestic water requirements of about five hundred persons (120-150 families), though half that number is considered more suitable if there is congestion at peak periods”.

2.14 Seasonal variations of access and use of water

The UNDP (2006:87) noted that at a national level water scarcity in rural areas is seldom a problem, but the rural poor often live in dry areas subject to seasonal shortages. The UNDP (2006:87) further noted that in northern Kenya, the Sahel region and drought prone areas of Gujarat in India wells run dry for long periods of time and in semi arid areas of western Nigeria water collection times increase from four to seven hours in the dry season. Time poverty is one consequence of seasonal scarcity UNDP (2006:87). In a study to determine the changing water needs and uses in rural communities of Mwanza district, Tanzania. Madulu (2000:5) noted that the fraction of households uses improved wells, dams and rivers for drinking, cooking and washing, remain almost constant between wet and dry season. Nearly three times as many households use water for building activities during the dry season, but a wider spread of sources

is used for this activity during the dry season. In this study it was found that about a quarter of those who have vegetable gardens abandon this activity altogether during the dry season, the remainder moves from relying principally on rain water to use of charco dams and traditional wells. These two water sources account for 75% of the dry season use and the remaining proposition to dry season gardening use rivers and the lake.

Madulu (2000:6) in this study noted that livestock keeping is an important economic activity in Mwanza region. He noted that cattle are watered mainly at specially constructed charco dams (bwana in the Swahili language) which account for about 51% of dry season use and 58% of the wet season use. In this study he noted that important secondary sources are traditional wells and rivers in both the dry and wet seasons and about 15% of cattle owners use the lake and 3% use improved wells in the dry season. The use of the lake is restricted by the distance of villages from the lake. Madulu (2000:6) noted that only 3% of the 12 sampled villages that actually borders the lake shore, and the other villages are located more than 20 kilometres from the lake shores. It was noted in this study that large amounts of water are brought into the household in the dry season than in the wet season. This was attributed to two reasons; in the wet season, when water can be obtained from pipes and from roof catchments, there is less need to carry water into the house from outside. Also, less water is required within the house for washing, as many convenient places for washing such as pools and seasonal rivers are available to the house. The study also noted that large differences were apparent between location of water sources used in the wet and dry seasons. It was noted that whereas around 80% of households are able to find sources of water for all their activities within the sub- villages in the wet season, this proportion had to drop in the dry season. Between 9% and 13% of households reported had to go right out of the villages to find suitable water sources (in general a distance of about 5 kilometres). In his study Madulu (2000:7) noted that in the wet season, nearly 5% of the

households use water from a source owned by the household, but in the dry season only 1% access their own sources. Less than 1% of the households use other privately owned sources for domestic use and this fraction change little between wet and dry seasons. Madulu (2000:7) further noted in his study that the most common use of privately owned sources is for watering cattle. The activities that showed the largest changes between wet and dry seasons are building and gardening with less than a quarter of households able to use the same source throughout the year, compared to over three quarters for the other activities.

2.15 Water Quality and Quantity

Since the provision of domestic water supply means quality as well as quantity, very low per capita consumption levels do not constitute a safe domestic water supply even if the water is free of contamination (Kia, 1981 cited in Matindike, 1982:14). In a number of countries studied by the United Nations Development Program, including Mauritius, the Sudan, Egypt, Sri Lanka, Iran, Pakistan and Venezuela, it has been noted that availability of domestic water supply has helped in the reduction of diarrhoeal diseases. An average daily minimum per person for drinking and basic hygiene, according to the World Health Organisation is estimated between 20 – 30 litres per day (ibid). Water quality is recognised as a major crisis. Srikanth (2009:317) noted in a survey carried out by Rajiv Gandhi National Drinking Water Mission, a nodal agency responsible for setting up systems of monitoring rural drinking water in India, indicated in its report during 1993 (based on a 1% random sampling) that 217, 211 inhabitants had water quality problems in rural India. He noted that groundwater accounts for more than 80% of the rural domestic water supply in India. Data collected in 1998 showed that 50% of rural households were served by tube wells and hand pumps, 26% by a well and 19% by a tap. He further noted that in most parts of the country, however, the water supplied through

groundwater is beset with problems of quality. In this study it was observed that the over dependency on ground water has led to 66 million people in 22 states of India at risk due to excessive fluoride and another 10 million at risk due to arsenic in six states. There were also problems due to excessive salinity, especially in coastal areas, iron, nitrates and others. Around 195,813 habitants are affected by poor water quality due to chemical parameters. Srikanth (2009:320) noted that iron, hardness and salinity impact on palatable taste to water making it unfit for drinking. Hardness is mainly caused by the presence of carbonate, bicarbonate, chloride, and sulphate salts of calcium and magnesium in water.

2.16 Management and maintenance of water sources

The UNDP (2006:88) noted that inadequate maintenance of infrastructure, insufficient training for repair works and inadequate financial resources for operations have eroded the rural water supply system in many countries. A survey in Ethiopia found that 29 per cent of hand pumps and 33 per cent of mechanised boreholes in rural areas were not functioning because of maintenance problems. In Rwanda an estimated one third of the rural infrastructure requires an urgent rehabilitation (*ibid*). The UNDP (2006:88) further noted that beyond mechanical factors the main source of breakdown in rural areas has been the failure to involve rural communities especially women in selecting, siting and managing improved technologies. The use of village water points and water committees require contributions of labour and cash to cover maintenance and capital cost of hand pumps (UNDP, 2006:88). The UNDP (2006:89) further noted that in a typical cycle a village water committee raises funds to construct a borehole and purchase a hand pump. Rights to draw water require payment of an initial membership fee and a monthly fee to cover the cost of operations and maintenance (*ibid*). Batz (2010:4) noted that governments have transferred the management and maintenance of rural water systems to community based institutions such as water point committees. It has been noted that such

institutions are crucial to the provision of domestic water to rural households. Batz (2010:4) further noted that in rural Kenya, for instance, it is estimated that around 30% of domestic water sources are managed by community based organisations. However, financial constraints, as well as limited managerial and technical expertise, often affect their efficiency. Batz (2010:5) noted that this has been attributable to the fact that poverty level of community group members can range from the destitute to the more non-poor, management and operational capabilities are low, and there is no orientation towards efficiency and effectiveness.

2.17 Treatment of rural water for household use

Srikanth (2009:322) noted that technological options for treating drinking water by communities in rural India should go hand in hand with social and behavioural issues like sanitation and hygiene. To ensure drinking water quality in terms of microbial contamination, one need to consider point of use disinfection as an ideal choice and in the case of chemical solution or contaminants, the interim solution like defluoridation and arsenic removal plants need to be promoted along with long term solutions like rainwater harvesting, artificial recharge and restoration and protection of tanks and lakes (*ibid*). Srikanth (2009:322) noted that promotion of traditional structures like open wells and sanitized dug wells is effective in tackling the problems related to iron and to some extent in the case of arsenic and fluoride. It has been noted that household ceramic filters are effective in prevention of diarrheal diseases in many developing countries (*ibid*). In India, state agencies promote the use of chlorine bleach (bleaching powder) for disinfection of community water resources including wells at an ad hoc basis (Srikanth 2009:322). He further noted that one of the ideal ways to obtain safe water for the community is to promote point of use disinfection along with hygienic water storage practices. This has proved to be a viable option and it cost less than US\$5 per year for a household (*ibid*).

2.18 The economics of domestic water supply

One can also look at domestic water supply from an economic point of view. In planning for a program in the mid 1950's to provide safe water in rural Venezuela, it was found that about two million man- days (worth US\$ 7.8 million) were lost annually because of water borne diseases (Hanlon, 1969 cited in Matindike 1982:5). In the same program, it was found that it had cost the nation US\$ 5.5 million in curing the people who were victims of those diseases. Espejo (1983) studied a project in the low income neighbourhoods of Honduras. The case study indicated that the availability of domestic water was providing vending opportunities for women thereby providing part time employment to poor single women with children. In the same study it was noted that surplus money was used to improve supplies. It was also noted in the same study that domestic water was also used to generate income from beer brewing, teashops and laundrette.

Mbithi and Rasmusoon (1977) as cited in Matindike (1982:5) studied a water project in Machakos in Kenya. The case study indicated that people were washing much less frequently and as the majority of people taking time to fetch water were women and girls, the time taken in preparing food, cleaning the house and looking after children had lessened leading to possible problems of nutrition and child care. These studies show that domestic water supply can both be costly and beneficial for both the community and the nation. The loss of man-hours can retard economic development of a country if many people suffer from water related diseases. It is also important to note that, if women have to walk long distances to collect water, they will tend to have unhygienic practices due to limited water supply and they will tend to have fewer hours for other family activities such as farming.

CHAPTER 3: METHODOLOGY OF THE STUDY

3.0 METHODOLOGY

3.1 Introduction

This chapter describes the methodological procedures and justification of the methods. Leedy (1980) views methodology as an operational framework within which the facts are placed so that their meaning can be seen more clearly. This chapter outlines the research design, population, sampling procedure and the data collection instruments that were used in the study.

3.1.1 Target Population

Dabane Trust, a local NGO has a total of 25 domestic water provision projects in the two wards of Malaba and Sigangantsha. Of the 25 projects, 13 water projects are in Malaba ward and 12 water projects are in Sigangantsha ward. Statistics from Dabane Trust indicate that a total of 458 women are beneficiaries of these projects and of these, 268 women are in Malaba ward and 190 women are in Sigangantsha ward. Key informants consisted of the Rural District Council, Dabane Trust, a local NGO working in the two wards and the District Development Fund also working with these communities. The research has deliberately targeted this population as they are the beneficiaries of the water projects which are being implemented by Dabane Trust, a local NGO that has been operating in the area for the past four years. Secondly, women as principal domestic water collectors and users are the most affected by these water projects, hence the need to understand the extent to which women's lives have been affected by these water projects.

3.1.2 Sampling Method

This was a cross sectional study involving women who lived in Sigangatsha and Malaba wards in Matobo district. The population of the two wards was obtained from Dabane Trust, a local

NGO working with the two communities' in the implementation of domestic water supply projects. The researcher used simple random sampling to select 12 water projects from a total of 25 water projects in the two wards. Six water projects out of a total of 13 water projects were selected from Malaba ward and six water projects were also selected from a total of 12 water projects from Sigangatsha ward. Thirteen per cent (13%) of women who are participants of water projects from each ward were randomly sampled using simple random sampling for the study. However, forty-two women were sampled from Malaba ward and 18 women from Sigangantsha ward making a total of 60 women between the two wards. Purposive sampling was used to select 6 key informants and these were drawn from organisations working with these two communities in the water projects as follows; 2 key informants were drawn from the Rural District Council, 2 key informants from the District Development Fund and 2 key informants were drawn from Dabane Trust.

3.1.3 Research Instruments

- i) A structured interview schedule was used with closed and open ended questions.
- ii) Desk review of secondary data was done
- iii) A semi-structured interview guide was used for key informants.
- iv) A theme guide was used for focus group discussions.

3.1.4 Data collection

One local officer who had previous research experience was recruited as a research assistant. Training on how to conduct interviews related to women and establishing rapport with respondents were done. This was crucial because in studies involving women, assurance of confidentiality to respondents and creation of rapport to gain confidence from interviewees is an important component of the interviewing process. The structured interview guide was prepared in English and then translated into Ndebele with the help of the research assistant. Translation

was also corrected by a local traditional leader. To test if the Ndebele version conveyed the same meaning as the English version, an independent person was asked to translate it back into English. The differences were discussed and corrected.

3.1.4.1 Interviews

The researcher and the research assistant conducted the interviews. Interviews were conducted face to face and confidentially. Respondents were asked in Ndebele about their background characteristics, their household chores as well as knowledge and practices concerning rural domestic water supply. The researcher himself solely conducted interviews with key informants.

3.1.4.2 Finding women at home

It was difficult to find all the sampled women at their homes. Fifteen sampled women had visited their husbands in South Africa. However to ease the problem, the researcher and the research assistant immediately replaced these women during interviews. Simple random sampling was used to replace these fifteen women.

3.1.4.3 Focus Groups

The focus groups were very useful in obtaining a better understanding of the forms of indigenous knowledge that exists in the area and how they use the knowledge as a community to alleviate or minimise the effects of water crises; define concepts and to assess perceptions on the impact of domestic water supply on rural women. The focus groups were also good in getting different perspectives from women with regard to qualitative insight into how they deal with the impact of domestic water supply in their community. This helped to form consistency with the questionnaires.

3.1.4.4 Questionnaires

Questionnaires helped in obtaining more personal information that cannot be obtained in focus group discussions. They also assisted in obtaining demographics such as the number of people in each household and reinforcing response from focus groups. The questionnaire entailed both open-ended and closed-ended questions. This was meant to give women more options and freedom in giving responses.

3.1.4.5 Pre-testing of Instruments

In order to check the correctness of the questions and to find out if the subjects had the same understanding of the questions, pre-testing of the questionnaires was done. This exercise was of importance in adapting the questions to local cultural settings thus minimising the risk of conveying ambiguous questions and eliciting responses from the local population. Twelve women from one ward outside the sampled areas were involved in the pre-testing and afterwards some changes were made in the instruments.

3.1.5 Data Analysis

3.1.5.1 Quantitative data

Quantitative data were analysed using Statistical Package for Social Scientists (SPSS). Descriptive statistics procedures were employed during data analysis.

3.1.5.2 Qualitative data

Analysis of qualitative data from semi-structured interviews and focus groups included ordering of emerging issues in the interviews and focus group discussions into themes and making

summaries. Sorting and ordering of responses from semi-structured interviews were done manually and grouped into thematic areas.

3.2 Ethical Considerations

3.2.1 Informed consent

The researcher recognised the sensitive and evasive nature of the topic and thus observed the ethical obligation to first seek informed consent from respondents.

3.2.2 Confidentiality

Issues to do with women are often regarded as private and confidential among the Ndebele people. The researcher observed the need to ensure protection of privacy by upholding the principle of confidentiality.

3.2.3 Neutrality

The principle of neutrality entailed that the researcher ought to respect the opinion of the respondents without deliberately seeking to influence their ideas. To this end, the researcher ensured neutrality by avoiding non-judgemental attitude during interviews.

3.2.4 Minimal deception

The researcher observed the need to debrief respondents on the purpose of the study. The researcher sought to avoid putting respondents in doubt as to the uses of the findings as well as raising false hopes in the respondents by clearly stating the aim and objectives of the interviews and discussions.

3.2.5 Professional Neglect

The researcher ensured that necessary referrals were made in cases where respondents might require professional assistance.

3.3 Limitations of the Study

- Since this study was based in Matobo district and focusing on a sample of 60 women, the study may not be generalised to all women in Zimbabwe.
- Some respondents who had been chosen withdraw from the interviews as they visited their husbands in South Africa. Replacements were done prior to the interviews. This change of respondents might have influenced the quality of data and subsequently the results of the research.

CHAPTER 4: RESEARCH FINDINGS AND DISCUSSION

4.0 Introduction

This section presents background information of respondents, results of the research findings and discusses the impact of domestic water supply on women in Sigangatsha and Malaba wards of Matobo district.

4.1.1 Age of respondents

The table below summaries the age, frequency distribution and the percentage distribution of the respondents.

Table 2: Percentage distribution of respondents by age

Age of respondents	Frequency	Percent	Valid Percent	Cumulative Percent
20 - 30 yrs	5	8.3	8.3	8.3
31- 40 yrs	3	5.0	5.0	13.3
41 - 50 yrs	25	41.7	41.7	55.0
51 - 60 yrs	21	35.0	35.0	90.0
61 - 70 yrs	6	10.0	10.0	100.0
Total	60	100.0	100.0	

The ages of respondents ranged from 20 years to 70 years. As indicated by table 2 above, the 20- 30 years age group had 5 respondents (8.3%) of the total number of respondents. The 31 – 40 years age group had 3 respondents (5%), the 41 – 50 years age group had 25 respondents (41.7%) and this group had the highest number of respondents. The 51– 60 years age group had 21 respondents (35%) out of 60 respondents and lastly the 61 – 70 years age group had 6 respondents (10%) of the total number of respondents. It was apparent that all the respondents were female as the research was focusing on women as primary respondents. Respondents

indicated that elderly women are now left in charge of households in rural areas as the young people are either living in urban areas or have gone to other countries especially South Africa in search of employment and that some have died of AIDS.

4.1.2 Level of education of respondents

The table below gives a summary of the highest level of education attained by respondents and also gives the frequency of occurrence per highest level of education attained.

Table 3: Distribution of respondents by highest level of education

Highest Level of education	Age Group					Total
	20 - 30 yrs	31- 40 yrs	41 - 50 yrs	51 - 60 yrs	61 - 70 yrs	
never been to school	2	1	3	1	2	9
primary	3	0	11	14	2	30
secondary	0	2	10	6	1	19
tertiary	0	0	1	0	1	2
Total	5	3	25	21	6	60

Table 3, above shows the distribution of respondents by highest level of education attained. The table indicates that the 20 - 30 years age group had 2 respondents who had never been to school, 3 respondents had attained primary education as their highest level of education. Under this age group, no respondents had attained secondary and tertiary level of education making a total of 5 respondents (8.3%) under this age group. The 31 – 40 years age had 1 respondent who had never been to school, none of the respondents had attained primary education as the highest level of education, 2 respondents had attained secondary education as their highest level of education and no respondent attained tertiary education making a total of 3 respondents (5%) under this age group. Under the 41 – 50 years age group, 3 respondents had never been to

school, 11 respondents attained primary education as their highest level of education, 10 respondents attained secondary education as their highest level of education and 1 respondent attained tertiary education as her highest level of education making a total of 25 respondents (41.7%) under this age group. Under the 51 – 60 years age group, 1 respondent had never been to school, 14 respondents attained primary education as their highest level of education, 6 respondents attained secondary education as their highest level of education and none of the respondents attained tertiary education making a total of 21 respondents (35%) under this age group. Under the 61- 70 years age group, 2 respondents had never been to school, 2 respondents had attained primary education only, 1 respondent had attained secondary education as the highest level of education and another 1 respondent had attained tertiary education making a total of 6 respondents(10%) under this age group.

4.1.3 Marital Status of respondents

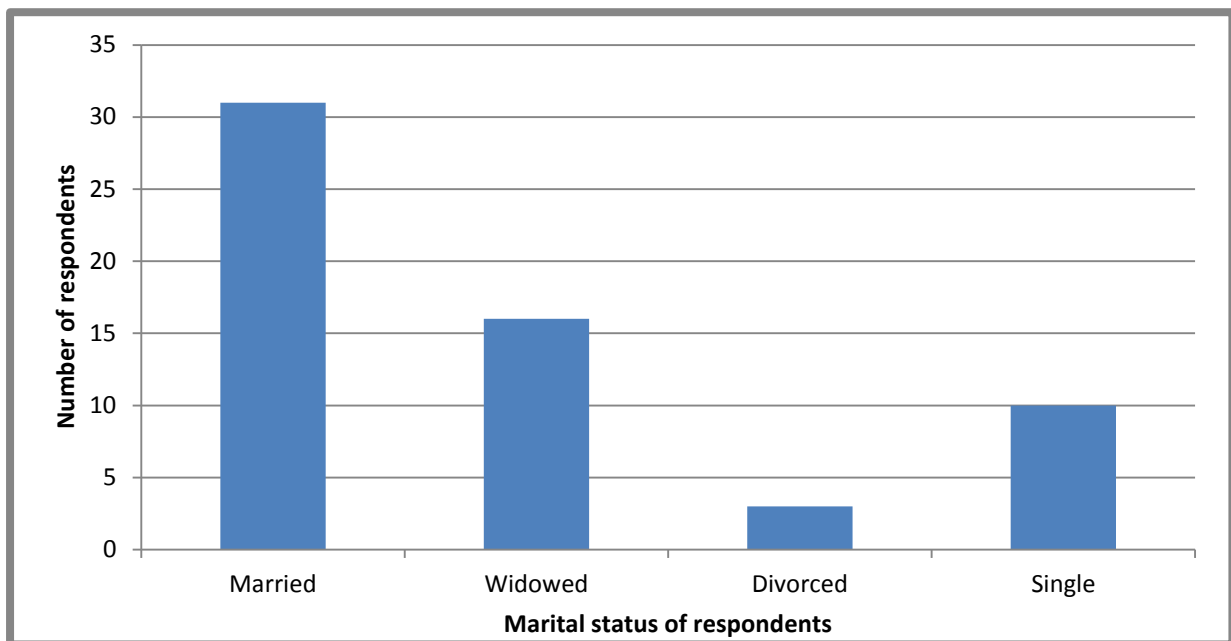


Figure 6: Distribution of respondents by marital status

Figure 6, above shows the marital status of all the 60 respondents interviewed during data gathering. However, 31 respondents (51.6%) were married, 16 respondents (26.7%) were widowed, 10 respondents (16.7%) were single mothers and the remaining 3 respondents (5%) were divorced.

Table 4: Distribution of respondents by marital status

Marital status	Age Group					Total
	20 - 30 yrs	31- 40 yrs	41 - 50 yrs	51 - 60 yrs	61 - 70 yrs	
Married	1	2	16	10	2	31
Widowed	3	0	4	6	3	16
Divorced	0	0	2	1	0	3
Single	1	1	3	4	1	10
Total	5	3	25	21	6	60

As indicated by table 4 above, there was 1 respondent who was married in the 20 – 30 years age group, 3 respondents were widowed, none of the respondents were divorced and 1 respondent was a single mother making a total of 5 respondents (8.3%). Under the 31 – 40 years age group, 2 respondents were married and none were either widowed or divorced and 1 respondent was a single mother making a total of 3 respondents (5%). Under the 41 – 50 years age group, 16 respondents were married, 4 respondents were widowed, 2 respondents were divorced and 3 respondents were single mothers making a total of 25 respondents (41.7%). Under the 51 – 60 years age group, 10 respondents were married, 6 respondents were widowed, 1 respondent was divorced and 4 respondents were single mothers making a total of 21 respondents (35%). Under the 61 – 70 years age group, 2 respondents were married, 3 respondents were widowed, none was divorced and 1 respondent was a single mother under this age group making a total of 6 respondents (10%) out of a total of 60 respondents.

4.1.4 Number of people in household

Table 5 below, gives a summary of the range of the number of people per given household in Sigangatsha and Malaba wards, it also shows the frequency of occurrence and the percentage distribution of respondents by household size.

Table 5: Percentage distribution of respondents by household size

Range of people in household	Frequency	Percent	Valid Percent	Cumulative Percent
Less than 3	3	5.0	5.0	5.0
3 - 5	14	23.3	23.3	28.3
6 - 8	29	48.3	48.3	76.7
9 - 11	9	15.0	15.0	91.7
12-15	5	8.3	8.3	100.0
Total	60	100.0	100.0	

Table 5, above shows the percentage distribution of respondents by household size. The table shows that 3 households had less than 3 people in each one of them which represent 5% of the total number of respondents' interviewed. 14 respondents indicated that their households had between 3 and 5 people in each one of them representing 23.3% of the total number of respondents interviewed. However, 29 respondents indicated that their households had between 6 and 8 people in each of the households representing 48.3%. 9 respondents indicated that their households had between 9 and 11 people in each one of them representing 15% of the total number of respondents interviewed. However, 5 households had between 12 and 15 people in each one of them representing 8.3% of respondents interviewed.

4.1.5 Domestic water sources

The figure below indicates domestic water source type and the number of households accessing each type of water source. Four water source types were indentified and these were dam, river, borehole and well.

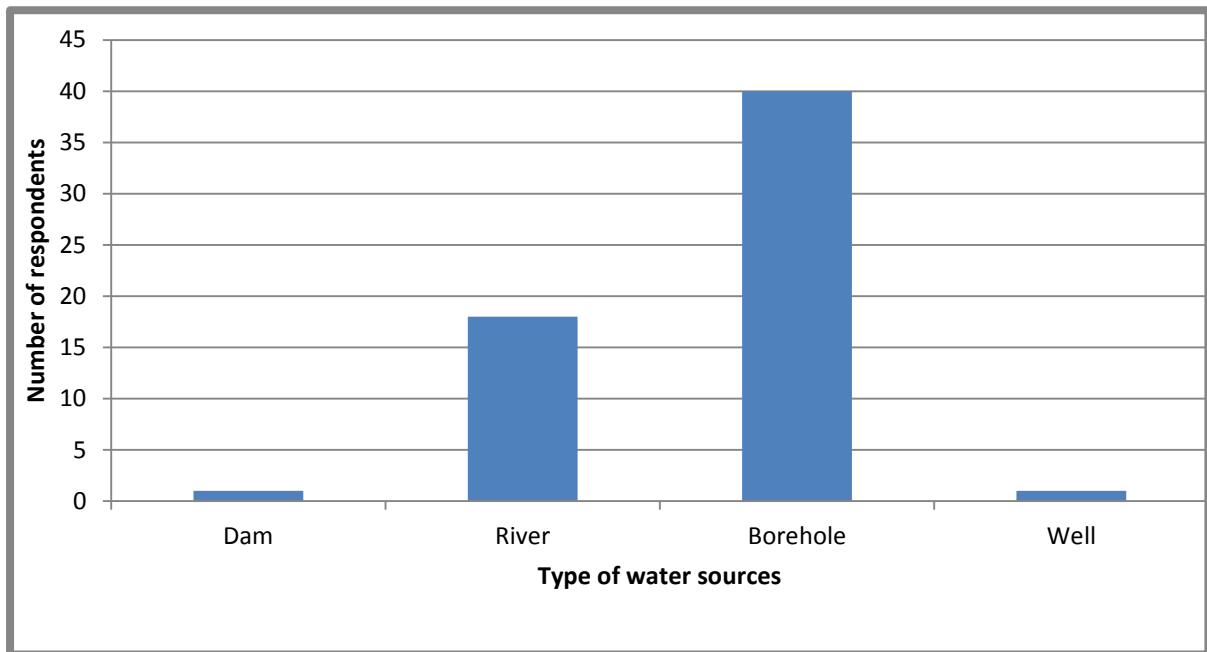


Figure 7: Distribution of water sources by type

Figure 7, above shows the types of water sources that are found in Sigangatsha and Malaba wards. However, 1 respondent (1.7%) indicated that she fetched water from a nearby dam. 18 respondents (30%) indicated that they fetched water from the river, 40 respondents (66.6%) indicated that they used boreholes as their source of domestic water and 1 respondent (1.7%) indicated that she fetched water from a private well at the homestead. When asked about the safety of the water from the river, respondents indicated during focus group discussions that they fetch the water from sand abstraction water sites (these are sites were sand had been excavated and pumps sunk such that water is sand filtered and is drawn through these pipes by the communities) that have been established by Dabane Trust, a local NGO working with the

two communities. When further asked why they prefer to walk to Shangane River instead of using boreholes in the area, respondents indicated that boreholes had dried up in Sigangatsha and Malaba wards resulting in some respondents fetching water from boreholes in neighbouring wards. It was noted during interviews that those who were using boreholes as their source of water were accessing them from Shelayemba ward, which borders Malaba and Sigangatsha wards. These findings confirm UNDP (2006:81)'s study findings in Cebu, Philippines that poor rural households draw water from protected wells during part of the year but they were forced to draw water from rivers or streams during the dry season. It was noted during interviews that most of the respondents get their water from boreholes during the rainy season and use dry river beds during the dry season. This finding does not confirm the contention that protected village wells are the most common source of rural water supply as noted by the UNDP (2006)'s study findings in Cebu, Philippines (UNDP, 2006:87). In Sigangatsha and Malaba wards village wells are not a common source of water because the area is dry hence water stressed. In Sigangatsha and Malaba wards people draw water for domestic use from boreholes, rivers, dams and individual wells in the wet season.

It is important to note that these findings dispute the UNDP (2006)'s study findings in some rural communities of Indonesia where it was noted that groundwater cannot be used for drinking because of salination. It was further noted that in such circumstances groundwater will only be used for cleaning and washing. In Sigangatsha and Malaba wards it was noted that although the community rely on groundwater which is salty for domestic use, it was not only used for washing and cleaning as the case with rural communities of Indonesia. Groundwater was used for various purposes such as washing, cleaning, watering backyard gardens, drinking etc. The ecological region (region 5) within which these two wards fall has meant that communities have

limited choice in so far as domestic water sources are concerned because water is a scarce resource.

4.1.6 Number of trips to water source per day

The figure below shows that number of households in relations to the frequency of water fetching trips. Frequency of fetching water is determined by the number of people in a given household.

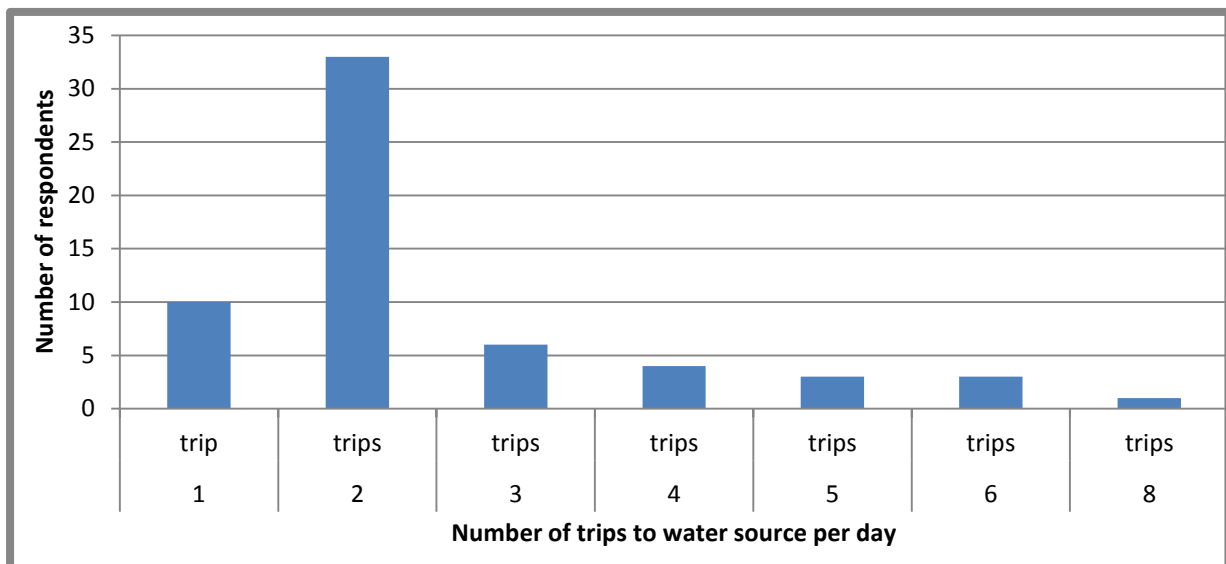


Figure 8: Distribution of the number of trips to water source per day

Figure 8, above indicates that the highest frequency of fetching water is 8 times per day from the 60 respondents interviewed. However, 1 respondent (1.7%) interviewed indicated that she had to fetch water 8 times a day usually in the morning, in the afternoon and later in the day. 3 respondents (5%) indicated that they fetch water 6 times a day and the other 3 respondents (5%) fetch water 5 times a day. However, 4 respondents (6.6%) indicated that they fetch water 4 times a day, 6 respondents (10%) indicated that they fetch water 3 times a day. However, 33 respondents (55%) indicated that they fetch water twice a day. However, 10 respondents

(16.7%) indicated that they fetch water once per day. It was noted that the number of trips undertaken was attributed to the number of people in the household and the size of the containers they used. The bigger the size of the containers used, the less the number of trips undertaken to fetch water and the smaller the size of containers used the bigger the number of trips undertaken. To establish the reasons why some fetched water more times than others, a comparison was made between the number of people in each household and the number of water fetching trips. Households with 6 members and above had to fetch water at an average of 3 times per day. Women indicated that it was their duty to collect water in their respective households. The study confirms the contention that water collection has been viewed as part of a gender division of labour that keeps on reinforcing the inequality within households. During the interviews women believed that it was their custom and traditional practice that they have to fetch water for use by household members. Frequency of more trips was said to be high during the dry season during which a lot of water had to be hauled to households. Women indicated during interviews that during the wet season trips to water sources will be short as sources of water will be nearer to households as women will be using roof catchments, boreholes, wells and springs. This finding confirm UNDP (2006)'s study findings in Malawi that water collection is affected by seasonal variations as women had to haul a lot of water during the dry season as compared to the wet season. It was also noted in the study findings of the Malawi study that water demand was high in the dry season than in the wet season which was a contributing factor to the increased number of water trips by women. It was noted in Sigangatsha and Malaba wards that demand for water increases in the dry season as people will be competing with animals for the same sources of water. Water supply in the two wards is surpassed by demand resulting in the women looking for alternative sources of water in the area and beyond.

4.1.7 Time spent collecting water

The table below shows time taken to reach the water source, the frequency of occurrence and the percentage distribution of time taken to reach the water source.

Table 6: Percentage distribution of time spent collecting water

Time spend collecting water	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 5 - 10 minutes	1	1.7	1.7	1.7
10-20 minutes	32	53.3	53.3	55.0
30-60 minutes	27	45.0	45.0	100.0
Total	60	100.0	100.0	

Table 6, above illustrates time taken by women in Sigangatsha and Malaba wards of Matobo district to reach their water sources. It is important to note that time taken to reach water source increases as the dry spell approaches. However, 1 respondent (1.7%) needed less than 10 minutes to get her water source, 32 respondents (53.3%) indicated that they needed between 10 minutes and 20 minutes to get to their nearest domestic water supply source. However, 27 respondents (45%) indicated that they needed between 30 minutes and 60 minutes to get to their nearest domestic water supply source. It is important to note that time taken to get to the water source is influenced by season. During the dry season women tended to walk for long distances to water sources hence the time they take increases. During the rainy season they walk for short distances as they would be relying on boreholes and roof catchment through rain water harvesting.

These findings confirm UNDP(2006)'s study findings in Malawi that women had to take a lot of time to get to the water source during the dry season as compared to the wet season. It was

noted in the Malawi study that during the dry season water sources are near the household as women can use roof catchment and household wells. It was also noted during this study that in the dry season water from nearby water sources would have dried up, prompting women to walk long distances to access water for domestic use. In Sigangatsha and Malaba wards people compete for water with animals in the dry season prompting women to walk for long distances looking for water thereby increasing the time that they spend looking for water. This is what Long (2001:11) termed the actor oriented perspective. Long (2001:11) argued that women's challenges in accessing water for domestic use can be overcome by their actions. In Sigangatsha and Malaba wards women have to find for alternative sources of water in the dry season as water demand increases. In Sigangatsha and Malaba wards women spend most of their time collecting water in the dry season as they have to walk for long distances to access domestic water sources. Time spent collecting water and the number of trips undertaken in the dry season increases as compared to the same in the wet season. It is important to note that the time spent collecting water in both the dry and wet season is a function of demand and supply for water. A study in India by the Self Employed Women's Association (SEWA) demonstrates that women spend more time collecting water in the semi-arid areas of Gujarat during the dry season as compared to the wet season. Sigangatsha and Malaba wards as areas that also fall in a semi-arid region of Matabeleland South is a water stressed area resulting in women spending most of their time collecting water for household use thereby reducing time for other activities such as child care, rest or reproductive work. This reinforces the UNDP (2006:47)'s study findings in Sub-Saharan Africa that the time spent collecting water reinforces time poverty, disempowers women and lowers their income.

4.1.8 Distance to water source

The table below shows the distance travelled by women to reach the domestic water source, frequency of occurrence and the percentage distribution of distance to water source.

Table 7: Percentage distribution of distance to water source

Distance to water source	Frequency	Percent	Valid Percent	Cumulative Percent
0-1kilometre	15	25.0	25.0	25.0
1-2kilometres	40	66.7	66.7	91.7
3-4kilometres	5	8.3	8.3	100.0
Total	60	100.0	100.0	

Table 7; above indicate distance walked to water source from given households. As shown by the table above 15 respondents (25%) indicated that they walked for less than a kilometre to the water source. However, 40 respondents (66.7%) indicated that they walked between 1 kilometre and 2 kilometres to access water for domestic use, 5 respondents (8.3%) indicated that they walked between 3 kilometres and 4 kilometres to the water source. It was noted during interviews that the relationship between water source and location of households in a given village was a determinant factor for distance. It was noted during interviews that homesteads which were located at the end of the village in relation to the domestic water source would mean that women from those homesteads would walk for more minutes compared to those near the water source.

Given the above information it is possible to calculate the mean (average) distance that women can walk to the source for domestic water in Sigangatsha and Malaba wards. The average

distance if determined would show the extent to which women are affected by distance in accessing domestic water supply in the two wards under study.

- Calculation of the mean distance walked by women in Sigangatsha and Malaba wards to the nearest water source.

$$\text{Mean of grouped data } X = \frac{\sum_{m1}^m (fx)}{\sum_{m-1}^m (f)}$$

f = Class frequency

X_i = Midpoint of the class interval

Table 8: Average distance walked by women to water source per trip in the dry season

Class Interval	f_i	X_i	f_iX_i
< 1000 metres	15	500	7500
1000 < 2000 metres	40	1500	60 000
3000 < 4000 metres	5	3500	17 500
∑ (f)	60		85 000

$$\sum f_i x_i = 85\,000$$

$$X = \frac{\sum f_i x_i}{\sum f_i} = 85000/60$$

$$= 1416.7 \text{ metres}/1000$$

$$= \underline{1,417 \text{ kilometres per trip to the water source}}$$

The above information mean that the average distance travelled by women in Sigangatsha and Malaba wards to the nearest water source is 1,417 kilometres per trip. The UNFPA (2001) noted that it is characteristic of African women to walk for 3, 7 kilometres to the water source. This information confirms that women are burdened by distance to access water for domestic use. The UNDP (2004) noted that people should walk for 1 kilometre or less as the minimum

distance to access domestic water in rural communities. This study finding is a confirmation of the assertions by Cairncross and Valdmanis (2003:771) who have noted during their studies in Africa that a hand pump that is 500 metres from the household is a luxury. However, the average figure of 1.417 kilometres for Sigangatsha and Malaba wards is remarkably higher than in similar studies. This finding contradicts Thompson, et al. (2001:42)'s study in 334 sites in Kenya, Tanzania and Uganda, where the mean distance walked by women was 622 metres as water sources were within the household premise. This view was supported by Telmo (2002:71)'s study findings in Gousansolo village, about 65 kilometres south of Bamako in Mali. Telmo (2002:71) noted that women walk between 3 metres and 260 metres to access domestic water. This was so because all households had protected wells within their homestead premises as it was a community practice to have water sources within individual homesteads so that women do not walk long distances to access water for domestic purposes. It was noted in Gousansolo village that individual wells were dug at the middle of the homestead to reduce walking distance for women. Given the above scenario Telmo (2002:71) noted that all women in Gousansolo village had access to water within 1 kilometre from the source confirming the UNDP (2006)'s view that women have to walk a distance of a kilometre or less to the water source. It is important to note that the situation in Sigangatsha and Malaba wards is different from the situation in Gousansolo village in Mali for example as Sigangatsha and Malaba wards are dry areas falling under ecological region five characterised by prolonged periods of dryness. In Sigangatsha and Malaba wards, domestic water is not found within easy reach by women. The distance travelled by women in Sigangatsha and Malaba wards is not different from the distance travelled by women in other parts in Africa. In Egypt, for example, the UNFPA (2002:1) noted that women walk for more than an hour a day to collect domestic water. The UNFPA (2002:1) further noted that women in Africa walk for an average distance of 6 kilometres to collect water for domestic use. It can be argued that distances that are travelled by

women in Sigangatsha and Malaba wards is a result of poor planning on the part of government and NGO's operating in that area. The government and NGO's operating in the area can also deepen boreholes in the area as a strategy of reducing distances travelled by women in the area thereby increasing the time they spent on other productive activities such as child caring and income generating activities.

4.1.9 Queuing time to access water

The table below shows the time taken by respondents waiting for their turn to fetch water, the frequency of occurrence and the percentage distribution of time taken queuing for water

Table 9: Percentage distribution of time taken queuing for water

Time for queuing	Frequency	Percent	Valid Percent	Cumulative Percent
5 minutes	3	5.0	5.0	5.0
25 minutes	23	38.3	38.3	43.3
10 minutes	8	13.3	13.3	56.7
15 minutes	13	21.7	21.7	78.3
20 minutes	4	6.7	6.7	85.0
25 minutes	5	8.3	8.3	93.3
30 minutes	4	6.7	6.7	100.0
Total	60	100.0	100.0	

Table 9, above indicates that some women waited for longer than other for their turn to fetch water. However 3 respondents (5%) had to wait for 5 minutes to fetch water, 23 respondents (38.3%) indicated that they waited for 25 minutes to fetch water. Of the 60 respondents, 8 respondents (13.3%) indicated that they waited for 10 minutes for their turn to fetch water. 13 respondents (21.7%) indicated that that they waited for 15 minutes, 4 respondents (6.7%) indicated that they waited for 20 minutes. 5 respondents (8.3%) indicated that they waited for 25 minutes for their turn to fetch water for domestic use. However, 4 respondents (6.7%)

indicated that they waited for 30 minutes to fetch water for domestic use. Respondents indicated that the waiting time was long because of the fact that this is a water stressed area. Respondents indicated that traditional water sources usually dry up before the rain season, that is, between the month of September and November. Respondent indicated that for one not to wait for too long she has to wake up early in the morning or has to fetch water when most of the people are away from the villages usually when they are in the fields or working in the gardens.

This view is also supported by The Sphere Project Handbook (2004:65)'s parameters that queuing for water is a result of two factors. The first being that there will be inadequate water sources and secondly, the water yield of the water sources will be inadequate. Both factors are a case in point as Sigangatsha and Malaba wards are dry areas. It was noted during data gathering that there were a number of boreholes in the area which get dry during the dry season hence low water yield in the water sources for use by women. During interviews women indicated that the time that they spend queuing to fetch water could better be spent doing some other tasks such as tending their livestock, gathering firewood and participating in village clubs such as saving and lending clubs. They argued that they are losing opportunities in their lives as a result of water problems in their area. This view is confirmed by the Sphere project Handbook (2004:66) which noted that queuing for water has the potential to reduce time for water collectors to tend to other essential survival tasks either at household or village level. Women in these two communities spent most of their time either queuing for water or walking long distances to collect domestic water from neighbouring wards or from Shangane River which is about 4 kilometres from homesteads thereby compromising their time that could be used for other productive activities. WHO and UNICEF (2010:28) both have noted that queuing time of over 30 minutes are most prevalent in Africa as well as arid countries outside Africa such as Mongolia and Yemen where women spent most of their time queuing for water. Sigangatsha and Malaba wards are no

exception to these findings by WHO and UNICEF (2010:28). The study findings have shown that Sigangatsha and Malaba wards are not different from the situation in Mongolia, Yemen and other parts of East Africa where women spent most of their time queuing for domestic water at the expense of productive work that can generate income for the benefit of their households.

4.1.10 Multiple uses of water

The table below shows multiple uses of water in Sigangatsha and Malaba wards, frequency of occurrence and the percentage distribution of water use in both Sigangatsha and Malaba wards.

Table 10: Percentage distribution of water use in Sigangatsha and Malaba Wards

Other uses of water	Frequency	Percent	Valid Percent	Cumulative Percent
Brick moulding and construction	6	10.0	10.0	10.0
Brew beer for sale	16	26.7	26.7	36.7
Watering fruit trees	3	5.0	5.0	41.7
Watering livestock	29	48.3	48.3	90.0
Watering vegetables	6	10.0	10.0	100.0
Total	60	100.0	100.0	

The table 10, above shows other uses of water other than for domestic purposes in Sigangatsha and Malaba wards in Matobo district. It is important to note that multipurpose use of water in households has directly contributed to improved household income and in turn has affected expenditure patterns at household level. From a sample of 60 respondents interviewed, it was noted that they use domestic water for other purposes other than the traditional uses of cooking, laundry, bathing and hygiene purposes. However, 6 respondents (10%) indicated that they use domestic water sources for moulding bricks and construction. However, 16 respondents (26.7%) indicated that they use water from domestic water sources for brewing beer for sale. It was

indicated during interviews that the beer is sold to supplement household income. However, 3 respondents (5%) indicated that they use water from domestic water sources for watering fruit trees whose fruits are sold on the local market, However, 29 respondents (48.3%) indicated that they use water from domestic water sources for watering their livestock, and 6 respondents (10%) indicated that they use water from domestic water sources for watering vegetables in their backyard gardens. It was noted that the vegetables are for household consumption and for sale to the local village market.

This study finding confirms the results of a study by Espejo (1983) in the neighbourhoods of Honduras, that besides using water for traditional purposes such as bathing, washing, cooking and laundry, women in Sigangatsha and Malaba wards were using water for watering backyard gardens, fruit trees, small livestock, teashops and launderette. Espejo (1983)'s study findings in the neighbourhoods of Honduras noted that water vending was providing part time employment to single poor women with children. It was also noted that surplus income was being used to improve and increase the sources of domestic water supply. In the same study it was noted that domestic water was being used to generate income from beer brewing, teashops and launderette. Although respondents in Sigangatsha and Malaba wards did not indicate the selling of water as a source of income for their households as the case in Honduras, respondents in these two wards indicated that women use domestic water for productive purposes such as watering vegetables, fruit trees, watering livestock, brewing beer and moulding bricks for sale. The research results in Honduras and Sigangatsha and Malaba wards demonstrate that domestic water can be used as a driving principle in livelihoods among women in rural communities. Women in Sigangatsha and Malaba wards were raising money to improve their household income through the selling of fruits, vegetables and bricks to the local market. This scenario support Van Koppen, et al.

(2009)'s observation when he noted that domestic water supply is a contributing factor to livelihoods benefits.

4.1.11 Responsibility for collecting water

Women and the girl child were the main people responsible for, looking for and collecting water for household use although some men would help their wives when they fall sick or when they were not at home. However, 54 respondents (90%) indicated that they ferry water on their own to their households whereas 6 respondents (10%) indicated that men at times assist women when nearby water sources have dried up by accessing water sources far away from their homesteads. This was noted as a coping strategy by women in the dry season when the water sources are far away from their homesteads. However, these respondents indicated that men ferry the water by the use of donkey drawn carts as a means of transport. This is usually done when the nearest boreholes had broken down or had dried up. This means of transport is used because they have to go to alternative sources which are far away from their villages and at times quite difficult for women and girls to access the water. During focus group discussions women indicated that when men did assist them they did not carry the water buckets on top of their heads but use donkey drawn cart or wheel barrows. For widows and those who have separated from their husbands, the girl child bore the burden; it was indicated during focus group discussions. It was indicated during focus group discussions that considering gender inequalities that are prevalent in rural communities, the girl child is the most affected as they usually lose out on school time as they will be looking for water to use in the household. Respondents indicated that the practice of carrying water on top of heads by women has negative health implication in the long run. Respondents indicated that women usually suffer from back aches in the long run as a result of carrying water for long distances and usually in very rough village terrain.

These study findings confirm that women are the principal water collectors in rural areas. This view is confirmed by the Water Aid (2009:2)'s study which noted that the role of water collection in developing countries predominantly falls to women and girls. This view is also supported by WHO and UNICEF (2010:29) who have both noted that for those families who do not have water sources near their homes women are responsible for water collection. This study confirms the results of a situational study by WHO and UNICEF (2010:29) in 45 countries which noted that two-thirds of women bear the responsibility and one-third indicated that men and the girl child share the responsibility. The WHO and UNICEF (2010:29)'s study findings noted that although men and girls collect water for household use they were not the main water collectors. These findings do not collaborate with study findings by Madulu (2000:7) in his research study in Mwanza district, rural Tanzania where he noted that the mean amount of water carried on a daily basis by individuals in the villages showed that the majority of this work is done by females aged 15-49. In the Mwanza district it was noted that women carry twice the amount as men. In Sigangatsha and Malaba wards, it was noted that men only assist women when they fall sick and unable to collect water for household use unlike in Mwanza district where men collect water to brew beer. Whichever the case maybe, Madulu (2000:7)'s study findings in Mwanza district of Tanzania and Sigangatsha and Malaba study demonstrate that women are the principal water collectors in rural communities.

4.1.12 Number of households per water source

The use of water facilities in Sigangatsha and Malaba wards is shared among households. On average 25 households share the same domestic water facilities in Sigangatsha and Malaba wards of Matobo district. Of the 60 respondents, 58 respondents (96.7%) indicated that they share the use of the water sources with neighbouring households. However, 2 respondents

(3.3%) indicated that they do not share the water source with others as they use private wells at their homesteads. The main water sources shared in the study area are boreholes. It was noted during focus group discussions that people share water sources (especially unprotected water sources) with animals, such as cattle, donkeys, goats etc. It was noted during focus group discussions that the number of households sharing the same water source increase as the dry spell approaches due to an increase in water demand caused by high temperatures experienced in the district as the supply deteriorates due to the lowering of the water table and competition with animals. Respondents indicated during focus group discussions that the number of households that shared a single water source increased as they shared with others from the neighbouring wards. Indications from respondents were that up to 30 households share the same water source in the dry season. It was also noted during focus group discussions that the number of households sharing water sources in the wet season decreases to as low as 10 households per water source attributable to the increase of water sources in the area.

These study findings confirm the Sphere project (2004:65) water source sharing parameters. The Sphere project handbook (2004:65) noted that up to 100 households can share water sources but indicated that this also depends on the yield of the water source. It is therefore important to note that this study was not testing the water yield of water sources in the two wards. The Sphere Project (2004:65) noted that a water source can support up to 250 people but noted that the source should have a water yield of about 7.5 litres per minute. A source that supports up to 500 people should have a water yield of 16.6 litres per minute and 400 people should be supported by a water source with a yield of 12.5 litres per minute. According to the CSO (200:22), Sigangatsha and Malaba wards have an average household size of 5.8 people. This being the case it means that water sources should support between 43 and 86 households when the water yield is between 7,5 litres and 16.6 litres per minute as per The Sphere

Handbook (2004:65) parameters. It is important to note that water sources in Sigangatsha and Malaba wards have the capacity of sustaining the number of households sharing the water sources thereby meeting The Sphere Handbook (2004:65) parameters but it is important to note that this is possible in the wet and not in the dry season as people will be competing for water with animals.

4.1.13 Seasonal variability of access and use

It is important to note that domestic water supply in Sigangatsha and Malaba wards is affected by seasonal variations especially during the dry season. Traditional sources in Sigangatsha and Malaba such as boreholes and communal wells dry up during the dry season. Women indicated that the long dry spells that have been caused by climate change leave them with water shortages. Most women said that they use boreholes as sources of domestic water supply as they are more reliable but noted that during the dry season, boreholes are congested and usually there is competition for water with animals. It is important to note that seasonal reliability affects the use of water in the household. It has been noted that the most affected people in the community are women who have to walk for long distances to fetch water for household use. However, 45 respondents (75%), indicated that women are the most affected people by seasonal variability of domestic water supply. Girls were identified by 15 respondents (25%) as the second most affected group by seasonal variability of domestic water, while none of the respondents said that men are affected, the reason being that it is the responsibility of women to ensure that there is water for household use. This put a lot of burden and risk on women because as they always had to look for alternatives to meet household water needs. The ability of women to search for alternative means to access water is what Long (2001:11) has termed the Actor Oriented perspective. Long (2001:16) argued that women's challenges in accessing water for domestic use can be overcome by their agency. Long (2001:17) further noted that actors are agents who

to an extent manipulate and deal with circumstances they are confronted with in an attempt to create room for manoeuvre. In this case, women as social agents exercise their agency as they learn how to intervene in the social environment around them. To this end, women have to walk for long distances to get water for household use. Respondents viewed this as a coping strategy by women as they struggle to make water available to their households.

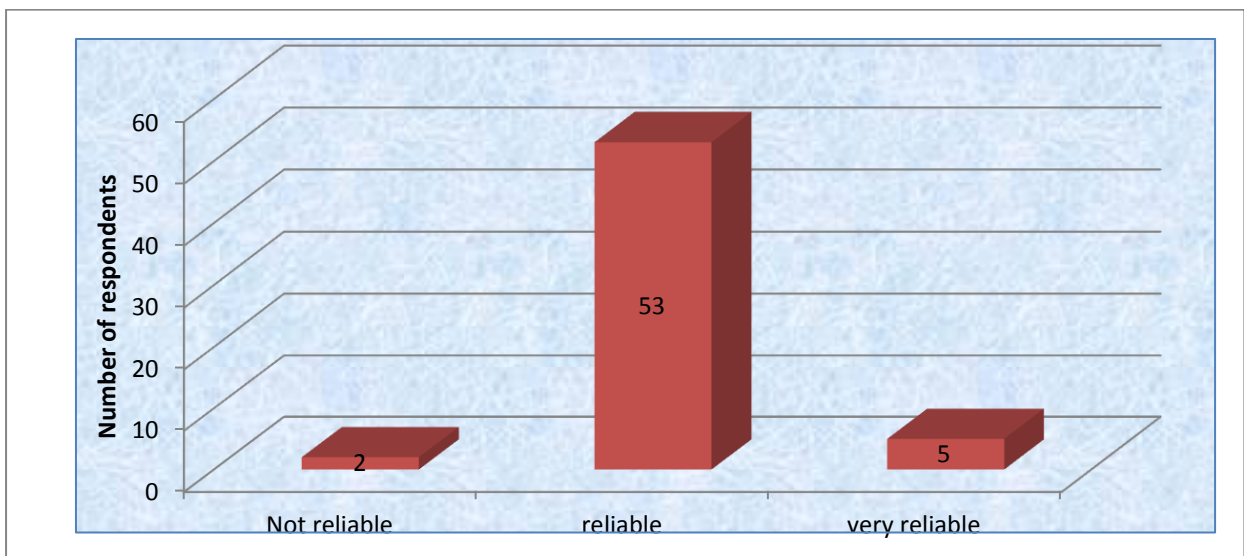


Figure 9: Reliability of water in the wet season

Respondents were asked the sources of their domestic water sources supply in both the dry and wet seasons. However, 53 respondents (88.4%) indicated that they use roof catchment areas, private wells and nearby boreholes as sources of water during the wet season whereas 7 respondents (11.6%) indicated that they access domestic water from the nearby Shangane River. When asked about the distance to the water source in the wet season, 5 respondents (8.3%) indicated that they walk for less than a kilometer to the water source in the wet season whereas 55 respondents (91.7%) indicated that they walk an average distance of 1.417 kilometres to access domestic water. Respondents indicated during focus group discussions that those who walk for long distances during the wet season are those who do not have houses with corrugated

sheets as these are used as rain catchment areas during the rainy season. It was indicated during focus group discussions that these people use river water, streams, springs and boreholes as their sources of domestic water supply.

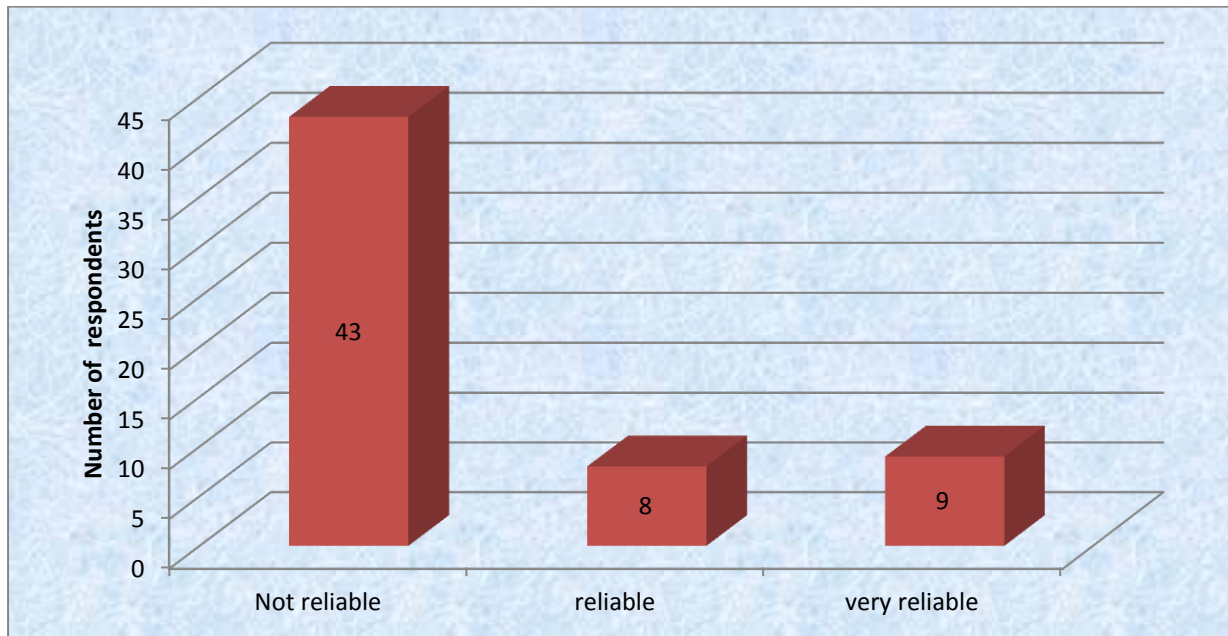


Figure 10: Reliability of water sources in the dry season

Figure 10, above shows that 43 respondents (71.67%) indicated that domestic water supply is not reliable during the dry season. However, 8 respondents (13.33%) and 9 respondents (15%) indicated that domestic water supply is reliable and very reliable respectively. It was noted during interviews that these responses were influenced by the location of homesteads in the village in relation to water sources. It is important to note that during the dry season women know how to and where to get water for domestic purposes. Women’s actions during the dry season in Sigangatsha and Malaba are in line with the structuration theory by Giddens (1984). Giddens (1984) argued that structure affects human behaviours, because of the knowledge that agents have about their own society. Ritzer (1996) also argued that there is a stock of “mutual knowledge of how to go on” or how to get things down. During the dry season women know how to get water as they use sand abstraction water (water that is obtained after digging holes in

dry river beds sometimes called *Mufuku* in the shona language. The water is sand filtered and is regarded as clean by women.) from Shangane River for domestic purposes and others get water from neighbouring wards. Respondents indicated during focus group discussions that there are usually conflicts with people from neighbouring wards during the dry season. Respondents indicated that they abandon some of their water intensive activities during the dry season such as watering vegetable gardens, moulding bricks and brewing beer as it becomes difficult to access water near their households. It was noted during focus group discussions that competition for water increases during the dry season as water sources become fewer in Sigangatsha and Malaba wards of Matobo district. This scenario forces women to walk for long distances in search of water for domestic use.

This study finding contradicts with Madulu (2000:7)'s study findings in Mwanza district, Tanzania that the fraction of households using improved water sources was not affected by seasonal variability but remain constant between wet and dry season. In certain respects this study confirms the study findings by Madulu (2000:7) when he noted that livestock keepers in Mwanza district had to move from the use of traditional water sources to the use of charco dams. On the other hand these findings confirm Madulu (2000:7)'s study findings when he noted that women abandon vegetable production in the dry season as water becomes scarce and difficult to reach for the purposes of vegetable production. However, these findings confirm Madulu (2000:7)'s study findings in Kenya, the Sahel region and the dry areas of Gujarat in India that domestic water sources dry up for long periods during the dry season forcing women to walk long distances in search of water for domestic use. It was noted in Sigangatsha and Malaba wards that women grow vegetables in their backyard garden in the wet season than in the dry season. In the dry season, because of competing priorities that require the use of water from domestic water sources women abandon some of the activities such as vegetable

production, watering livestock and moulding bricks. It was noted that water needs for women in Sigangatsha and Malaba wards does not remain the same between the wet and dry season. In the wet season water availability is within the villages unlike in the dry season where women have to walk for long distances to collect water from far way sources such as from a dam and Shangane rivers.

4.1.14 Water Quality and Quantity

One of the challenges that women face in accessing domestic water supply is the issue of water quality for household use. The issue of water quality looks at palatability of the water accessed for domestic purposes. The water quality from the traditional water supply sources is very poor and exposes household members to water related diseases. It was noted that 51 respondents (85%) indicated that the quality of water affect water use at household level. However, 9 respondents (15%) were of the idea that water quality does not affect water use at household level. Respondents noted that poor quality water causes water related diseases such as dysentery and typhoid which put a lot of burden on women who are usually caregivers of the sick in the community. Respondents noted that poor water stains clothes and alters the taste of food when used for cooking.

These findings confirm the results of a situational study carried out by the Rajiv Gandhi National Drinking Water Mission which cited water quality as of importance and noted that in rural India groundwater is contaminated with fluorides and arsenic and there are also problems due to salinity, iron, nitrates and other chemicals which makes it unpalatable to drink. This view is supported by a study among 217,211 inhabitants in rural India by the Rajiv Gandhi National Drinking Water Mission which noted that iron, hardness and salinity impact on palatable taste

that makes water unsafe to drink. In Sigangatsha and Malaba wards women draw water for domestic use from boreholes in the wet season but the water from these boreholes is beset with problems of quality. There are problems of excessive salinity, iron, nitrates and fluorides. It is important to note that these chemical parameters also affect water use in Sigangatsha and Malaba wards of Matabeleland South region. These chemical parameters impact on palatable taste to water in the two wards making it difficult and unfit for drinking and stains clothes.

4.1.15 Management and Maintenance of water sources

4.1.15.1 Maintenance cost, management teams and challenges

Communities are actively involved in the maintenance of the communal water supply sources at household premises such as wells are managed and maintained individually. It was noted that 55 respondents (91.6%) indicated that it was the responsibility of the community to maintain the domestic water sources. The community elected a water point committee which has the responsibility to maintain the source on behalf of the community. However, 5 respondents (8.4%) said the local DDF office helps with major repairs while the community takes charge of the minor repairs on the borehole pumps. This maintenance of the private sources owned by individual households is solely left to the hands of the owners. It was noted that 2 households (3.3%) had private domestic water facilities whereas 58 households (96.7%) share domestic water sources among themselves. It was noted during focus group discussions that it was the responsibility of women to manage water sources in their communities as they were the main water collectors. According to focus group discussions the majority members of water point committees were women making up three quarters of the water point committee members. The community contributes money and labour. The money is used to buy spare parts and pay hand pump mechanics. Labour is provided by community members during clearing, cleaning and

fencing of the water sources. NGO's/CBO's assisted in borehole repairs and by-laws are made by the water point committees that are followed by all community members. These findings confirm UNDP(2006:88)'s study findings in Rwanda that inadequate maintenance of water infrastructure, insufficient training for repair work and inadequate financial resources affect the provision of water supply in rural areas.

4.1.15.2 Maintenance costs

Maintenance costs in Sigangatsha and Malaba wards are addressed communally as indicated by 49 respondents (81.6%). However, 11 respondents (18.4%) indicated that individuals meet the costs but basically for the facilities owned by the private individual households. Of the entire 60 respondents, 8 respondents (13.3%) indicated that it is by use of by-laws that every household has to contribute. However, 45 respondents (75%) indicated that they lobby for assistance from NGO's and central government through their local district representatives and 7 respondents (11.7%) said that charges or fines are imposed on defaulters to raise money for water source maintenance. It is important to note that all users are expected to contribute towards maintenance of water sources. However, 21 respondents (35%) said that some people are not willing to contribute towards the maintenance of water sources, while 39 respondents (65%) noted that people are willing to pay maintenance fees for water sources. According to 39 respondents (65%) contributions were in the form of money, 15 respondents (25%) said labour and 6 respondents (10%) said they provided food during repair works. On average each household pays about 20 South African rand as water source maintenance fees as this is the preferred currency in the area.

This finding confirm UNDP (2006:89)'s study findings in Rwanda that the use of water point committees require contributions of labour and cash to cover maintenance and capital costs to buy hand pumps for boreholes. It is important to note that government through its decentralisation program of water management in rural areas, communities in Sigangatsha and Malaba wards are now responsible for the management and maintenance of its water sources and in line with the policy on gender where women are also seen as partners in development, they now constitute the majority on water point committees. Water point committees were seen as crucial institutions of water provision in rural communities. It is important to note that maintenance of water sources in Sigangatsha and Malaba wards is a major problem as the communities are not able to raise enough money to maintain the few boreholes in the area. The cost of maintaining the boreholes and the willingness of community members to raise the required amount of money are at variance with each other thereby presenting a challenge in so far as water sources management is concerned. This has been attributable to the fact that poverty levels in these two communities range from the destitute to the more non-poor and a lot of households are not able to raise the required 20 South African Rand as water source management fee.

4.1.15.3 Functions of the water point committee

According to 18 respondents (30%), the functions of the water point committee include; cleaning and controlling queues at water sources when need arise, 3 respondents (5%) said to mobilize funds from NGO's/CBO's and government. However, 19 respondents (31.7%) said to collect maintenance fees and to account for user fees, 11 respondents (18.3%) said to maintain proper functionality of the water sources such as making repairs in case of breakdowns and 9

respondents (15%) said to sensitize the community on proper hygiene and sanitation throughout the domestic water chain.

These findings confirm UNDP (2006:89)'s study findings in Rwanda that in a typical village cycle, a village water point committee raises funds to construct a borehole and purchase a hand pump. The UNDP (2006:89) further noted that water point committees are crucial institutions for the management of water sources in rural areas. In Sigangatsha and Malaba wards the main function of the water point committee is make sure that water sources are clean and all hygiene requirements are being met by the water source users. Communities are put into groups and these groups are responsible for cleaning and also have to ensure that the water source is well protected from animal encroachment. The water point committee is also responsible for the collection, use and accountability of water source maintenance fees. Despite the fact that maintenance fee was collected from community members, a number of boreholes in the area were not working. This may be attributable to poor management and operational capabilities and lack of orientation towards efficiency and effectiveness.

4.1.15.4 Challenges faced with the management and maintenance of water sources

There are many challenges faced by women on the management of domestic water facilities in Sigangtsha and Malaba wards. However, 52 respondents (86.7%) said they do face challenges and the remaining 8 respondents (13.3%) said they do not face challenges. The main challenges as indicated by respondents include; lack of spare parts because there are no local outlets in the villages and a limited number of hand pump mechanics as the majority had since gone to neighbouring South Africa and Botswana in search of employment. It was noted in Sigangatsha and Malaba wards that water point committees are sometimes inactive, and water sources are not well protected and hence animals play around the water sources, some community members

are not willing to contribute maintenance fees, embezzlement of funds and lack of accountability, poor water quality and congestion of water sources especially during the dry season and also women are undermined and abused in their responsibilities because men face women collecting user fees. This finding confirms the result of a situational study by Batz (2010:4) in Kenya that water point committees are faced with financial constraints, as well as limited managerial and technical expertise. He further noted that these two factors affect their efficiency. Batz (2010:4) also noted in his study findings that in a village there is no orientation towards effectiveness and efficiency of water point committees. In Sigangatsha and Malaba wards communities are not able to repair boreholes as they are not able to raise the required amount of money. This may be attributable to the levels of poverty in the community and or the general unwillingness by the community to pay borehole maintenance fees. Issues of financial mismanagement may not be ruled out as some respondents were not happy in the way the money was being management.

4.1.15.5 Women involvement in water management

Women participate in the management of domestic water sources in Sigangatsha and Malaba wards. However, 58 respondents (96.7%) said women are involved in the management of domestic water sources and 2 respondents (3.3%) said women are not involved in the management of domestic water sources. Respondents noted that the roles played by women in the management team include; clearing and cleaning the water sources. The members of the committee with positions like secretary, treasurer, vice-chairperson and committee member are held by women in Sigangatsha and Malaba wards. It was also noted during focus group discussions that women promote hygiene and sanitation throughout the domestic water chain and mobilize funds for operations and maintenance of water sources from communities. This finding is not shared by the UNDP (2006:89)'s study findings in Rwanda who cited the main

source of breakdown as the failure to involve rural committees especially women in managing water resources. It was noted in Sigangatsha and Malaba wards that the majority of the water point committee members are women with a few men occupying some of the positions in water point committees. This scenario could be as a result of having few men in the area as some have died and others have gone to neighbouring countries especially South Africa and Botswana in search of employment. Hence women's involvement in water management in Sigangatsha and Malaba wards could be by coincidence rather than by design.

4.1.15.6 Changes realized with women's involvement in water management

It was noted during focus group discussion that 19 respondents (31.7%) said that the changes brought about by women's involvement in the management of water source are proper hygiene and sanitation which has been realized throughout the domestic water chain. However, 15 respondents (25%) said women make good decisions which have resulted in the cleanness of the sources of domestic water supply, 11 respondents (18.3%) said there is quality improvement in the provision of services at water sources, 6 respondents (10%) said money is kept well for maintenance costs in case of breakdown of water facilities and 5 respondents (8.3%) said there is gender balance and equality, that women have good ideas and 4 respondents (6.7%) said there was a feeling of ownership of the water sources because women take good care of water sources as the water sources are not abandoned. Some respondents said women have been empowered through government policies to take part in community activities only that they do not have productive resources at their disposal to clearly challenge men. In Sigangatsha and Malaba wards, women are looked down upon as men do not usually want to take orders from women and as a result instructions given by women as members of water point management committees are not executed by men resulting in delayed repair of boreholes in the area.

4.1.16 Treatment of rural water for household use

During focus group discussions, treatment of water for use in the household was identified as a challenge for women in Sigangtsha and Malaba wards. Respondents were asked if they had ever treated water for domestic use either at home or at the point of use. Only 8 respondents (13.3 %) had treated water at the point of use and 52 respondents (86.7%) had not treated water before use. However, when asked if it was necessary to treat water for household use all the 60 respondents (100%) responded in the affirmative. The respondents were therefore asked to mention the barriers they were facing at household, community and water point level in the treatment of water. At household level, 43 respondents (71.7%) cited lack of financial resources to purchase water treatment tablets as a major barrier. However, 10 respondents (16.6%) mentioned lack of knowledge of the need to use aqua tablets, 3 respondents (5%) mentioned traditional barriers. Only 4 respondents (6.7%) stated that they do not face any barriers to water treatment. At community level respondents cited lack of outlets in the community that sell aqua tablets. At water point level, 35 respondents (58.3%) cited lack of attention by water point committees as a major barrier to treatment of water at the source. However, 15 respondents (25%) reported that it was not a good idea to treat water at the source as it was bound to be contaminated again as people would be using untreated water containers to fetch water. 3 respondents (5%) cited lack of information and 3 respondents (5%) mentioned unavailability of water treatment tablets. Only 4 respondents (6.7%) indicated that they were not facing any barriers at all.

These findings confirm Srikanth (2009:322)'s study findings in India that the treatment of water go hand in hand with behavioural issues like sanitation and hygiene. In his study Srikanth (2009:322) noted that the point of use disinfection was the best way of treating water in terms of

microbial contamination. He further noted that water treatment at source was being promoted by the government of India which supports the use of chlorine bleach at community wells. This view by the government of India is not shared by women in Sigangatsha and Malaba wards who cited treatment of water source as not the best way but treatment at point of use. In Sigangatsha and Malaba wards treatment of water was done at the point of use through the use of aqua tablets although their availability was indicated as a problem by respondents. Point of use disinfection was noted to be cheap in India as it cost a given households less that US\$5 per year. It is possible for the Sigangatsha and Malaba women to explore the possibility of using ash in place of aqua tablets. Ash is locally available and cheap to get. There is the possibility of promoting traditional structures like open wells and sanitized dug wells as they are an effective measure in tackling the problems related to iron and to some extent arsenic and fluorides contamination (Srikanth, 2009:322).

4.1.17 The economics of domestic water supply

It is important to note that domestic water supply can have some economic impact for rural women at both household and community level. Domestic water supply has been used to increase household income and this has influenced expenditure patterns for women in Sigangatsha and Malaba wards.

Table 11: Percentage distribution of income from domestic water use activities

Amounts	Frequency	Percent	Valid Percent	Cumulative Percent
< R100	1	1.7	1.7	1.7
R100-R200	1	1.7	1.7	3.3
R300-R400	8	13.3	13.3	16.7
>R400	20	33.3	33.3	50.0
NIL	30	50.0	50.0	100.0
Total	60	100.0	100.0	

It is important to note that domestic water supply in Sigangatsha and Malaba wards has influenced household income and expenditure patterns for the benefit of women thereby reducing the levels of poverty at household level. It is also important to note that these two communities are heavily influenced by South Africa hence they use the South Africa currency in preference of the United States dollar. It was noted during interviews that women with livelihoods projects supported by domestic water sources had recorded improved family income, improvement uptake of nutritious food and improved schooling for their children as they could afford to pay school fees for them. As indicated by table 16 above, 1 respondent (1.7%) indicated that she usually gets less than R100 per month after selling vegetables from her garden. Another 1 respondent (1.7%) indicated that they usually get a monthly income of between R100 and R200 from the sale of vegetables from her backyard garden plot. It was noted that 8 respondents (13.3%) had diversified livelihoods options such as selling vegetables and receipt of remittances from children in South Africa. However, 20 respondents (33.3%) indicated that they get more than R400 on average from their livelihoods activities. Of these 20 respondents, 5 respondents reported diversified livelihoods options to the extent that they could get as much as R5000 usually after the sale of livestock, brick sales, beer brewing and receipt of remittances from children in South Africa. However, 30 respondents (50%) reported not selling anything to augment their household income despite the fact that they had livelihoods options through the use of domestic water supply. The above information demonstrate that the use of domestic water supply women in this case have been empowered through the use of domestic water supply hence transforming the unequal social and economic relations in their households and societies Moser(1989) termed women centred development as it seeks to address women's strategic gender needs in equilibrium with practical gender needs. In this case Moser (1989) views women as part of the development agenda in their communities. Women in the two wards raise money for household use through the use of domestic water sources.

Table 12: Percentage distribution of household expenditure patterns

Use of money from livelihoods options	Frequency	Percent	Valid Percent	Cumulative Percent
Pay fees and purchase uniform for children	16	26.7	26.7	26.7
buy household supplies	4	6.7	6.7	33.3
purchase food for household	8	13.3	13.3	46.7
pay rates to local authority	2	3.3	3.3	50.0
Not applicable	30	50.0	50.0	100.0
Total	60	100.0	100.0	

Table 12 above, shows expenditure patterns of women realizing income from livelihoods activities as a result of using domestic water in Sigangatsha and Malaba wards of Matobo district. The money was used for paying fees and purchasing uniforms for children, buy household supplies, purchase food for the household and lastly pay rates to the local district council. As indicated by table 12 above, 16 respondents (26.7%) indicated that they used the money they raised from livelihoods activities to pay fees and purchase informs for their children. 4 respondents (6.7%) indicated that they used the money to buy household supplies. However, 8 respondents (13.3%) indicated that they used the money to purchase food for their households and 2 respondents (3.3%) indicated that they used the money to pay rates to the local authority. It is important to note that the 30 respondents (50%) who did not raise money by their livelihoods activities did not have any form of expenditure under this category. The highest expenditures are on education for children which constitutes 26.7%. This was influenced by the value that these women attach on education. The second highest expenditure pattern was on the purchase of food for the family. This was influenced by the current drought situation in Sigangatsha and Malaba wards.

These findings confirm Espejo (1983) 's study findings in the low income neighbourhood of Honduras that domestic water was giving women vending opportunities thereby providing part time employment to poor single women. The same study noted that domestic water was used to generate income through beer brewing, teashops and laundrette and the money raised was used to supplement household income. In Sigangatsha and Malaba wards women have been using domestic water sources to water backyard vegetable gardens, fruit trees, moulding bricks and brewing beer. The money raise was used to meet household expenditure such as the payment of school fees for those with school going children, purchase uniforms, pay local council rates etc. It has been noted that women in Sigangatsha and Malaba wards have benefited by the use of domestic water sources as they have been able to raise money for their households. They have been able to meet household financial requirements through the use of domestic water sources. This demonstrates that the Latin American study by Espejo (1983) collaborate with the research findings from Sigangatsha and Malaba wards of Matobo district in Matabeleland South province.

4.2 Policy Framework for domestic water supply

This study looked at policy framework within which water supply was being implemented in Matobo district. The following policies and acts of parliament were reviewed in terms of their relevance to domestic water supply.

4.2.1 The National Domestic Water Supply and Sanitation Policy (of August 2008)

The vision of the domestic water supply and sanitation policy is to guarantee sustainable access (rights) to safe, affordable and adequate drinking water facilities for all Zimbabweans. Social

objective 3, states that communities especially women and the disadvantaged should take an active role in the planning, designing, implementation and management of domestic water to ensure both relevance and sustainability of services. Guiding principle 3 postulates that the work of community based and non-governmental organisations (CBO's and NGO's) is pertinent in providing innovation, flexibility and material resources towards meeting the MDG targets.

4.2.2 Zimbabwe's Old Water Act (act No 7 of 1976)

Under the Zimbabwe old water act, (Act No 7 of 1976), water rights were issued in perpetuity. The right to water was attached to land ownership. This practically excluded the rural people who resided in what were called the Tribal Trust Lands (now called communal areas) were they held no title to the land they cultivated. This effectively excluded the rural areas from development especially the provision of safe drinking water. This disadvantaged women as they are the main water collectors in rural areas. Women had to travel long distances to collect water as there was no water infrastructure within their easy reach. Adequate water infrastructure was found in commercial areas where whites had title to land leaving the majority in rural areas using unsafe water sources.

4.2.3 The Water Act (act No 16 of 1993)

Part VI section 33, states that any person may, while he is at any place where there is lawful public access to a public stream, abstract and use public water for the immediate purpose of – cooking, drinking or washing or watering stock provided the water is not used for primary purposes. Section 68, states that no person shall, with the intention of abstracting underground water, sink or deepen a borehole or well to a depth of, or alter or deepen a borehole or well to a

depth of, more than fifteen metres below ground level in an underground water control area without the secretary's approval. This act was meant to open up the use of water for domestic purposes. It effectively meant that there is no need to seek authority from government when one would like to use water from a river, dam or stream for domestic purposes.

4.2.4 The New water Act (act No 31 of 1998)

This act was promulgated to correct injustices of the colonial government in terms of equitable access to water. The new act identifies some of the root causes that could have led to effects of water problems in comparison to the old act. The act seeks to repeal the Water Act of 1976. Under this act communities have been given the opportunity to participate in the management of water resources in their areas through Sub-catchment councils. In this case women have become active participants in these councils. The participation of women has led to the development of water infrastructure for the benefit of women.

4.2.5 The Zimbabwe National Water Authority Act (act No 25 of 1998)

This act was promulgated to facilitate the establishment of a parastatal agency to deal with the provision of water in rural areas. All stakeholders were involved in water management including women. Under this act ZINWA has the mandate to prepare broken down boreholes in rural areas. It is responsible for enforcing laws and regulations at a local level. It is important to note that though this should be the case with ZINWA, the parastatal is not well funded to carry out this mandate hence a lot of boreholes in rural areas remain non functional. Considering this factor into account it has resulted in women walking long distances to collect water or using unsafe water sources with the potential household members acquiring water borne diseases.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

Domestic water supply has been shown to have implications on women in rural households of Sigangatsha and Malaba wards in Matobo district of Matabeleland South province. This study like most others dealing with women has shown that there are gender inequalities in domestic water provision. Improvement in access to water can only be possible if women are empowered to participate in decision-making processes at community level. This is particularly in aspects such as household water supply, provision, water use, management and maintenance. Special attention should be given to the active involvement of women by giving priority to their needs and ideas in the planning, implementation and management of domestic water projects in these two communities.

Although it was significant in the results that women are the principal water collectors and managers of domestic water at household level, it was also evident in the study that in most instances though they could be involved in the provision of water, they lacked financial resources, technical capacity and managerial expertise required to ensure that water sources in their area are fully functional. As a result they have been negatively affected throughout the domestic water chain. There is need to investigate the water yield at each and every water source to determine the number of households that each water source can support. Major emphasis should be on water quality and quantity as well and the possibility of using traditional water treatment methods such as the use of ash in place of aqua tablets in rural communities.

The development and implementation of the domestic water supply projects should be based on the needs of women and participation of all groups including women who serve as principal water collectors and managers at household level. The community should elect an active water user committee whose role should be to mobilize and coordinate the communities on the planning management and maintenance of water sources. Investment in self supply should be given priority as it is bound to bring water sources near households thereby helping in reducing the distance that women in the two communities travel to access domestic water. It is anticipated that this will give women the opportunity to participate in other productive activities. However, most of the women in the two wards are poor and therefore there is need for them to be empowered economically through the use of domestic water supply sources.

It is important for government and donor agencies to focus aid on promoting self supply water projects at household level which are made convenient and effective. This should be a much more inclusive approach that benefits women in these two communities. It should also be in a manner that does not limit women's social networks among themselves. Women as principal beneficiaries should be willing to own, operate, manage and actively participate in government and or NGO/CBO initiated projects on domestic water supply. Such projects should include financial resource mobilization, water systems management and operation that should be aimed at empowering women in water service provision and management in the two communities.

5.2 Recommendations

5.2.1 There is need to demystify gender issues and to redefine the role of women and men in rural communities. This brings into the fore the issue of “women in development” and “women and development”. Women are seen as “little machines” in this community and not as equal partners with men. Molyneux (1981) noted that for gender planning to become effective it is

important to distinguish between strategic and practical gender needs. In more practical terms, there is need for policies to meet practical gender needs that have to focus on the domestic arena and on community level requirements of basic social services such as domestic water supply for the benefit of women.

5.2.2 When designing programs and projects in rural communities there is need to take into account the fact that water sources which are meant to supply water for domestic purposes can also supply water that can be used for livelihoods activities for the benefit of women. Such recognition at the planning stage would mean that water supply sources will be designed with the multiple purpose use in mind by service providers. Recognition of this fact would assist planners to come up with more sustainable plans that will cater for water for domestic purposes and water for livelihoods activities. It has been shown that women's livelihoods activities have positively influenced household income and have changed their households spending patterns. It is therefore recommended that designing of water sources for domestic use should take into account the multiple water use service approach as proposed by Van Koppen, et al, (2009).

5.2.3 It is recommended that there is need to increase the number of water sources in Sigangatsha and Malaba wards. This will reduce the number of households per water source, reduced time spend collecting water, reduced time spent queuing for water and reduce time spent travelling to the nearest water source. If this is achieved it is anticipated that it reduces competition for water in the community because at the moment many households are getting water from few water sources thereby putting these sources under stress. The few boreholes that are available at the moment are serving a big number of households and livestock yet the water yield of these boreholes is low. Boreholes in the area should be complemented by deep wells

which can be dug along river banks as a way of sand filtering the water. These wells can be used to water livestock and also provide water for livelihoods activities for the benefit of women in these two communities.

5.2.4 There is need to do research to determine the link between domestic water supply and household income and expenditures patterns. This will help to understand how domestic water sources that are used to provide water for livelihoods activities in rural communities can influence household income and expenditure patterns for the benefit of poor groups such as women in rural communities.

5.2.5 There is also need do to research to determine the extent to which remittances can influence rural economies and the extent to which they have impacted on the lives of women. It was noted during this research that most of the young people who have been trained in borehole maintenance in these two communities have left for neighbouring countries especially South Africa and Botswana leaving no skilled manpower in the area to do borehole maintenance.

5.2.6 It is important to note that management of policy is not done at district level by the respective government departments but at national level. At district level, government departments are only involved in implementing policy directives from central government. It is therefore recommended that the government has to decentralize management and implementation of policy to district level. Decentralization of policy would ensure equitable distribution of resources for the benefit of recipient groups in different communities.

5.2.7 It is recommended that the government should have one single authority or a department that is responsible for the coordination and development of domestic water provision at grassroots level. At the moment there are a number of government departments that are responsible for water development in communities and these are; the Zimbabwe National Water Authority (ZINWA), The Ministry of local Government through Rural District Councils, The Ministry of Water Development, The Ministry of Agriculture and Extensions Services, The District Development Fund and Catchment Councils. This type of an arrangement brings confusion as to who should be in charge of policy management at district and grassroots level.

5.2.8 It is also recommended that the government should consider having two policies dealing with domestic water supply. One policy should be focusing on domestic water provision in rural communities and the other should be focusing on domestic water provision in urban areas. It is anticipated that such a strategy of having two policies catering for two different segments of the community will ensure an equitable distribution of resources and development. Domestic water supply provision at the moment is biased towards urban areas at the expense of the less developed rural areas in what Lipton (1977) termed an urban biased hypothesis.

5.2.9 With the current under funding of most of government programs in the country due to the use of multi-currency and the macroeconomic challenges, it is recommended that the community should seek funding from other institutions such as from the donor community and the private sector. These two institutions are potential sources of funding for water development in Sigangatsha and Malaba wards. There is need to promote public – private partnerships in the area of water development.

5.3 Implications for Social Work Practice

This section looks at social work intervention strategies in women's problems in rural communities as epitomised by this study, including issues of participation, working with vulnerable groups, health related issues and community social relations.

5.3.1 Social Work and Women's Participation

It can be argued that social workers are the most appropriate professionals to work with women particularly with their socio-economic and social problems. It is also important to acknowledge the role that other professionals can play in the upliftment of women especially in rural communities where the majority of them live in a state of deprivation and poverty as they have limited access to resources and opportunity to better their lives, such as economists in the economic development of women for instance, and income generating projects etc. The advantage with social workers is that they go further to analyse the cultural and traditional aspects that predispose women to their current situations which are part of women's experiences.

5.3.2 Community social relations and the Social Worker

The establishment of social relations and social networks is important for peaceful co-existence in rural communities. It should be noted that where resources are limited, conflicts are bound to arise. Given the fact that water is a scarce resource in Sigangatsha and Malaba wards women are bound to access domestic water from those communities that would be having adequate domestic water resources. This practice would mean increased demand of the water resources which may lead to conflicts among and between communities. Social workers would then be expected to take steps to facilitate dialogue among or between conflicting communities, to facilitate positive interaction. Social workers should take a lead in educating rural communities about gender equality and gender equity. It should be acknowledged that they are faced with the

challenge of mobilising support for constructive gender policies, measures which are aimed at reducing the burden of work from rural women. It was also noted under literature review that easy access to domestic water supply for women would result in time savings which can be used to participate in income generation and other activities such as savings and lending schemes, which will have a positive impact for their families. At a professional level there may be little that a professional social worker may do, apart from alleviating some of the challenges that women face in accessing domestic water and demonstrate a degree of solidarity with the affected group. It should be noted that solidarity can be demonstrated in a number of ways, including research which would draw policymakers' attention to the plight of women in rural communities.

5.3.3 Social work and women's education

It should be noted that there is need for critical consciousness for both men and women in rural communities on issues of gender equality. Social workers can play both a supportive and advocacy roles in shaping the policies that affect women in rural communities. Social workers should advocate for cultural and traditional practices that subordinate women to men, but their efforts should not antagonise people in communities. Social workers may also be expected to take a stand where gender policies are concerned as they may have a bearing on enculturation. Social workers could encourage government departments and non-governmental organisations to place women's problems, high on their priority list and encourage them to provide resources (both material and financial) for the construction of sustainable domestic water supply sources as well as solving challenges that women face in trying to access domestic water for their households in rural communities.

5.3.4 Social work and community health

Social workers can play a supportive role in the promotion of community health in rural communities. Their contribution can include providing information on the dangers of drinking unsafe water, and research to establish the health related problems of using unsafe sources of domestic water. Social workers can engage in culturally appropriate community health education and information dissemination for the benefit of the affected communities.

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