

**THE IMPACT OF IMPROVED WATER ACCESS FOR BOTH DOMESTIC AND
PRODUCTIVE USES ON HUMAN DEVELOPMENT: THE CASE OF LETSOALO-
SEKORORO IN LIMPOPO PROVINCE, SOUTH AFRICA**

By

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DECLARATION

I, Ma-Edward Jemina Motoboli declare that this study hereby submitted to the University of Limpopo for the degree Master of Science in Agricultural Economics has not been submitted by me for the degree at this or any other university. It is my own work in design and in execution, and that all material contained therein have been duly acknowledged.

Signed _____

Date _____

DEDICATION

To my father Tshepo Motoboli, my mother Matsibiso Motoboli, my brothers: Kutloano, Tsibiso and Machedi, my sisters: Mannana and Khothatso, my sister-in-law Mamotoboli as well as the
Letsoalo-Sekororo community

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“THE LORD IS MY SHEPHERD, I SHALL NOT WANT” (Psalm 23: 1)

ABSTRACT

The main aim of the study was to analyse the impact of improved water access for both domestic and productive uses on human development. The study was conducted in three villages in the Letsoalo-Sekororo community within the Mopani District Municipality in the Maruleng Local Municipality around the banks of the Olifants River in Limpopo Province, South Africa. The study used a total sample of 59 participants representing 40 households, 16 key informants. Three focus group discussions were held. Various variables for the households were selected and analysed using logistic regression. The method of agreement was used for key informants as well as for focus group discussions.

The results from the logistic regression indicated that household size and quantity of water consumed by an individual per household was found to be showing a positive relationship to improved water access. Cattle ownership and household's monthly income were found to be showing a negative relationship to improved water access. The results also indicated that other people's private yard taps are the water source which showed a negative relationship to improved water access. The variable food availability throughout the year, showed a positive relationship to improved water access. Water related disease showed a negative relationship to improved water access.

The results of method of agreement indicated that there are many challenges faced by the key informants. These challenges were because of the poor water reticulations and the fact that other households were unable to make their connections due to lack of a money.

The study recommends that the Department of Water Affairs and the Maruleng Local Municipality should continue their efforts of getting enough and safe water for the Letsoalo-Sekororo communities. Once that is done these communities will be able to get involved in income generating activities.

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ACRONYMS

DWAF	: Department of Water Affairs and Forestry
DUCT	: Duzi-Umnngeni Conservation Trust
FAO	: Food Agricultural Organisation
FBW	: Free Basic Water
GDG	: Gender Development Group
HDI	: Human Development Index
HDR	: Human Development Report
HPI	: Human Poverty Index
MDG	: Millennium Development Goal
MLM	: Maruleng Local Municipality
NGO	: Non Governmental Organisation
SALGA	: South African Local Government Association
SA HRD	: South African Human Development Report
UNDP	: United Nations Development Programme
WHO	: World Health Organisation
WSA	: Water Service Authority
WSP	: Water Service Provider

CHAPTER 1

INTRODUCTION

1.1 Background

Water is critical to the livelihoods and well-being of the world's population (United Nations Development Report, 2003). It is also regarded as one of the most important natural resources for human development. The Human Development Report (HDR) (2006) adds that the provision of water is one of the greatest human development challenges of the 21st century. Access to improved water is currently defined as the percentage of the population that can obtain at least 20 litres per person per day from an improved source that is within one kilometre of the user's dwelling. A Household is considered to have improved water access if it uses improved drinking water sources. These sources include household connections, public standpipes, boreholes, protected wells or springs (World Health Organisation, 2009). Mboup (2008) indicates that improved water access technologies are more likely to provide safe drinking water than those characterised as unimproved, for instance, trucks, unprotected wells or springs.

According to Wikipedia Projects (2008), a household connection or yard tap is piped water from a public water distribution source that reaches a home. When people have a household connection they usually have indoor plumbing. A public stand pipe is an outside tap from which a number of households can get water from. It is connected to public water distribution sources. Boreholes, on the other hand are very deep, well-drilled into the ground using specialised machinery. According to HDR (2006), households with improved technology such as taps and stand pipes indicate partially improved water

access because for many household taps run dry for long periods, forcing people to use unsafe water. Bingham (2007) adds that rural people use water for many different activities which are called multiple uses (often grouped into domestic uses and productive uses). Mokgope *et al.* (2001) quoting Moriarty (2001) indicate that productive uses of water at household level include activities such as backyard irrigation, beer brewing, dairying, brick-making, and construction. At the village level productive uses include community gardens and poultry raising. According to Sanewe and Dube (2008), water is essential for rural livelihoods because of the food security and income it generates in rain-fed and irrigated crop production. Casale and Desmond (2007) note that the nature of water is a key feature in determining the well- being of the community members.

1.2 Human development

The HDR (2006) defines human development as the process of enlarging people's choices, which is achieved by expanding human capabilities and functioning at all levels of development. These choices are opportunities leading to long healthy creative lives, opportunities to participate fully in every decision and progress that affect their lives, education and equal access to resources for decent living (DPRU Policy Brief, 2001). Robyens (2005) states that the human development approach values capabilities related to health, nutrition, basic education, and income as the means to achieve. If these capabilities are not attained, many choices are simply not available. According to South African Human Development Report (2003), in South Africa, the human development process is about the overall improvement in the quality of life to the poor and the well

being of the society. It is measured by the extent to which all its citizens enjoy good health, shelter, education, and other life amenities that are generally regarded as social services.

Human development is measured using the Human Development Index (HDI). This is a composite measure of a country's development measured in terms of income, level of educational attainment and life expectancy (health). The basic use of the Human Development Index is, however, to rank countries by the level of human development, which also usually implies to determine whether a country is developed, developing or under-developed (HDR, 2006). SA HDR (2003) stresses that the Human Development Index is measured on a scale of 0 to 1 with 0 being the lowest level of development and 1 the highest. An HDI value between 1 and 0.8 is regarded as a high level of development; a value between 0.799 and 0.5 as a medium level of human development, and the value between 0.499 and 0 as a low level of development. According to the HDR (2000), the higher the HDI, the better the country's achievement in its basic standard of living. In 1996 the HDI for South Africa was 0,628 and in 2005 it was 0.674, which means that South Africa is in a medium level in terms of human development.

1.3 Problem Statement

The major problem faced by rural people is a lack of adequate or good quality water for domestic use. Millions of people in rural area suffer from a lack of access to clean water and inadequate water for food production (United Nations Development Report, 2003).

In almost all rural communities people draw water from many sources which they use for many purposes as they seek to sustain their livelihoods. However, these sources are unreliable and have an insufficient supply of water. They are also far away from their dwellings. As a result, communities are still mainly reliant on the rivers which are always polluted because they are also being used by the livestock. Communities get more water during the rainy seasons and struggle during the dry seasons. Primarily very often women and girls are the ones who collect water, protect water sources, and maintain water systems.

According to the World Health Organisation (2003), the quantity of water that households collect and use depends primarily on the accessibility as determined by both distance and time. Abrams (2001) indicates that when water has to be collected from a distant source, there are health risks ó both direct and indirect, while there is also an indication that cost and reliability may influence the quantity of the water collected. South Africa, particularly rural South Africa is not immune to the problems mentioned above.

1.4 Justification of the Study

Access to water and sanitation are key aspects of human development given that they are prerequisites to achieving a minimum standard of health and for productive uses (Mehta, 2006). More water is needed not only to meet basic needs such as washing, cooking and drinking, but also to promote productive uses of water at the household and village levels (Mokgope *et al.* 2001). Butterworth and Moriarty (2003) state that improved water access

is essential for rural people's survival, but meeting the basic needs is not just about health or hygiene. In South Africa, the government has tried to solve the problem of water in rural areas by introducing a free basic water system. This system, however did not solve the problem because in most rural areas the system was not effectively and efficiently implemented due to insufficient water in these areas. As a result, rural people are unable to expand their options to secure their food and income as they spend more time collecting water. According to Dlamini (2007), improved water access can create livelihood opportunities that can break the cycle of poverty.

Not much research has been done, particularly in South Africa, regarding the impact of improved water access on human development. The present study attempts to look at how access to water can impact rural livelihoods. It also attempts to document the magnitude of the problem of having unimproved water access for both domestic and productive uses. Through its recommendations, the study hopes to assist the Department of Water Affairs and Forestry (DWAF) and the Maruleng Local Municipality to be able to address water problems and constraints in the Letsoalo-Sekororo community as well as other contiguous communities. The information will also be shared with the community of Letsoalo óSekororo, advising them on how they could improve their access to water.

1.5 Scope, aim and Objectives of the Study

1.5.1 Aim

The main aim of the study was to analyse the impact of improved water access for both domestic and productive uses on human development in the Letsoalo-Sekororo community.

1.5.2 Objectives

The objectives of the study are:

1.5.2.1 To identify factors that enhance or restrain people's capabilities to improved water access in the Letsoalo-Sekororo community.

1.5.2.2 To identify sources of water used by households in the Letsoalo-Sekororo community.

1.5.2.3 To look at the impact of the accessibility of water on food security.

1.6 Hypotheses

The study examined the following hypotheses:

1.6.1 There are no factors that enhance or restrict people's capabilities to improved access to water in the Letsoalo-Sekororo community.

1.6.2 There are no different types of sources of water used by households in the Letsoalo-Sekororo community.

1.6.3 The accessibility of water has no impact on food security and human health.

1.7 Organisation of the study

The study is presented in five chapters. Chapter One introduces the background and objectives of the study. The hypotheses for the study are also indicated. Chapter Two presents the literature review and Chapter Three gives a detailed explanation of the methodology used. It discusses the issues concerning the research design, data collection and analysis as well as the analytical framework used in the study. It also focuses on the study area, providing information of all areas where the data were collected. Chapter Four presents the results and interpretations of the study. Finally, Chapter Five presents summary conclusions and the recommendations.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

According to South Africa Online (2009), the country is largely a semi-arid and water stressed country. Nationwide the average rainfall is only about 500mm which is the minimum required for successful dry land farming. Collins (2001) mentions that people depend on rivers, dams and underground water for their water supply. To overcome the problem of overflowing rivers in the country, large storage dams were constructed to transfer water between catchments (DWAF, 2007). Burger (2008) notes that there are 22 major rivers that are flowing in South Africa with hundreds of small and major dams.

According to the Human Development Report (HDR) (2003) ensuring the availability of water service is fundamental in rural areas. A lack of access to basic services and the infrastructure necessary to sustain basic human capabilities are indirect measures of human poverty. South African Human Development Report (SAHDR) (2003) further notes that even though there are challenges in providing basic services in South Africa, there is an indication from DWAF (2007) that in the case of water services the government has given considerable attention to the availability of water to rural communities. Progress has been made in backlog reduction and a basic level of water has been provided. DWAF has invested considerable resources in bringing safe, reliable supplies of water into the rural communities of South Africa.

According to Dlamini (2007), people's ability to obtain enough water for their needs is dependent on many overlapping factors. These factors are climate and physical factors such as land form and soil, which determine the amount of water that can be collected for use. Where people live also affects how much water is available, while the number of people sharing water, and the costs affect people's ability to obtain sufficient water for their needs. Lastly, the infrastructure to collect and distribute water also influences the quality of water. The debate on the Millennium Development Goals (MDG) focuses only on water supply for domestic use and sanitation, while giving little attention to water access for productive uses in agriculture (HDR, 2006). Mokgope *et al.* (2001) quoting Moriarty (2001) adds that contributions to rural incomes, food security and the wider economy from small scale irrigation are widely acknowledged, but the contributions to livelihoods of water use for productive activities at the household level and informal village-based enterprises are normally rarely considered.

2.2 Water availability in South Africa

In South Africa water has always been managed by the Department of Water Affairs and Forestry but since 1994, when the country became a democracy, few changes have been made. The domestic water supply is presently in the process of being transferred to the district municipalities and the infrastructures need change (Kanyoka, 2008). A municipality can choose whether to provide this service itself or to appoint a Water Service Provider (WSP) to supply water on its behalf. According to DWAF (2003), the main duty of a WSP is to provide water services in accordance with the Constitution of the Republic of South Africa and Water Service Act and by law of the Water Service

Authority (WSA) and in terms of specific conditions set by WSA. According to Mthobeli (undated), whichever option the district municipality chooses to use as a WSA, the district municipality is still responsible for ensuring a good and reliable water supply to the communities. In recognition of the primary importance of having a clean and adequate water supply, the South African Government introduced Free Basic Water (FBW) in 2002 (Hall *et al.* 2006).

The provision of FBW is not only aimed at improving the quality of life to those South Africans who cannot afford to pay for water, but it is also a contribution to the government's fight to eradicate poverty. The FBW policy is the national government's policy but it can only be implemented by the local government. According to Dugard and Tissington (2008), there are still some municipalities in South Africa, particularly rural and under-resourced ones that are not providing FBW to poor households. The policy is in place but means of implementing it are virtually non-existent. Constitutionally local government is responsible for the delivery of basic services; however, the national government and the South African Local Government Association (SALGA) are providing support to local government to ensure that they have the capacity to implement it. According to the policy, poor households will each receive 6000 litres of water free per month (DWAF, 2002).

The Maruleng Local Municipality, the area of study, is also responsible for providing FBW. The area is characterised by a low rainfall, making it a limited water resource area, with severe water shortage and drought conditions. According to the Maruleng IDP

Review (undated), there is stiff competition among different water users and as a result domestic water is crucial and needs more attention. The Maruleng Local Municipality (MLM) (undated) adds that the South African standard of 6000 litres is an internationally based standard, but the municipalities have their own discretion when coming to implementing the policy. The intended recipients of FBW are poor households who are unable to make a monetary contribution to pay for the municipal services. Some municipalities may choose to provide a greater amount, while in other areas a smaller amount, may be given. In remote areas with scattered settlements and in water stressed areas it is often not feasible to provide larger amounts of water.

In its indigent policy document, the Maruleng Local Municipality gives the following discretion when coming to the FBW policy. All water consumed from communal standpipes, unmetered standpipes and other supplies which constitute the minimum level of service will provide the average consumption of such per household. All indigent consumers serviced through metered yard connections shall receive the first 6000 litres free of charge, while monthly basic levy will be charged to all non-indigent consumers who exceed the consumption of 6000 litres. According to Wikipedia Projects (2008) rural local governments are faced with challenges in providing water and sanitation services in general. The first challenge is that there are infrastructural problems in many areas of South Africa which means that water delivery of any kind is a burdensome activity. The implementation to provide basic water for free therefore, requires rapid improvements in the water infrastructure, especially for the rural poor. Another challenge is that the allocation of free basic water is made on the basis of the household and not on

individual members. Since an average poor household typically comprises of more than eight individuals, large poor households are penalised.

2.3 Food Security and Health

According to the United Nations Development Report (2003), water is critical for food production. Providing water for productive uses can enhance people's livelihood options by making significant additions to household food security and nutrition while generating income as well. Bonti Ankoma (2001) defines food security as access by all households at all levels to adequate safe and nutritious food for a healthy life. South Africa produces sufficient food, but this does not in any way ensure food security at individual household level. According to Matla (2008), access to food depends on the adequate stable local food supply, which is influenced by many interacting factors. The most frequent factors are access to land, livestock ownership, food garden availability, safe accessible water supply, access to food shops, stable climatic conditions and cash (income). Food security can be divided into two components which are, the ability to be self sufficient in own food production and second the ability to purchase food items. Ensuring access to food security at household level depends not only on secure food supplies, but also on stable demand and purchasing power.

According to Bonti Ankoma (2001), most of the poor households' main source of cash are insecure piece jobs, government's social welfare safety net (primarily in the form of old age pensions as well as child support grant). If families are unable to grow or purchase enough food and social nets are absent or inefficient, there may be hunger. Homestead gardens are important sources of food security. Anderson *et al.* (2006)

explain homestead gardens as food plots within the boundaries of the residential sites. They mention that the sizes vary from household to household between villages, depending on the size of the residential sites. Many villages are located far from the towns and markets and, therefore, production from home gardens can contribute towards meeting household basic food needs (FAO, 2003). Marsh (1998) in turn indicates that homestead gardens do not depend on imported technology tools. According to the HDR (2006), people must be able to increase their production and participate fully in the process of income generation and remunerative employment because productivity is one of the components of the human development.

According to Casale and Desmond (2007), the nature of access to water is clearly a key factor in determining the well-being of the household members. May (1998) emphasises that poor access to water contributes to hunger and poor food security. As a result people become vulnerable to poor health which reduces the quality of life and their productivity capacity. In addition, the Duzi-Umgeni Conservation Trust (DUCT) (2008) indicates that people become infected by various diseases when they come into contact with polluted water. According to the HDR (2006), water access of sufficient quality and quantity will reduce the incidence of diseases caused by polluted water which in turn will improve the health and productivity of women and better school attendance by learners.

2.4 Education and Gender

According to the HDR (2000), access to education (both formal and non formal), health care, basic social services and a proper social infrastructure are essential requirements for human development and effective participation by people in all spheres of life. In addition, the HDR (2006) points out that progress in education is crucial for human development in its own right, and because of the links to health, equity and empowerment. Over the past decades, development planners have assumed that women were only concerned about water for domestic purposes while men were responsible for the productive water use. This underlying assumption has underestimated women's productive role because rural women also need access to water resources not only for domestic activities, but also to undertake potential beneficial work for themselves (Updhay, 2004).

The Gender Development Group (GDG) (2002) supports the above statement by indicating that women are most often users, providers and managers of water in the rural households. They are the guardians of household hygiene as well. It is usually women who collect water, and they may be physically attacked while performing this task. Men are usually more concerned with water for irrigation and livestock purposes. According to the UNDR (2003), the provision of clean and adequate sanitation in schools improves community health standards and enables children, especially girls to attend classes instead of having to walk distances to collect water. The impact of improved water supply can be translated into tangible benefits for women such as better health, time freed up for other activities, and more production potential.

2.5 Poverty

According to the HDR (1997), while human development focuses on the progress of the community a complete study of poverty focuses on the progress of the most deprived people in the community. Inadequate water supplies are both the cause and effect of poverty. Poverty can mean more than a lack of what is necessary for material well-being; it can also mean the denial of opportunities and choices most basic to human development; to lead a healthy life and enjoy improved standard of life. The lack of access to safe water, thus, has a major effect on people's health, development and poverty alleviation. To address poverty and food insecurity in rural households, it is necessary to understand how people in rural areas create their livelihoods. Poor people have to combine their resources in a variety of ways to enable them to maintain a minimum standard of living (Abrams, 2001).

According to the HDR (2000), poverty is measured by the Human Poverty Index (HPI), while the HDI measures the progress of the country in general. The HPI is used to measure deprivations in the basic dimensions of human development and the proportion of the people left out of progress. The HPI was computed on the basis of deprivation in living standard, deprivation in longevity and deprivation in knowledge. In 1996 the HPI for South Africa was 20.2 % which implies that by then 20.2% of the people were living below the poverty line.

CHAPTER 3

METHODOLOGY

3.1 Introduction

This Chapter presents a brief description of the study areas as well as the maps which show the location of the study area and data collection. The Chapter also describes the research methodology used to collect the data and to analyze the variables that were considered for the study. Finally, the Chapter provides a brief description of the sources of information used, the sampling techniques, the data collection methods, and methods of analysis.

3.2 Description of the Study Area

3.2.1 Limpopo Province

Limpopo Province is the northernmost province of the Republic of South Africa, sharing borders with Mozambique and Zimbabwe. The province consists of five district municipalities and 23 local municipalities (Demarcation Board of South Africa, 2008). Morula Marketing (2008) states that the average annual rainfall of the province totals about 300 mm with most of it falling in the summer months between November and March. Limpopo Province is the natural resource treasure chest of South Africa, if not the whole of Southern Africa. It boasts some of the greatest reserves of agriculture, mineral and tourism resources, many of which remain hugely under-exploited. In terms of agriculture, Limpopo could be described as the garden of South Africa or of the whole African continent, given its rich fruit and vegetable production (Morula Marketing, 2008)

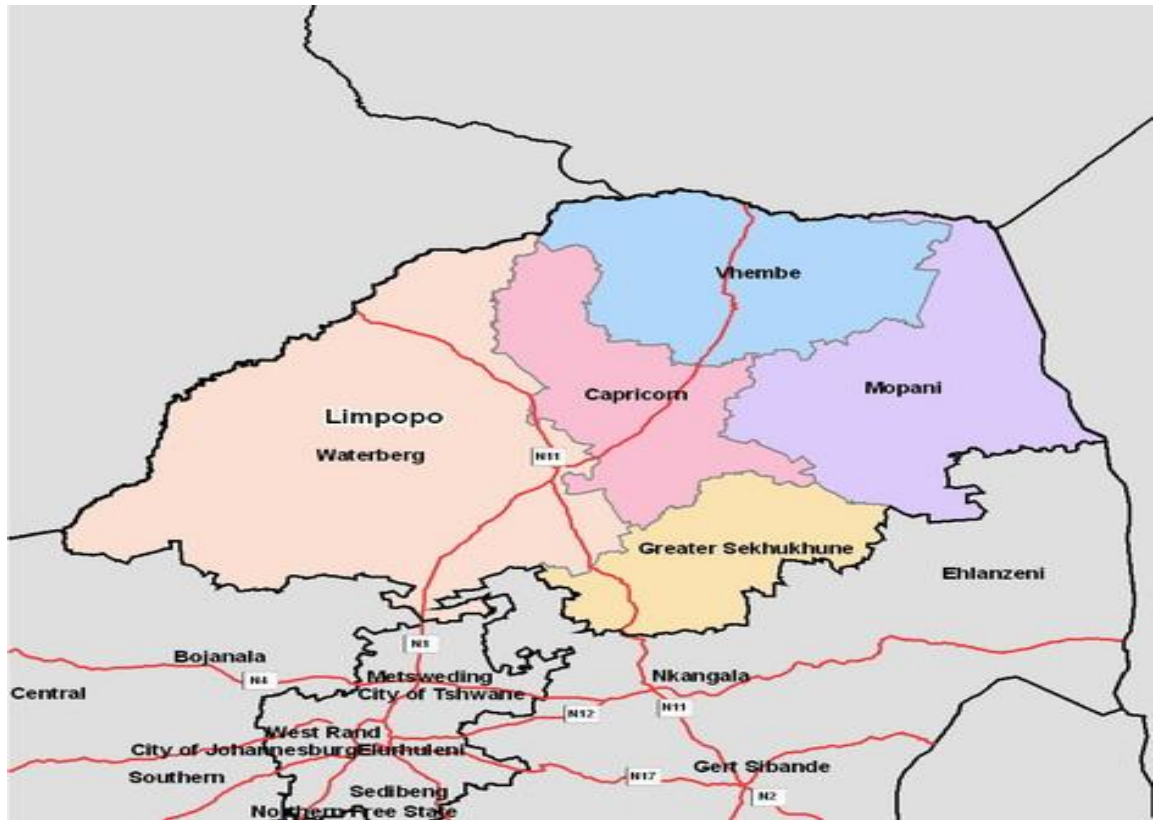


Figure 3.1 Map showing the five districts of Limpopo Province: Vhembe, Waterberg, Capricorn, Greater Sekhukhune and Mopani and some districts of Mpumalanga and Johannesburg

Source: Demarcation Board of South Africa, 2003

3.2.2 Letsoalo-Sekororo area

The study was conducted in the Letsoalo-Sekororo area within the Maruleng Local Municipality in the Mopani District Municipality around the banks of the Olifants River basin. According to the Demarcation Board of South Africa (2008), the Maruleng Municipality is bordered by the Kruger National Park to the east, the Ba-Phalaborwa and Tzaneen municipalities to the north, the Lepelle-Nkumpi municipality and Tubatse municipality to the west. The Letsoalo-Sekororo area consists of about ten villages: there

are Metz, Sofaya, Makgaung, Turkey, Worcester, Moshate, Madeira, Butswana, Lorraine, and Enable.

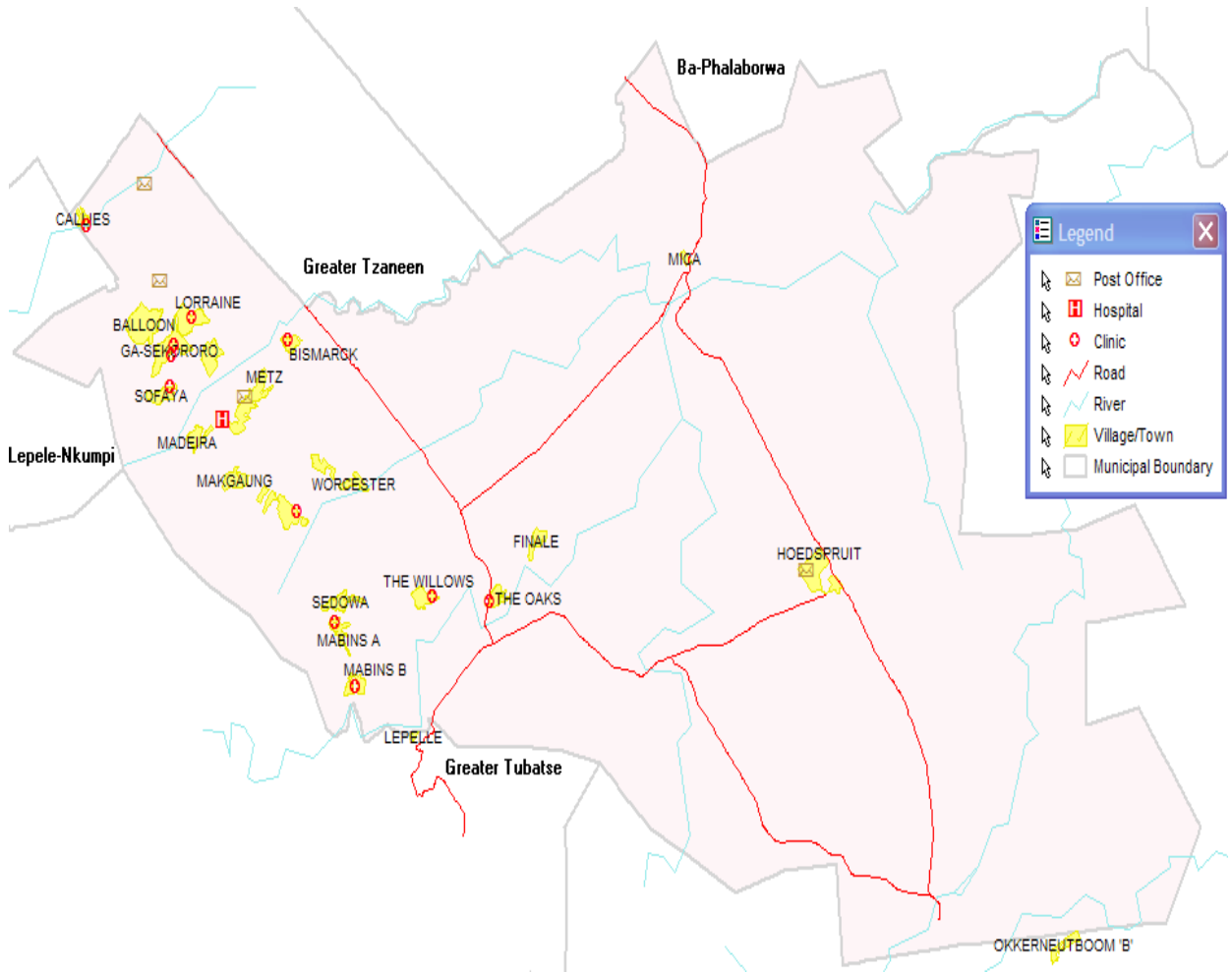


Figure 3.2 Map showing villages in Letsoalo-Sekororo

Source: Maruleng Local Municipality, undated.

3.3 Description of the Selected Villages

Only three villages were selected namely, Worcester, Metz and Mahlomelong. The selection of these villages was based on the exploratory field study that was conducted in the Letsoalo-Sekororo community prior to the research.

3.3.1 Worcester village

Worcester is a very dry area, far from the mountains and crossed by streams that only have surface water during the rainy season. There is no clinic in the area; hence people go to Sekororo Hospital located in Metz. In terms of water supply the equipment consists of two steel tanks that were put on a steel stand to provide water to the public. The public stand pipes around the village were completely dry during the study period. Two municipal tanks were removed by DWAF officials during the study period because the community was vandalising them. There is no irrigation scheme in the village. Only communal gardens exist and these which were designed for the orphans in the village by the non-governmental organisation, World Vision.

3.3.2 Mahlomelong village

Mahlomelong is one of the villages in Sekororo village, managed by Chief Sekororo. The village is very close to the mountains. Unlike in Worcester there is a clinic in Mahlomelong. In terms of water supply infrastructure, there is a bore hole pump and two cement reservoirs that are supplied with water by this pump. There are also two steel tanks that are on steel stands which were dry during the study. At the end of the village, which is on top of the mountain there is a storage dam that was constructed by the community. There are pipes connected to the storage dam which bring water to the village. There is no irrigation scheme but a well-fenced communal garden exist but the community is not making use of it.

3.3.3 Metz

Metz is a village that is mid mountain, rather very big when compared to other villages in the Letsoalo-Sekororo community. The village is managed by only one chief, Chief Letsoalo, but within the village there are three sections which are managed by the headmen who then report to the Letsoalo Tribal Office. In terms of water infrastructure, there are six cement reservoirs in the village, two in each section with one borehole for each section. There is an irrigation scheme which is located at the third section of the village which was not used by the community during the study because the scheme was being revitalised.

3.4 Data collection

Qualitative and quantitative data were collected. According to Matthew and Huberman (1994), qualitative data consist of words and observations. Neuman (1997) states that qualitative data are in the form of text, written words, phrases or symbols, describing or presenting people's actions and events in the social life while quantitative data use numbers. Various data collection techniques were used to collect data. These include household interviews, key informant interviews and focus group discussions. The data were tape recorded. The purpose of recording the data was to allow the interviewer to freely engage in the conversation without taking notes and missing important information (Beaulieu and Carter, 1992).

3.4.1 Household interviews

A questionnaire was used to collect qualitative and quantitative data. The purpose of the study was clearly explained to the household members in order for them to give as reliable answers as possible. The questionnaire consisted of open-ended and close-ended questions about water access, uses of water, backyard gardens, water consumption, and other factors affecting improved water access.

3.4.2 Key informants technique

According to Mckillip (1987), key informants are community residents who are in the position to know the community as a whole or the portion the researcher is interested in. Bealieu and Carter (1992) further indicate that key informants are people who know what is going on in the village and they can thus provide insight on the nature of problems and make recommendations about solutions. A questionnaire with open-ended questions was used to collect qualitative data from the key informants. The interviews were conducted with members of irrigation committees, water committees, nurses, chiefs, technicians, and ward councillors in the three villages.

There are two committees dealing with water issues in Mahlomelong and Worcester villages. The first committee is a household water committee which deals with water use at household level, and the second, irrigation committee which deals with irrigation water. There was also water technician in Worcester and volunteers in Metz who were dealing with water at household level. Ward councillors are representatives of the local municipality at the village level and they are mandated to deliver services to the

communities based on the Integrated Development Plan (IDP) as agreed upon with the community. The provision of water is one of the priorities in most IDPs. The nurses were interviewed to find out whether there were diseases or health related problems regarding the water in the villages. The interview with the chief was meant to give an idea of issues about water in the community.

3.4.3 Focus group discussions

This is a qualitative method which aims at obtaining in-depth information on concepts, perceptions and ideas of a group. It aims to be more than a question and answer interaction. The idea is that group members discuss the topic among themselves with the guidance from the facilitator (Debus and Novelli, 1986). Questionnaires with open-ended questions were used to undertake this task. The participants were women who were interviewed during the household interviews. The reason for this was to validate the information that was provided during the household interviews, especially for those women who found one-on-one interviews intimidating.

Secondary data were also used in the study. The secondary data were obtained from the Department of Water Affairs and Forestry, the internet, library, Mopani District Municipality, and Maruleng Local Municipality, as well as previous studies.

3.5 Sampling Procedure

The study used stratified random sampling to select the households due to the fact that some households have improved water access and some have unimproved water access.

A purposive sampling technique was used in the case of key informants and focus group discussions. A total of 40 randomly sampled households were covered during the interviews, assuming that the selected sample would be a representative of the three selected villages. Sixteen key informants were interviewed while three focus group discussions took place.

Table 3.1 List of villages and household respondents

Villages	Improved water access	Unimproved water access	Frequency	Percentage
Worcester	0	8	8	20
Metz	10	9	19	47.5
Mahlomelong	7	6	13	32.5
Total	17	23	40	100

Source: Survey (2008)

3.6. Methods used in Data Analysis

The Statistical Package for Social Sciences (SPSS) was used to analyse the data. Descriptive statistics including cross tabulations, standard deviations and means were calculated. A logistic regression was used to analyse the quantitative data and method of agreement was used to analyse focus group discussions as well as key informants' interviews.

3.6.1 Logistic regression

Logistic regression predicts a categorical dependent variable on the basis of continuous and categorical independent variables. It was used to estimate the probability of whether a household has improved water access or not. It is also used to determine the percentage of variance in the dependent variable explained by the independent variables and to show the impact of independent variables on the dependent variable. The relationship between the probability of $Y = 1$ and the explanatory variables are determined through the logit function and that is the natural logarithm of odds of

$Y = 1$.

This assumes a linear relation between the log of odds and independent variables (Hosmer and Lemeshow, 1989). The analysis in this study focused on the probabilities that households had improved water access in the Letsoalo-Sekororo community. The logistic regression model is based on the probability that Y equals to one ($P = P_1$). The value of Y is assumed to depend on the value of X_1, X_2, \dots, X_k . The logit model representing the relationship of Y and X is given by:

Operational model

$$\text{Logit}(p) = \ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k$$

The ratio $p/1-p$ is the odds ratio

P_i = probability that a household has improved access to water while $1-P_i$ = probability that a household does not have improved water access.

X_i = various independent variables

U_i = disturbance term.

Specific model

The following linear equation is specified

$$\text{IMPWACC} = \beta_0 + \beta_1 \text{WSOURCE} + \beta_2 \text{WUSE} + \beta_3 \text{HMMINC} + \beta_4 \text{HHS} + \beta_5 \text{QWCONS} + \beta_6 \text{COWN} + \beta_7 \text{BYGARD} + \beta_8 \text{PLBYG} + \beta_9 \text{FDTYR} + \beta_{10} \text{WRDIS} + \mu$$

The probability of household having improved water access is a dependent variable which is measured as a dummy. There are several independent variables on which access to water depends.

Table 3.2: Variables included in the logistic regression

Variables	Description	Units
Dependent variable		
IMPWACC	1 if household has improved water access, 0 otherwise	Dummy
Independent variables		
WSOURCE	1 if household's water source is other people's private yard tap, 0 otherwise	Dummy
WUSE	1 if household uses water for domestic and productive uses, 0 otherwise	Dummy
HMMINC	Household members monthly income	Rands
HHS	The size of the household	Numbers
QWCONS	Quantity of water consumed by an individual per household	Litres
COWN	1 if the household has cattle ,0 otherwise	Dummy
BYGARD	1 if household has a backyard garden, 0 otherwise	Dummy
PLBYG	1 if household is planting in the backyard garden, 0 otherwise	Dummy
FDTYR	1 if food is available throughout the year, 0 otherwise	Dummy
WRDIS	1 if water causes diarrhoea, 0 otherwise	Dummy

3.6.2 Method of agreement

Qualitative data are analysed by concepts formation which starts during the data collection stage. As a result conceptualisation is one way that qualitative data are organised to make sense. There are a few methods that are used to analyse qualitative data, but in this study the method of agreement was applied to analyse the data. This is a type of method that focuses attention on what is common across the cases that are being investigated. The cases with a common outcome is established and located as a common cause, although the cases may differ. Features that are not shared across the cases are eliminated (Neuman, 1997).

CHAPTER 4

RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the results from the descriptive statistical analysis as described in Chapter Three. The results of the households interviews are presented in the form of tables and charts and each of them is interpreted. The results from key informants and focus groups are also presented in this chapter in the form of discussions.

4.2 Descriptive statistics

The descriptions below are the results for 40 households, where 23 households were found to have improved water access while 17 had unimproved water access.

4.2.1 Water source used by households

According to the World Health Organisation (2009), households with improved water sources are considered to have improved water access. Table 4.1 below shows the type of water sources used by households. The results show that out of 17 households with unimproved water access, 52.9% use other people's private yard taps as their water source and 41.2% use rivers or canals as their water source. The results also reveal that out of 23 households with improved water access, 43.5% use private yard taps as their water source and 26.1% use private boreholes as their water source. This implies that the households with improved water access use water sources that are inside their dwelling, in other words they do not travel distances to get to their water.

Table 4.1 Water source used by households(%)

	Improved water access N=23	Unimproved water access N=17	Total N=40
Private yard tap	43.5	0	25.0
Private borehole	26.1	0	15
Public tap	13.0	5.9	10
River /canal	0	41.2	17.5
Other people's private yard tap	8.7	52.9	27.5
Private borehole and private yard tap	8.7	0	5.0
Total	100	100	100

4.2.2 Uses of water by households

Rural households use water for many different kinds of activities. This is called multiple uses of water. These uses are grouped as domestic and productive uses. Figure 4.1 below shows the various uses of water by households. The results indicate that 87% of the households with improved water access use water for all domestic purposes and 64.7% of households with unimproved water access use water for all domestic uses. The results also reveal that 23.5% of the households with unimproved water access are using water for domestic uses excluding washing and none of the households with improved water access use water for domestic purposes excluding washing. Only 13% of the households with improved water access and 11.8% of households with unimproved water access were using water for both domestic uses and productive uses.

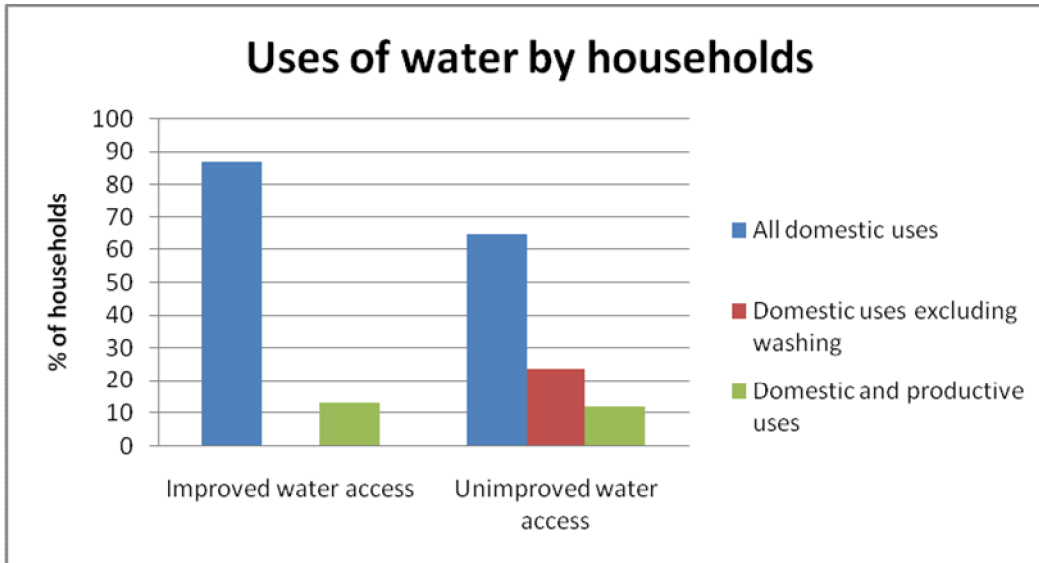


Figure 4.1: Uses of water by households

4.2.3 Household members' monthly income

Table 4.2 below indicates the household members' monthly income. The results show that the lowest monthly income for the households with improved water access was R200.00 and R400.00 for the households with unimproved water access. The maximum amount was R7000.00 for households with improved water access as well as for the households with unimproved water access. The average monthly income for improved water was R1958.58 and R1491.88 for the households with unimproved water access. The results simply indicate that on average the monthly income for households with improved water access was more than households with unimproved water access.

Table 4.2 Household members' monthly income

	Improved water access N=17	Unimproved water access N=23
Monthly income(R)		
Minimum	200	400
Maximum	7000	7000
Mean	1985.58	1491.88
Std.deviation	1866.76	1583.34

4.2.4 Household size

Household size and composition are important factors which influence water use. The results in Table 4.3 indicate that the minimum size of a household for both water access was 4. The maximum size was 13 for households with improved water access and 10 for the households with unimproved water access. On average, households with improved water access have a household size of 8, and households with unimproved water access had 6. The results suggest that there were more members in the households with improved water access and less in the households with unimproved water access.

Table 4.3 Household size

	Improved water access N= 17	Unimproved water access N=23
Minimum	4	4
Maximum	13	10
Mean	8	6
Std deviation	2.6	1.89

4.2.5 Quantity of water consumed by an individual per household

The quantity of water used depends on the number of people using water in the household. According to the World Health Organisation; the minimum quantity of water needed for survival is 25 litres per person per day. This includes water for drinking, cooking and personal hygiene (Children Institute, 2009). The results as indicated in Table 4.4 below show that the minimum quantity of water consumption in the household with improved water access was 13 litres and 12 litres for households with unimproved water access. The maximum quantity of water consumed by household with improved water access was 208 litres and 38 litres for the household with unimproved water access. On average, members of households with improved water access consume 50 litres and households with unimproved access consume 20 litres. The results thus suggest that households with improved water access consume more water which is more than the minimum standard for the Free Basic Water in South Africa, while households with unimproved water access consume less than the minimum standard for the Free Basic Water in South Africa.

Table 4.4 Quantity of water consumed by an individual per household

	Improved water access N=17	Unimproved water access N=23
Minimum	13	12
Maximum	208	38
Mean	50	20
Std deviation	52.4	6.55

4.2.6 Cattle ownership by households

Figure 4.2 below shows the number of households owning cattle. The results reveal that 73.9% of the households with improved water access and 64.7% of the household with unimproved water access did not own cattle. Only 35.3% of the households with unimproved water access and 26.1% of those household with improved water access owned cattle. The results suggest that most of the household did not own cattle.

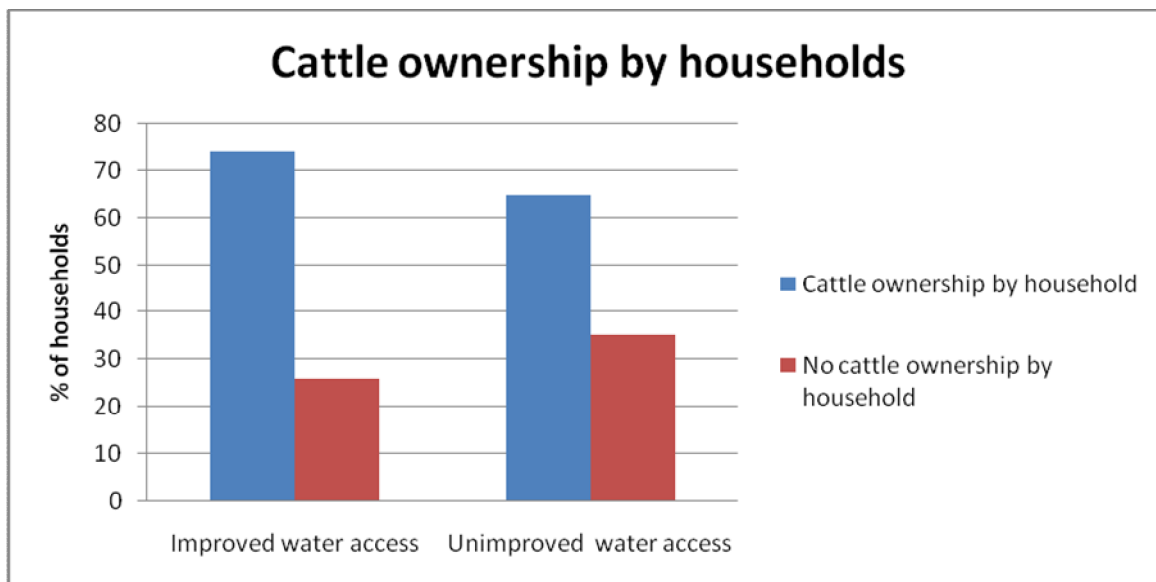


Figure 4.2: Cattle ownership by households

4.2.7 Backyard garden and planting in backyard garden

In spite of the fact that most of the households have backyard gardens, according to Anderson et al. (2006), households in rural areas usually obtain food purchased from urban markets rather than own production, because of constrains such as irrigation water, land degradation and poor soil which limit the amount of production. Table 4.3 show the number of households with backyard gardens and households who are planting in their

backyard gardens. The results indicate that 94.1% of households with unimproved water access had backyard gardens and were planting in them, while 13% did not have backyard gardens. The results further indicate that out of 23 of the households with improved water access 87% had backyard gardens and were planting in the backyard gardens. The results suggest that most of the households had backyard gardens and were planting. This could be due to the fact that most of the households use rain-fed irrigation for their backyard gardens.

Table 4.5 Backyard gardens and planting in backyard gardens (%)

	Improved water access N=23	Unimproved water access N=17	Total N= 40
Backyard garden and planting in backyard garden	87.0	94.1	90.0
No backyard garden and not planting in backyard garden	13.0	5.9	10
Total	100	100	100

4.2.8 Food availability throughout the year

Figure 4.3 shows the availability of food throughout the year in the households. The results show that 82.6% of the households with improved water access had availability of food throughout the year, while none (0%) of the households with unimproved water access had food availability throughout the year. Only 17% of households with improved water access had no food availability throughout the year. The results suggest that only households with improved water access had food availability throughout the year.

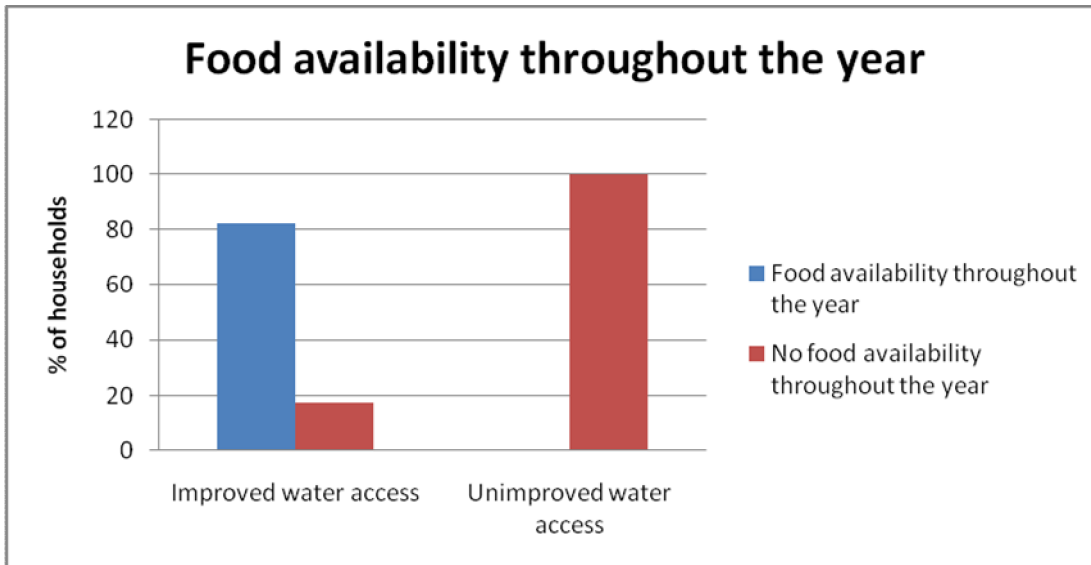


Figure 4.3: Food availability throughout the year

4.2.9 Water related diseases in the households

According to the Children Institute (2009), clean water is essential for human survival and unclean water can compromise children’s health and hygiene. Table 4.4 shows the number of households experiencing water related diseases. The results indicate that out of 17 households with unimproved water access (88.2%), which is a total of 15 households, were experiencing water-related diseases while none of the households with improved water access were experiencing water-related diseases. The results suggest that only households with unimproved water access were experiencing water related diseases.

Table 4.6 Water-related diseases (%)

	Improved water access N=23	Unimproved water access N=17	Total N=40
Water-related disease	0	88.2	95.0
No water-related disease	100	11.8	5.0
Total	100	100	100

4.3 Key informants' interview results

These interviews focused more on establishing the responsibilities and challenges faced by the key informants and the solutions they had regarding the provision and use of water.

4.3.1 Household water committees

In Mahlomelong, the committee's responsibility is to control and distribute water in the village. The water comes from the top of the mountain. The community constructed a storage dam and connected pipes to transport water to the village. According to the committee this water is used for all domestic purposes, but at night households are allowed to irrigate small backyard gardens. In Worcester, the committee was no longer active during the study, but previously the committee was responsible for controlling water that was supplied by the municipality to the community by trucks and to report broken public stand pipes. The challenge facing the committee in Mahlomelong is that the constructed storage dam is too small hence it can not store enough water for the community. Consequently the community does not get enough water for both domestic and productive uses. To address the challenge the committee was of the opinion that if

the Department of Water Affairs and Forestry and the Municipality could help with building a bigger storage dam, the community would be able to get enough water for all its needs.

In Worcester even though the committee was no longer active, the previous chairperson indicated that there had been challenges. The first challenge was that the public stand pipes were not functional because the pipes connected to the public stand pipes were small and thus there was not enough pressure from the pipes to take water up the stand pipes. The other challenge was that the community was still sourcing water from the river where they were still competing with livestock. To address these challenges, the ex-chairperson was of the opinion that the municipality remove the small pipes and replace them with bigger pipes.

4.3.2 Technicians

A technician was only found in Worcester. He dealt with water at the household level. According to the technician, his duties included monitoring the borehole machine and reporting it when it is broken to the Department of Water Affairs. According to him, the community would then get water after a day. He indicated that his challenges were old water pipes which were deep down in the sand and thus disturbing the movement of water to the public stand pipes. The other challenge was that water was not enough for the whole village, and that the machine kept on breaking down. The technician indicated that this problem could be solved if the municipality would repair the machines since the

responsibility had been shifted to the municipality by Department of water affairs regarding water services and allocations.

In Metz no technician was found but there were three volunteers who were responsible for dealing with water at the household level. Their responsibility included opening the water from the boreholes to the reservoirs where it would then be transported to the private yard taps within the village. The main challenges as indicated by the volunteers were that people were stealing the borehole pumps and secondly, the community was using water to irrigate their back yard gardens a practice which was not allowed because there was not much water to go around and lastly the water was not clean. The volunteers felt that they needed to get paid for the job they were doing because it was the same job that is done by the technicians.

4.3.3 Irrigation water committees

Irrigation committees were found in all three villages under study but they were no longer active. According to the ex-chairpersons of the irrigation committees, these were no longer active because there was no water to continue with productive activities in the villages. In Metz the committee's responsibility was to control irrigation supplied through the canal to the irrigation scheme. At the time of the study the irrigation scheme was being revitalized. The canal was being changed into sprinkler irrigation system. This was done by the Department of Agriculture through the programme of RESIS (Revitalization of Irrigation Schemes) to try to save water used in the scheme. In Mahlomelong the committee was responsible for mediating with government officials on behalf of the community with regard to the communal land that they had. In Worcester the irrigation

committee's responsibility was to control the irrigation water supply and distribution in the communal gardens where people with plots were contributing five rand (R5) to pay for electricity used by the machine to pump water from the borehole for irrigation.

4.3.4 Ward councillors

According to the councillors, their responsibility was to make sure that basic services (water included) were delivered to the people. There were challenges faced by the communities in each village, but the main challenge was that the shortage of water. Water was only available for domestic purposes. According to the Ward councillors, development was hampered because people were unable to irrigate their backyard gardens. In Mahlomelong the councillor also indicated that the water that the community was using was not clean. It came from the mountain where the community constructed a storage dam that was not protected. In Worcester there were only two tanks for storing water and one borehole pump that was pumping water into those tanks. This infrastructure was supposed to supply the whole village with water. The councillor from Metz stated that there were also few borehole pumps and reservoirs to supply water to the whole village.

To address these challenge the councillors indicated that Mametja-Sekororo bulk water project was being brought to the community. This was the project that would make water available to the village. In Worcester the councillor indicated that the village was far from the Mametja-Sekororo bulk water supply pipeline. It would therefore delay water connection into the village. In Mahlomelong and Metz the councillors were of the

opinion that another solution would be to have more borehole pumps and reservoirs so that the community would be able to get enough water for both domestic and productive uses while waiting for the completion of the Mametja-Sekororo bulk water project. According to the councillors, the Department of Water Affairs and Forestry has not yet handed over the responsibility to the municipality so these issues would have to be reported to the Department of Water Affairs and Forestry.

4.3.5 Nurses

According to the nurse in Mahlomelong clinic, there were several cases of water borne diseases that have been attacking people in Mahlomelong. She cited bilharzias, diarrhoea and malaria, but indicated that the clinic could only treat diarrhoea. She also indicated that malaria was serious during the rainy season while diarrhoea and bilharzia were found throughout the year but no death cases had been reported. She indicated the very same challenges as emphasised by the water committees and councillors namely water not being clean because it was not purified, coming directly from the top of the mountain. When asked about the solution to the challenges she cited an increase in the number of borehole pumps as a solution to the water problem in the village.

The nurse from the Sekororo Hospital stated that the most common water borne disease cases in Metz was bilharzia, while in Worcester cholera and typhoid posed major problems as the community was still using water from the river. However there were no death cases that had been reported. According to the nurse, the challenge that the community was facing was that not all areas in Metz were getting water. There was no

enough water for people to make small vegetable gardens since water was only used for domestic purposes. There was also a problem of malnutrition especially in children. The supply of water could make the people grow vegetables in their gardens and thus improve their diet

4.3.6 Chief

Chief Letsoalo is responsible for the Metz community. Metz is the biggest village in the Letsoalo-Sekororo area which is divided into three sections. These sections are led by headmen who in turn report to Chief Letsoalo at Moshate (Tribal Office). On issues related to water the chief indicated that the water was pumped from boreholes into the reservoirs through pipes to the private yard taps. Chief Letsoalo further stated that for a member of a community to have a private connection a fee of R50 was paid at the tribal office. The chief proudly indicated that there were volunteers who were helping the community by opening the borehole pumps to transfer water to the private yard taps. He also indicated that water was used for domestic purposes only because there was not enough water

4.4 Focus Group Discussion

In the focus group discussions it emerges that there were challenges regarding the provision of water in the three villages. The discussions in Metz and Mahlomelong indicated that the challenges were that the communities did not get water as often as necessary because of a lack of dams and broken machines. They also mentioned that there were private yard connections which were not providing water due to small pipes

that were used during the connections and thus water could not go up the stand pipes. They went furthermore to indicate that the water was polluted by livestock because their sources of water were unprotected. In addition, they indicated that members of the community with connections were not allowed to use as much water as they wanted because there was not enough water. However, some members of the community did not have money to install private connections.

In Worcester, the situation seemed to be worse than in Mahlomelong and in the sense that Worcester is a dry place compared to the other two and people were still accessing water from the river. According to the group discussions there was too little water in the area because the pressure to pump the water up to the public stand pipes in the village was too low. However, the little water available from the river was polluted by livestock beside it being salty. When asked about the solutions, the focus group discussions from Metz and Mahlomelong suggested that the local councillors and the Department of Water Affairs and Forestry should repair and increase borehole pumps. They further suggested that a bigger storage dam should be constructed on top of the mountain so that the community could have more water for both domestic and productive uses. Another solution was that there should be a constant water supply. In Worcester the group indicated that the municipality must drill boreholes and replace small pipes that were taking water to the public stand pipes with big ones for an adequate supply of water to the public stand pipes. The group further emphasised that the community should protect the wells in the village from being polluted by livestock.

4.5 Logistic regression results

Results from logistic regression are presented in Table 4.7 below.

$$\text{IMPWACC} = \beta_0 + \beta_1\text{HMMINC} + \beta_2\text{HHS} + \beta_3\text{COWN} + \beta_4\text{WSOURCE} + \beta_5\text{QWCONS} + \beta_6\text{BYGARD} + \beta_7\text{PLBYG} + \beta_8\text{FTYR} + \beta_9\text{WUSE} + \beta_{10}\text{WRDIS} + \mu$$

Table 4.7 Logistic regression results

Variable	Coefficients	S.E	Wald statistics	Df	Sig
WSOURCE	-3.106*	1.997	2.49	1	0.120
WUSE	-40.863	12320.083	0	1	0.997
HMMINC	-0.002*	0.002	2.704	1	0.100
HHS	2.825**	1.329	4.521	1	0.033
QWCONS	0.442*	0.23	3.681	1	0.055
COWN	-4.107*	2.4	2.904	1	0.088
BYGARD	-9.317	96229.359	0	1	0.998
PLBYG	-11.327	96229.36	0	1	0.999
FDTYR	6.849**	3.409	4.037	1	0.045
WRDIS	-35.502	16922.764	0	1	0.998
2 log likelihood		13.989			
Pseudo R square		63%			
%correctly predicted		90			
Chi-square		39.852			

**,* represent significance at 5% and 10% respectively

The results from Table 4.7 indicate that cases correctly predicted 90%, which implies that 10% are insignificant but included or variables which are significant but excluded from the analysis. This might be due to the fact that some respondents give incomplete or biased information. The table also indicates that Pseudo R² is 63% which higher, and thus the implication is therefore that the model fits and predicts better the outcome that improved water access has a positive impact on human development.

The principal assumption on which the loglikelihood ratio is based is that improved water access has a positive impact on human development. The loglikelihood ratio accepts the null hypothesis, which revealed that improved water access has a positive impact on human development.

The results in Table 4.7 also indicate that out of the 10 variables that were included in the model only 6 were significant. These variables were, water source (WSOURCE), the size of the household (HHS), household members' monthly income (HMMINC), quantity of water consumed by an individual per household per day (QWCONS), cattle ownership (COWN), and food availability throughout the year (FDTYR).

4.5.1 Water source

This variable was negative and significant at a 10% level. There is a negative relationship between using other people's private yard taps as water source and the probability of the households having improved water access. The implication is therefore, that households that use other people's private yard taps as a water source are not likely to have improved water access. This is because other people's private yard taps could be more than 1 kilometre away from the household's dwelling.

4.5.2 Household size

The variable household size was positive and significant at a 5% level. There is a positive association between the size of the household and the probability of a household having improved water access. This implies that larger households are likely to have improved

water access. This is also revealed by the descriptive analysis where on average, households with improved water access were larger compared to those households with unimproved water access.

4.5.3 Household members' monthly income

The variable household members' monthly income was negative and significant at a 10% level. There is a negative association between the household members' monthly income and the probability that a household had an improved water access. The implication is, therefore, that households with bigger monthly income are not likely to have improved water access. There is no obvious interpretation for this finding, because the descriptive analysis indicated that the households with improved water access were the ones with bigger monthly income on average. The possible reason could be that the households with improved water access are not concerned about their water access.

4.5.4 Quantity of water consumed by an individual per household

The variable was positive and significant at a 10% level. There is a positive association between the quantity of water an individual consumes per household and the probability of a household having improved water access. This implies that members of the households that consume more water are likely to have improved water access. This is also proven from the descriptive analysis where households with improved water access were found to be consuming more water compared to households with unimproved water access.

4.5.5 Cattle ownership by households

The variable was negative and significant at a 10% level. There is a negative association between households that own cattle and the probability of households having improved water access. The implication is, therefore, that households that own cattle are not likely to have improved water access. This could be due to the fact that the source of water for cattle is often not from the domestic system, but cattle are left to look for water in the river or dams in the villages.

4.5.6 Food availability throughout the year

The variable was positive and significant at a 5% level. There is a positive relationship between food availability throughout the year in the household and the probability of the household having improved water access. This implies that households that have food throughout the year are likely to have improved water access. This is also proven from the descriptive statistics where most of the households with improved water access were found to be having food availability throughout the year and none was found from the households with unimproved water access.

4.6 Method of agreement

4.6.1 Key informants

There are many challenges that were presented by the key informants which all pointed to the fact that the communities in the three villages were only getting water for domestic purposes only even though there were exceptions in other villages during certain hours. Irrigation schemes were not operating because of the shortage of water with the exception

of Metz irrigation scheme, where revitalization was taking place. These challenges were all because of poor water infrastructure and reticulations that were constructed a long time ago. Water-related diseases were reported from places where there were serious water challenges but they were not much of a threat since no death cases were reported from the clinics as well as from the hospital.

4.6.2 Focus group discussions

Many problems were outlined in each village and all of them could be ascribed to poor infrastructures and the unavailability of funds for the community to have their own connections. This prevented people from using the maximum water for both domestic and productive uses.

CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This Chapter reviews the main findings of the study and discusses the conclusions to be derived from the empirical results. The chapter specifically discusses the extent to which the hypotheses posed at the beginning of the study have been addressed by the analysis. The chapter also makes practical recommendations on the best way to improve water access.

The chapter is presented into four sections. Section 5.1 is the introduction; Section 5.2 presents the summary of the study, Section 5.3 the conclusions while Section 5.4 gives recommendations.

5.2 Summary

The main aim of the study was to analyse the impact of improved water access on human development. The first objective was to identify factors that enhance or restrain people's capabilities to improve water access. The second objective was to identify types of water source used by the households. The third objective was to look at the impact of accessibility of improved water access on food security.

The analytical techniques which include descriptive statistics, logistic regression and method of agreement were used to analyse the impact of improved water access for both domestic and productive uses on human development.

5.3 Conclusion

Hypothesis 1: There are no factors that restrict or enhance people's capabilities to improved water access. The findings do not support this hypothesis. The study revealed that there are different factors that can enhance or restrict households' capabilities to improved water access. These include, household size, the household members' monthly income, ownership of cattle and quantity of water consumed by an individual per day in a household. The quantity of water consumed per individual per day in a household and household size showed a positive relationship with improved water access. Other factors such as household members' monthly income and cattle ownership showed a negative relationship with improved water access.

Hypothesis 2: There are no different water sources. The findings support this hypothesis. The results revealed that other people's private yard tap is the water source used by the households which showed a negative relationship with improved water access. Most of the households with unimproved water access get their water from other people's private yard taps.

Hypothesis 3: The accessibility of water has no impact on food security. The findings reject this hypothesis. The results revealed that availability of food throughout the year has a positive relationship with improved access to water. Households with unimproved water access do not have food throughout the year.

In general findings revealed that other people's private yard taps is the water used by most of the households with unimproved water access, which showed a negative relationship with improved water access. Households with improved water access showed a positive relationship with food availability throughout the year. It also revealed that the size of the households and water consumed per member per day has a positive association with improved water access and hence enhance people's capabilities of improving water access. Household members' monthly income and owning cattle have a negative relationship with improved water access. This is also seen from focus group statements in which people pointed out that one of the challenges faced by households was that they did not have enough money to make their own connections. The key informant's statements revealed the findings that water was only available for domestic and not productive uses.

5.4 Recommendations

The recommendations arise on the basis of the findings of the study and observations made during the study.

In Metz and Worcester water is supplied from the boreholes into the reservoirs through pipes to public and private stand pipes. These pipes are too small and cannot transfer water up the stand pipes and there are also too few borehole pumps and reservoirs to store more water. In Mahlomelong water is supplied from a reservoir on top of a mountain. The reservoir is small, and therefore, stores little water. The recommendation is, therefore that the Mopani district municipality together with the Department of Water Affairs and

forestry should construct bigger reservoirs for Mahlomelong. They should also increase the number of pumps and reservoirs and advise households on the type of pipes to buy when they want to make private connections so that households can get more water for both domestic and productive uses.

In Worcester previously the municipality was delivering water using trucks. This practice had to be stopped because the trucks were not taken good care of by community members. This study recommends that the municipality revisits the decision and resumes the practice as it helped increase water access in Worcester.

Water storage at household level is likely to remain important, and most vulnerable households can be assisted to increase their water storage through rain water harvesting tanks. It is therefore, recommended that DWAF and the municipality help to construct cement rain water harvesting tanks for the vulnerable groups so that they will be able to have enough water for all domestic and productive uses.

Water recycling is also one option that the communities can use to irrigate their gardens. It is recommended that the community instead of throwing away water after bathing and washing, they should use it to irrigate their backyard gardens.

Key informants have indicated that there is an intended water project to supply water to the community. It is recommended that the municipality speed up the process with preference to areas such as Worcester which are dry and do not have sufficient water.

Water is central to the realisation of human potential, without water households would never realize their potential. They would never be able to expand their options in order to secure their food and income. In conclusion, improved water access for both domestic and productive uses has a positive impact on human development.

REFERENCES

- ABRAMS, L. 2001. Water for basic needs. World Water Report, World Health Organization.
- ANDERSON, K., BOTHA, J.J., FRASER, G. and N. MONDE. 2006. Making home Gardening a viable livelihood option in rural areas of South Africa: the case of Guquka and Khayaletu in Central Eastern Cape. South Africa, Paper presented at the 4th International conference on environmental management for sustainable universities, Stevenø points, USA, 26-30 June. Available from <http://www.hrsc/research-publications-19665.phtm>
- BEAULIEU, L.J. and K.A. CARTER. 1992. Conducting a community need assessment: Primary data collection techniques. USA: Florida Extension Service.
- BINGHAM, R. 2007. Multiple uses service: Meeting the Productive and Domestic water needs for the rural poor. MALD/MS.
- BONTI ANKOMA, S. 2001. Addressing Food Security in South Africa. Pretoria: National Institute for Economic Policy.
- BURGER, D. 2008. Government communications and Information Centre. South Africa Year book 2007/2008.
- BUTTERWORTH, J. and P. MORIARTY. 2003. The productive uses of domestic water Supply. IRC: International Water and Sanitation.
- CASALE, D. and C. DESMOND. 2007. The economic well-being of the family householdø access to resources in post apartheid South Africa, 1995-200. In: A.Y,

AMAOTENG and T.B HEATON (eds), Families and households in post apartheid South Africa, Human Science Research Council Publishers.]

CHILDREN INSTITUTE, 2009. Access to adequate water, University of Cape Town: Cape Town.

COLLINS, J. 2001. Enviro Facts: Precious Water.

Available from: <http://www.botany.uwc.ac.za/Envirofacts/gacts/water.htm>

DEBUS, M. and NOVELLI, P, 1986. Handbook for excellence in focus group. Research for educational development. Pretoria: Department of health

DEMARICATION BOARD OF SOUTH AFRICA, 2003. Municipal Profiles.

Available from: <http://www.demarcation.org.za/municprofiles2003/about/htm>

DEMARICATION BOARD OF SOUTH AFRICA, 2008. Municipal Profiles.

Available from: <http://www.demarcation.org.za/municprofiles2008/about/htm>

DEPARTMENT OF WATER AFFAIRS AND FORESTRY, 2002. Sanitation for healthy nation, Sanitation option technology, Pretoria: DWAF.

DEPARTMENT OF WATER AFFAIRS AND FORESTRY, 2003. Water Sector Policy Database. Department of Water and Environmental Affairs Intranet.

DEPARTMENT OF WATER AFFAIRS AND FORESTRY, 2007. Water for all, Pretoria: DWAF

Available from: <http://www.dwaf.gov.za>

DLAMINI, V.G. 2007. Local Government implementation of policies for integrated water service provision. The practice of Bushbuckridge local municipality, MUS project.

Available from: <http://musproject.net/page/1950>

DPRU POLICY, 2001. Human Development indicators in SADC. Policy Brief no 01/p13.

DUGARD, J, and K. TISSINGTON, 2008. Submission to parliament on free basic Water, Centre for Applied Legal Studies, Johannesburg: University of Witwatersrand

DUZI-UMNGENI CONSERVATION TRUST, 2008. Water borne disease including Bilharzia, Pietermaritzburg:

Available from: www.duct.org.za

FOOD and AGRICULTURAL ORGANISATION, 2003. Special programme for food security (SPSF): Handbook on monitoring and evaluation, Rome, FAO (SPFS Handbook Series/DOC/30).

GENDER DEVELOPMENT GROUP, 2002. Water Sanitation and Gender Equality.

Available from: <http://www.worldbank.org/gender>

HALL K., LEAT, A. and T. MONSON. 2006. Accommodating the poor: Free basic water policy and housing subsidy. South African Children Institute.

HUMAN DEVELOPMENT REPORT, 1997. Poverty from a human development perspective. Published for United Nations Development Programme, New York: Oxford University Press.

HUMAN DEVELOPMENT REPORT, 2000. Human rights and human development. Published for United Nations Development Programme, New York: Oxford University Press.

Available from: <http://www.undp.org/hdr2000>

HUMAN DEVELOPMENT REPORT, 2003. Human rights and poverty reduction: Conceptual framework. Published for United Nations Development Programme, New York: Oxford University Press.

Available from: <http://www.undp.org/hdr2003>

HUMAN DEVELOPMENT REPORT, 2006. Beyond Scarcity: Power, Poverty and Global Water Crisis. Published for United Nations Development Programme, New York: Oxford University Press.

KANYOKA, P. 2008. Water value and multiple uses in the rural area of South Africa: The case of Ga-Sekororo. Unpublished Masters Thesis. University of Pretoria, South Africa.

MARSH, R. 1998. Building on Traditional gardening to improve household food security. FAO: Sustainable Development Department.

MARULENG LOCAL MUNICIPALITY. UNDATED. Free Basic Water Policy

Available from: <http://www.maruleng.co.za>

MARULENG LOCAL MUNICIPALITY, UNDATED. Indigent Policy.

Available from: <http://www.maruleng.co.za>

MATLA, T.H.M. 2008. The contribution of food access strategies to dietary diversity of

farm worker households on Oranje Farm in the Fouriesburg district of South Africa. Unpublished Masters Thesis. University of Pretoria, South Africa.

MATTHEW, M.B. and M.A. HUBERMAN.1994. Qualitative data analysis: An expand source: 2nd Edition. London: Sage Publications

MAY, J. 1998. Poverty and Equality in South Africa. World Bank South Africa.

MBOUP, G. 2008. Millennium Development Goal Indicators: The official united nations site for MDG indicators. UN habitat: Nairobi.

MCKILLIP, J. 1987. Need Analysis: Tool for the human service and Education: Applied Social Research Methods series, Volume 10, Sage Publications, Thousand Oaks, CA.

MEHTA, L. 2006. Water and human development: capabilities, entitlements and power. Pretoria: Institute of Development Studies.

MOKGOPE, K., BUTTERWORTH, J. and S. POLLARD. 2001. Water Resource and Water supply for rural communities in the Sand River Catchment, South Africa. Paper prepared for the 27th WEDC conference. People and systems of water, Sanitation and health, Lusaka, Zambia, 20-24 August 2001.

MORIARTY, P. 2001. Watson and rural livelihoods approaches. Lusaka. Zambia.

MORULA MARKETING. 2008. Available online in <http://marula.co.za/limpopoinfo.htm>

MTHOBELI, K. UNDATED. Basic Service. Palmer Development Group.

Available online from www.pdg.co.za

NEUMAN, W.L. 1997. Social Research Methods: Qualitative and Quantitative Approaches. 3RD Edition. University of Wisconsin, United States of America.

ROBYENS, I. 2005. Sen's capability approach and gender equality, selecting relevant capabilities, *Feminist Economics*, 9:61-92.

SANEWE, A, and R. DUBE. 2008. Water research and food security. Pretoria, Water Research Commission.

SOUTH AFRICA HUMAN DEVELOPMENT REPORT. 2003. The challenge of Sustainable Development in South Africa: Unlocking people's creativity. Published for United Nations Development Programme, South Africa: Oxford University Press.

SOUTH AFRICA ONLINE. 2009. About South Africa:

Available from: <http://www.ifo.gov.za/aboutsa/index.htm>

UNITED NATIONS DEVELOPMENT REPORT. 2003. Ageing and Poverty in South Africa. Country Position Paper.

UPDHAY, B. 2004. Gender roles and multiple uses of water in North Gujarat.

Working paper 70. Gujarat, India: International Water Management Institution.

WIKIPEDIA PROJECTS. 2008. Water Supply and Sanitation in South Africa.

Available from: http://en.wikipedia.org/wiki/water_supply_and_sanitation_in_South_Africa

WORLD HEALTH ORGANISATION, 2003. Guidelines for safe recreational water environment coastal and fresh water, Geneva: World Health Organization.

WORLD HEALTH ORGANISATION, 2009. Meeting the millennium development goal drinking and sanitation target. Geneva: Switzerland.

APPENDICES

APPENDIX 1: QUESTIONNAIRE FOR THE HOUSEHOLDS

The aim of the present study is to analyse the impact of improved access to water for both domestic and productive uses in Letsoalo-Sekororo community in Limpopo Province.

Enumerator: Motoboli Ma-Edward Jemina

Particulars of the respondent

Name of the area	
Date of the interview	
Time of the interview	

SECTION 1: General Social characteristics of the respondent

1. Name of the respondent
2. Contact numbers of the respondent (optional)
3. Number of people in the households (People who have been living with you for the past three months)
4. Highest educational qualifications

Primary	Secondary	Tertiary	None
1.	2.	3.	4.

5. Occupation of the respondent

Temporary employed	Permanent employment	Self employed	ó Unemployed	Pensioner
1.	2.	3.	4.	5.

6. What is the monthly income for the household?

7. Source of income

Wages	Remittances	Social grants
1.	2.	3.

8. Which types of livestock do you keep?

Chickens	Cattle	Goats	Pigs
1.	2.	3.	4.

SECTION 2: Access to water and uses of water

1. Do you have improved access to water?

Yes	No
-----	----

2. What is your source of access of water?

1.Private stand pipe	2.Other people's	3. Private boreholes	4.Rivers and Canals	5.Public stand pipe
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	private taps			
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3. Do you pay for water?

Yes	No
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4. If yes, how much and to whom do you pay?

5. What is the distance from the house to the water source? (km/ minutes)

6. Who collects water from the source?

7. How much water does each member of the household consume per day?

8. What do you use water for?

9. Which use is more water-consuming?

10. Are you able to store water from the water that you collect?

Yes	No
-----	----

11. If yes, where do you store it?

Small containers	Big containers	Jojo Tank
1.	2.	3.

12. If no, give a reason/s

13. Who is responsible for supplying water in your village?

14. What are those responsible for supplying water doing to improve your access to water?

15. Which problems do you encounter when using your water?

16. What do you do with the water after washing and bathing?

SECTION 3: Food security

1. Do you have a home garden?

Yes	No
-----	----

2. Do you plant in your home garden?

Yes	No
-----	----

3. How do you irrigate your home garden?

4. Are you able to produce food throughout the year in your home garden?

Yes	No
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5. If no, where do you get food?

APPENDIX 2: KEY INFORMANT QUESTIONNAIRES

APPENDIX 2.1 QUESTIONNAIRE FOR WATER COMMITTEES

The aim of the present study is to analyse the impact of improved access to water for both domestic and productive uses in Letsoalo-Sekororo community in Limpopo Province

Enumerator's name: Motoboli Ma-Edward Jemina

Particulars of the respondent

Name of the area	
Name of the respondent	
Contact numbers	
Date of the interview	
Time of the interview	

SECTION A

1. Composition of the household water committee/Irrigation water committee

- 1.1 How was the committee formed?
- 1.2 When was it formed? (year)
- 1.3 What was the reason for forming the water committee?
- 1.4 How was the committee members elected?
- 1.5 Who elected them?

1.6 What is your position in the committee?

2. The role and services of the committee

2.1 What is the role of the committee in the village?

2.2 What are the financial resources of the committee? How much money does the committee have? Where does the money come from?

2.3 What are the main expenses of the committee?

2.4 What are the main problems of water in the village?

2.5 How do you with these problems?

2.6 What is the impact of water on development of the village?

SECTION B

Household water committee only

1. Where does the water come from?

2. What is it used for?

3. Do you have villagers who have yard taps

4. Do the villagers consult the water committee before installation?

5. Do you have any control of the water the villagers are getting?

a. When do you allow the villagers to get water (daily, weekends, monthly)?

b. Are the villagers allowed to use as much water as they can?

6. What is the history of water services in your village

i. How were you getting water before the election of the water committee?

- ii. Is the situation the same as before?
- iii. If there are any changes , what has changed (new members, their role)?

7. The evolution of water management institution

- i. How was the water management institution formed?
 - ii. Who reports to whom?
8. What is the relationship between the water committee and the following:
- i. Community
 - ii. DWAF
 - iii. Municipality
 - iv. Department of Agriculture

SECTION C

Irrigation water committee only

1. Where does the water come from
2. What is it used for?
3. When do you irrigate? (In the morning, during the day, afternoon or at night)
how is the irrigation schedule organized?
4. Do you have any control of the irrigation water the villagers are getting?
 - i. If no, who does?
 - ii. If yes, when do you allow the villagers to get water (daily, weekends, monthly?)
5. Are the villagers allowed to use as much water as they can to irrigate?
6. If no, how much water are they allowed to use for irrigation? Community garden/backyard garden

7. How do you control this process?
8. Are there any sanctions if villagers do not comply with the rules? Are these sanctions applied?
9. How often do problems occur?

10. What is the history of water services for irrigation in your village?

- i. When was the irrigation scheme built? By whom?
- ii. Did the villagers participate in its construction?
- iii. How were you getting water for irrigation before the creation of the irrigation scheme?
- iv. Have there been any major changes in the infrastructures of the scheme?
- v. Which changes, when did they take place and why?

RESIS PRORAMME (Revitalization of irrigation schemes)

Is your scheme part of the RESIS programme?

- i. What has been done here under RESIS?
- ii. Was the committee and the community involved in the decision-making in the RESIS programme?
- iii. What are the next steps in the RESIS programme in this area?
- iv. Which support do you expect after the programme is finished? From whom?

v. Apart from RESIS, what would be an improvement of the water situation for irrigation in the village? Who should be responsible for these improvements, and who should be involved?

9. What is the relationship between the water committee and the following:

- i. Department of Agriculture
- ii. DWAF
- iii. Municipality

APPENDIX 2.2: QUESTIONNAIRE FOR TECHNICIANS

The aim of the study was to analyse the impact of improved access to water for both domestic and productive uses in Letsoalo-Sekororo community in Limpopo Province.

Enumerator's name: Motoboli Ma-Edward Jemina

Particulars of the respondent

Name of the area	
Name of the respondent	
Contact numbers	
Date of the interview	
Time of the interview	

1. Employment details

- i. Who is your employer?
- ii. When were you employed?

Duties

- i. Do you live in this village?
- ii. What is your role in the village?
- iii. What are your duties?
- iv. When do you carry out are these duties (weekly, daily, and monthly)?

v. How do you organise your job?

Is your present job the only one that you are doing or are there more?

vi. What are the main problems in your job?

vii. Are these problems occurring regular/rarely

viii. How do you deal with these problems?

Water services

i. What is water used for in the village?

ii. When do people get water?

iii. What are the main problems regarding water in the village?

How do you rate the village in terms of human development?

APPENDIX 2.3 QUESTIONNAIRE FOR WARD COUNCILLORS

The aim of the study was to analyze the impact of improved access to water for both domestic and productive uses in Letsoalo-Sekororo community in Limpopo Province

Enumerator's name: Motoboli Ma-Edward Jemina

Particulars of the respondent

Name of the area	
Name of the respondent	
Contact numbers	
Date of the interview	
Time of the interview	

1. Roles and Duties

- a. What is your role in the village?
- b. What are your duties?

2. Water services

- a. Who is responsible for water allocation in the village?
- b. Who is responsible for water supply in the village?
- c. Where water come from?
- d. What are the sources of water in the village?
- e. When do the villagers get water? Why?

- f. What do the villagers use water for?
 - g. What happens to the villagers during the days that water is not available?
Are there alternative sources of water?
 - h. Are the villagers allowed to use as much water as they can from their source?
 - i. Who is responsible for maintaining water infrastructures in the village?
 - j. Who should report the break down? How long does it take to fix broken machines?
 - k. Are you aware of water supply project in your village? Can you briefly tell me about it
 - l. Are water services integrated with IDP (Integrated Development Plan) processes?
 - m. How are the water services integrated with the IDP process?
1. What is your relationship between you and the following?
 - i. Water committee
 - ii. DWAF
 - iii. Department of Agriculture
 - iv. Community
 2. How do you rate human development in the village?

APPENDIX 2.4 QUESTIONNAIRE FOR THE NURSES (HOSPITAL/ CLINIC)

The aim of the study was to analyse the impact of improved access to water for both domestic and productive uses in Letsoalo-Sekororo community in Limpopo Province.

Enumerator: Motoboli Ma-Edward Jemina

Particulars of the respondent

Name of the area	
Name of the respondent	
Contact numbers	
Date of the interview	
Time of the interview	

SECTION A: Water related diseases

1. Are there cases of water borne diseases that have been reported in the clinic/hospital?
 - i. If yes, how do you treat them?
 - ii. If no, which diseases are commonly reported?
2. What causes the diseases that you mentioned?
3. How often do they occur?
4. Which people are normally affected by such diseases (children, adults)?
5. Any deaths reported due to these diseases?

6. Do you teach the community about hygiene when they come to the clinic or the hospital? How many times does that happen?

SECTION B: Water services

1. Where does the water come from?
2. How can you assess the water situation in the village in terms of infrastructure, water governance and its sources?
3. What are the problems regarding water in the village?
4. Is there water available for irrigation?
5. Who should be responsible for solving these problems?

APPENDIX 2.5 QUESTIONNAIRE FOR THE CHIEFS

The aim of the study was to analyse the impact of improved access to water for both domestic and productive uses in Letsoalo-Sekororo community in Limpopo Province.

Enumerator: Motoboli Ma-Edward Jemina

Particulars of the respondent

Name of the area	
Name of the respondent	
Contact numbers	
Date of the interview	
Time of the interview	

SECTION A: Role and Responsibilities

3. What is your role in the village?
4. When did you become a chief
5. How many villages are you responsible for?
6. How do you manage them?
7. For someone to stay in your village what procedure does one need to follow?

SECTION B: Water Services

1. Where does the village get its water from?

2. Who is responsible for supplying water in the village?
3. How do the households get water ,and what is the procedure to get water?
4. Who is responsible for operating water pumps in the village?
5. What are the uses of water in the village?
6. Is the community allowed to use as much water as they can for all the uses?
If no, what are the reasons?
7. What are the main problems regarding water in the village?
8. Who is responsible for solving those problems and how long does it take?
9. What can be done to improve water supply in the village?
10. Indicate the working relationship with the following : municipality

: DWAF

APPENDIX 3: QUESTIONNAIRE FOR THE FOCUS GROUP DISCUSSIONS

The aim of the study was to analyse the impact of improved access to water for both domestic and productive uses in Letsoalo-Sekororo community in Limpopo.

Facilitator: Motoboli Ma-Edward Jemina

Names of the participant

Name of the area	
Date of the interview	
Time of the interview	

1. Choose the different types of access to water that you know/have
 - 1.1 What do you think of each type of access?
2. What are the main problems regarding access to water in your village?
 - 2.1. What should be done to solve these problems?
 - 2.2. Who should be responsible for solving these problems?
3. What is the difference between different storage equipment?
4. Why are people not moving from where there is no water to where water is available?