

**POOR WATER SUPPLY AND SANITATION IN CHAINDA  
SHANTY COMPOUND (2004-2014), LUSAKA, ZAMBIA.**

**BY**

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(IWRM)**

**The university of Zambia**

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## **Declaration**

I, Cecilia S.M Mukanda, declare that this thesis:

- (a) Represents my own work
- (b) Has not previously been submitted for a post graduate diploma at this or any other university; and
- (c) Does not incorporate any published work or material from another dissertation

Signed: .....

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## **Approval**

This dissertation by Cecilia S.M Mukanda, is approved as partially fulfilling the requirements for the award of the post graduate Diploma in Integrated Water Resources Management (IWRM) by the University of Zambia.

Supervisor.....

Date.....

Signature.....

## **Abstract**

It is well known that water is a natural resource without which all living things cannot exist.

It is a natural requirement for all living things to have access to water, if they have to be alive.

It is why seventy percent of our planet earth is covered by water, though the world population is facing water scarcity. Such scarcity of water is urging people to use water from unprotected sources which the world urban poor and rural population are highly affected by.

It is a well known fact that ‘water is life’ because it gives life for all. On the contrary, many are dying as a result of unsafe drinking water. The consequences of unsafe drinking water are in general negatively affecting the environmental and socio- economic development of a nation.

Access to basic sanitation still remains a big challenge to the urban poor. The combination of poor accessibility to potable water and basic sanitation is negatively impacting on the economic, environmental, and social condition of a country. Chainda compound of Lusaka is among the many shanty compounds in Zambia experiencing poor accessibility to potable water and basic sanitation. As it is in many compounds, the people of Chainda are affected by the problem of water and sanitation.

## **Dedication**

This research work is dedicated to my husband, Mwape Ndawa, my son, Chota Ndawa, and my mother, Gertrude Mukanda, who gave me the moral support and encouragement and without whose love, patience and prayer, my studies would not have been possible.

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Finally, I am very grateful to all the respondents who, despite being busy, found time to be interviewed. This work would not have been possible without them. I am also grateful to my family and friends for the support and confidence they had in me which propelled the completion of this effort.

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## LIST OF ACRONYMS AND ABBREVIATIONS

CSO	Central Statistical Office
HIV	Human Immunodeficiency Virus
JICA	Japan International Cooperation Agency
JMP	Joint Monitoring Programme
MDGs	Millennium Development Goals
MOH	Ministry Of Health
NGOs	Nongovernmental Organisations
NWASCO	National Water Supply and Sanitation Council
SPSS	Statistical Package for Social Sciences
UN	United Nations
UNDP	United Nations Development Programme
UNICEF	United Nations Children’s Fund
WHO	World Health Organisation
WSP-EPA	Water and Sanitation Programme-East Asia and the Pacific
WSSCC	Water Supply and Sanitation Collaborative Council

## **CHAPTER 1: INTRODUCTION**

### **1.1 Background**

The urban population, particularly in developing countries, is rapidly increasing due to urbanisation and population growths (Aiga and Umenai, 2002). The United Nations (UN) has estimated that by the year 2020, urban population will account for over 56% of the total global population (WHO/UNICEF, 2000). Urbanisation in many cities of developing countries has resulted in a sprung up of densely populated squatter townships. This situation has created numerous problems in relation to public health and social economic conditions (Aiga and Umenai, 2002). One of the major difficulties faced by these urban settlements is access to water supply.

Zambia is one of the most urbanised countries in sub-Saharan Africa with approximately 39% of the population living in urban areas (CSO, 2003). Rural-urban imbalances accelerated after independence as government sought to develop a modern mining and industrial economy. This resulted into rural-urban migration, which led to the concentration of people living along the line of rail. The social infrastructure provided to support this population was inadequate. This led to the proliferation of unplanned settlements around urban centres (peri-urban area), which created many social problems, including inadequate water supply and sanitation services.

This has been the case for Chainda Compound. It started as an illegal settlement and lacks the regular layout of the conventional areas. It is overcrowded and prone to unemployment and high poverty levels. The unplanned nature, coupled with inadequate or non existence of basic services such as water and proper sanitation, tends to make the living conditions in Chainda Compound essentially unhealthy.

Chainda compound is located east of Lusaka. Lusaka is the capital city of Zambia. Chainda compound is classed as one of the unplanned settlements in Lusaka. As such, the compound has many challenges with high levels of HIV transmission, compounded by high poverty and unemployment levels.

Chainda compound was created in 1968, as a result of several people from many Bantu tribes being moved there from nearby land in order that the city airport could be constructed. Approximately 26,000 people live in Chainda compound, although the real figure could even be twice as high. It is not an easy thing to count people in Lusaka because there are so many and those that do the counting tend to be very selective.

Simon Mwansa Kapwepwe Road separates Chainda compound from New Avondale, and from that road is a cramped market. Several different things are sold in this market such as food items, hardware, and clothes. It is a very busy market. The market takes you into the heart of the compound. There is another road that leads around to the back of the compound and the hub of the compound is enclosed within these routes. However, there is increasing overspill as space runs out and new land is sought. The houses are made from shacks made from tarpaulins on timber frames, to larger breeze block properties, interspersed with stalls and shops selling little bags of mealie meal and lollipops, toilets and bars and are connected with dirt tracks, which are dry and dusty in the dry season. Some bars are more respectable, whilst others are simply local maize brew drinking dens with a few benches and a pile of crates.

There are two official types of compounds, government compounds and non-government compounds. Government compounds have a police presence, and infrastructure such as schools and clinics, and this is the case for Chainda compound. Non-government compounds lack the presence of the police and infrastructure such as schools and clinics. Although shanty compounds differ in amenities, one thing they have in common is extreme poverty and high unemployment levels.

## **1.2 Problem statement**

Like many other shanty compounds that were set up a long time ago in Zambia, the provision of water and sanitation services still remains a challenge in Chainda Shanty Compound of Lusaka. The majority of the population is poor and live without adequate services. They do not have access to adequate water supply and consequently their health is compromised leading to a reduced ability for productive work.

### **1.3 Aim**

This study aimed at Coming up with new innovative strategies and approaches in planning, implementation and management to improve water and sanitation services in order for them to become effective and sustainable.

### **1.4 Objective of the study**

The main objective of the study is to assess the effects of poor water supply and sanitation in Chainda Shanty Compound in Lusaka, Zambia with the following specific objectives:

1. To determine the effects of poor water supply and sanitation services in Chainda compound.
2. To determine the reasons for poor water supply and sanitation.
3. To compare the extent to which the findings relate to the national situation.

### **1.5 Research questions**

The following were the research questions:

1. What are the effects of poor water supply and sanitation?
2. What are the reasons for poor water supply and sanitation?
3. How can the situation in Chainda Compound be compared to the national situation?

## CHAPTER 2: LITERATURE REVIEW

Zambia covers a land area of 752,614km<sup>2</sup>. It has a population over 14 million. Zambia lies between latitudes 10° and 18° south and 28° and 33° east with an average altitude of 1,000-1,400m above sea level. The country is entirely enclosed by land whose neighbours are Angola, Democratic Republic of Congo, Malawi, Botswana, Tanzania, Mozambique, Namibia and Zimbabwe. As a result of its strong economic and social ties with countries in the Southern African Sub-continent, Zambia, as can be seen in Figure 1, is generally considered to be a Southern African country, (UNDP, 2001).



Figure 1: Geopolitical map of Zambia in Africa.

Source: Google map

According to the World Bank (1984), in 1963, 20% of Zambia's population lived in urban areas. The attainment of independence in 1964 has seen rapid and large scale urbanization in Zambia.

The proportion of the population that lived in urban areas almost doubled during the period 1965-80 from 23%-43%. This made Zambia the second most urbanized country in Sub-Saharan Africa. The World Bank is of the view that in 1980, 78% of all the urban dwellers were mainly concentrated in ten large towns and cities along the Copperbelt. UNICEF (1986) states that the Copperbelt and Lusaka Provinces are the two most urbanized provinces within the country.

Zambia is a third world country whose quarter of the population live in the urban shanty compounds. In relation to this, JICA (2003) affirms that the population of Lusaka is concentrated mainly in the shanty compounds where approximately 1 million people with low income live. There are quite a number of reasons that have led to urban population growth in the shanty compounds but the two major reasons are rural-urban migration in search of employment opportunities and the high fertility rates within these areas.

The rapid urbanization has been accompanied by growth of shanty compounds which make up most of the population in major towns such as Lusaka. Zambia is a third world country whose quarter of the population live in the urban shanty compounds. In relation to this, JICA (2003) affirms that the population of Lusaka is concentrated mainly in the shanty compounds where approximately 1 million people with low income live. There are quite a number of reasons that have led to urban population growth in the shanty compounds but the two major reasons are rural-urban migration in search of employment opportunities and the high fertility rates within these areas. This has resulted into high morbidity and mortality from among others, diarrhoeal diseases and parasitic infections, which have been very critical in the low income groups in the shanty compounds.

The provision of formal employment has been hindered as a result of the rapid population growth. Since the 1970s, there has been a decline in employment in the formal sector. The consequent result of this has led to the growth of the informal sector, which has been an important source of employment within the urban areas, in particular, for the poor in the shanty compounds. A labour Force Survey of 1986 has indicated that 64.5% of the economically active labour force was engaged in informal sector activities, which included petty trading and marketing of charcoal, fuel wood, beer, second-hand clothes and other commodities.

Chainda shanty compound has a population of 26,000 people and 25% of the adult residents are not employed. Access to water and sanitation are grossly inadequate. The majority of the people live in mud block homes with thatched or zinc sheet roofs.

Most of the houses in Chainda compound are built out of mud bricks for making walls, cardboard, tins and plastic materials and even grass for roofing. The unconventional building materials make the shanty compound vulnerable to outbreaks of fire and collapsing in the event of floods. The biggest problem for low income groups of the shanty compounds is vulnerability to ill health, more especially because of lack of access to clean water and safe sanitation facilities. The quality of environmental conditions in the unauthorised shanty compound has degenerated progressively with increased population. The situation is made worse by lack of garbage collection services and transport infrastructure and services. Lack of access to clean water and sewage facilities has subjected residents of the shanty compound to the use of untreated water from shallow wells, and pit latrines. In some instances, open bush is used for disposal of human waste which pollute the environment, thus, making shanty compounds very uncomfortable places to live.

Today, about 4.6million out of the 13.5 million inhabitants of Zambia do not have access to safe water due to lack of adequate sanitation facilities. Out of these 4.6 million the majority live in the countryside, in shanty compounds and in underdeveloped, expanding suburbs. As a result of the lack of adequate water supply, over 5,000 children under the age of 5 years die every year in Zambia from diarrhoeal diseases (Water Aid, 2013).

The shanty compounds in Zambia have grown rapidly over the past years as the people have moved from the countryside closer to the cities in hope of getting steady incomes and better lives. The poorest suburbs have expanded without any town planning and they therefore lack water and sanitation systems. One of the problems in the peri-urban areas is that the drinking water is taken from wells that are not deep enough and the water is therefore often contaminated. The contaminations are either due to the surrounding industries, insufficient sanitary conditions or uncontrolled dumps or domestic refuse. The water in these areas is often conveyed through collectively utilized piping, and the transport from the pipes to the people's homes is often head

or hand carry. People often lack education and therefore they do not have the knowledge to decide whether the water is safe or safe or not (Henningson, 2003).

The role of the public sector for water supply has diminished and the water distribution is increasingly subject to privatization. This development has rather been debated over the last years and there is a clear division of opinions. Sceptics argue that there are certain goods, water included, that everyone should have access to, regardless of their ability and willingness to pay. They also claim that private enterprises providing basic services, such as water supply, may fail since the necessary investments are so large or the returns are uncertain that the private sector is unable to undertake them. Proponents, on the other hand, argue that under a competitive environment, such as when the market is dominated by private entrepreneurs, resources are used more economically to produce a given output and existing resources are used more optimally to maximise the outputs (Kjellen, 2006).

Lack of access to safe water can cause severe diseases and disabilities (World Health Organisation, 2014). Examples of waterborne diseases that common in Zambia that have a great impact on the Zambian population and society are cholera and diarrhoea. These diseases occur where the water supplies facilities are poor and can in some cases lead to death World Health Organisation, 2014). Most cases of cholera are reported from rural or peri-urban areas of Lusaka and Copperbelt provinces. In Lusaka, cholera and diarrhoea is most common in the western suburbs of the city where the access to safe water and good sanitation is poor. The observed ongoing cholera epidemics in Zambia have corresponded to the progressive decline in the economy. It started in the late 70's, when cholera outbreaks first commenced, and it still persists. Thus, research shows that the lack of access to safe water, in rural and peri-urban areas in particular, hinders the development of these areas. The gap between the "better off" and the "poor" in the country grows and in addition the development in the country becomes more limited since a share of the money has to go to disease-related measures and there is not a fully working and contributing population that can concentrate on developing the country (Skolnik, 2012).

## **2.1 Water constraints to peri-urban areas**

The constraints to water supply in peri-urban areas are categorized under physical and technical, economic and financial, and capacity building and community involvement.

### **2.1.1 Physical and technical constraints**

The urban poor tend to settle on pieces of land that is undesirable and in most cases unplanned. They do it for clear and rational reasons: the less the market value of land and therefore the more affordable it is. Most of these areas are densely populated and haphazardly built up leaving no room for access to roads or service right-of-ways. Laying pipes under such circumstances calls for the creation of streets and the consequent removal and relocation of houses. In these situations, the cost of service delivery is higher, both in financial and social terms resulting in areas lagging behind in services.

The lack of secure land tenure also makes any intervention in these areas problematic and risky. More critical however, is the concern amongst the local authority that if pipes are installed in areas without legal status, the permanence may be seen as providing a stamp of approval or some degree of legitimacy to the residents

### **2.1.2 Economic and financial constraints**

These constraints include the costs of water and sanitation, and low family income; the shortage of capital for investment; while even the lowest-income families can usually afford potable water as it is delivered, the provision of indoor connections or connections close to the house can become unaffordable because of the attendant costs that are not taken into account in project feasibility studies. These include; external delivery cost; land legalization and regularization costs; and the initial connection fee and additional such costs to the family.

A limited finance for extending water supply and sanitation services to informal or unplanned areas is another constraint. Most water providers direct their resources to formal or planned areas where there is higher possibility of recovering the costs. There is a general perception that service delivery to informal or unplanned settlements is a loss-making venture due to the inappropriate payment arrangements, pricing policies and the socio-economic factors such as low

and/or irregular incomes. Attempts to attract independent financiers to fund infrastructure development in urban poor areas have been largely unsuccessful.

### **2.1.3 Capacity building and community involvement constraints**

Inadequate or inappropriate human resource capacity in both the utility and local authorities has contributed to low prioritization and limited knowledge of the issues involved in service delivery to low-income areas. The primary challenge for improving these services lies in the hands of the local and municipal authorities. They cannot solve this on their own but need effective partnerships with the poor, NGOs and the local private sector.

## **2.2 Safe water**

According to the World Health Organization safe water is “Water which does not contain biological or chemical agents directly determined to health”. “Safe water’ includes treated surface waters, and untreated but uncontaminated waters such as from protected springs, bore holes, and sanitary wells,” (World Health Organization, 1996).

The United Nations (2013) is of the view that safe water contributes to a standard of living that is adequate for the good health and well-being. This is a human right and is therefore a fundamental resource that all individuals should have access to and enjoy.

In order for a society to develop key factors such as good health and absence of disease are important. If headed in the right direction, also contributes to the well- being of individuals (Skolnik, 2012).

Good health promotes education and is important for development. It is also true that the good health of parents affects the education of their children since the parents have the ability to work if they are healthy and in turn, the children do not have to provide for the family and can thus prioritize school. The parents are also more likely to afford school tuitions for their children if they have a steady income. Additionally, the good health of a child affects his or her cognitive development and school performance. The good health will enable and prolong the attendance of the child in school and also enhances students’ capacity. It is also the other way around, education promotes good health. (Skolnik, 2012).

Also important to note is that good health impacts personal productivity, not only in the learning process but also at work. This clearly shows that good health is of great importance for the personal income and development of the society (Skolnik, 2012).

Therefore, with better health, people are more likely to get a good education, employment and be able to provide for themselves. A healthy population is most likely going to contribute to society. It is easier to achieve a development in the wanted direction. In addition, countries with a healthy population spend less money to address health problems and can channel the money towards other purposes, (Skolnik, 2012).

The World Health Organisation (2014) states that lack of access to safe water can cause several severe diseases and disabilities. Examples of waterborne diseases common in Zambia that have a great impact on the Zambian population and society are cholera and diarrhoea (National Institute of Standards and Technology, 2011). These diseases occur where the water supplies and sanitation facilities are poor and can in some cases lead to death (World Health Organization, 2014). Most cases of cholera are reported from rural or peri-urban areas. The observed ongoing cholera epidemics in Zambia have corresponded to the progressive decline in the economy. It started in the late 70's, when the cholera outbreaks first commenced, and it still persists. Thus, research show that the lack of access to safe water, in rural and peri-urban areas in particular, hinders the development of these areas (World Health Organization, 2011). The gap between the "better off" and the "poor" in the country grows and in addition the development in the country becomes more limited since a share of the money has to go to disease-related measures and there is not a fully working and contributing population that can concentrate on developing the country (Skolnik, 2012).

According to the Water Aid, 2001, about 4.6 million out of the 13.5 million inhabitants of Zambia do not have access to safe water due to lack of adequate sanitation facilities. Out of these 4.6 million, the majority live in the countryside, in shanty compounds and in underdeveloped, expanding suburbs. As a result of the lack of adequate water supply, over 5 000 children under 5 years die every year in Zambia from diarrhoeal diseases.

In Zambia, the shanty compounds have grown rapidly over the past years. People have moved closer to the cities all in the hope of getting steady incomes and better lives. The compounds

have expanded without any town planning and they therefore lack water- and sanitation systems. One of the main problems in the peri-urban areas is that the drinking water is taken from wells. These wells are not deep enough and the water is often contaminated. The contaminations are either due to surrounding industries, insufficient sanitary conditions or uncontrolled dumps or domestic refuse. The water in these areas is often conveyed through collectively utilized piping, and the transport from the pipes to people's homes is often head- or hand carry. People often lack education and therefore they do not have the knowledge to decide whether the water is safe or not (Henningson, 2003).

The role of the public sector for water supply has diminished and the water distribution is increasingly subject to privatization. This development has been rather debated over the last years and there is a clear division of opinions. Skeptics argue that there are certain goods, water included, that everyone should have access to, regardless of their ability and willingness to pay. They also claim that private enterprises providing basic services, such as water supply, may fail since the necessary investments are so large or the returns are so uncertain that the private sector is unable to undertake them. Proponents, on the other hand, argue that under a competitive environment, such as when the market is dominated by private entrepreneurs, resources are used more economically to produce a given output and existing resources are used more optimally to maximize the outputs (Kjellén, 2006).

### **2.3 Water supply and sanitation worldwide and in Africa**

According to UNESCO (2006), every person needs 20 to 50 litres of potable water a day for their basic needs, which is drinking, cooking and cleaning. Even though every person needs that much water per day, more than one in six does not have access to such amount of potable water. Africa has the lowest total water supply coverage of any region, with only 62 percent of the population having access to improved water supply. The situation is worst in rural areas, where coverage is only 47 percent. According to the Joint Monitoring Programme (2010) by WHO and UNICEF, about 2.6 billion people do not have access to basic sanitation. As a result, 1.5 million people die each year. Many of these people live in south East Asia and sub-Saharan Africa. Sanitation coverage in Africa is poor, only 60 percent of the total populations have sanitation coverage. This coverage varies from 84 percent in urban areas to 45 percent in rural areas (JMP, 2010).

From Table 1, sanitation coverage of Africa is much better than Asia. Although this is the case, it is not yet at the stage to be called sufficient since only 60 percent of the region have access to sanitation. As it can be seen from the table below, one can easily understand that the water supply coverage is the lowest in Africa.

Table 1: Water and sanitation coverage by region (WHO/UNICEF/WSSCC, 2000)

Region	Water supply (%)	Sanitation (%)
Africa	62	60
Asia	81	48
Latin America and Caribbean	85	78
Oceania	88	93
Europe	96	92
North America	100	100

#### **2.4 Water sources and sanitation classifications**

Water for drinking purpose can be found from natural sources like surface water, ground water and rain water. Depending on the impurities that water from all these sources to use for household activities may have, treatment is needed. It is the treatment and degree of cleanness of the water that makes it safe or unsafe to drink. The World Health Organization and UNICEF classified water sources as improved and unimproved based on their purity to drink, as can be seen in Table 2.

Table 2: Definition of improved and unimproved water supply and sanitation facilities (JMP, 2006)

Water supply		Sanitation	
Improved	unimproved	improved	unimproved
Household connection	Unprotected well	Connection to public sewer	Service or bucket latrines
Public standpipe	Unprotected spring	Connection to a system	Public latrines
Boreholes	Vendor-provided water	Pour-flush latrines	Latrines with an open pit
Protected dug well	bottled	Simple latrine	
Protected spring water	Tanker-truck provided	Ventilated improved pit latrine	
Rain water collection			

## 2.5 Approaches to sanitation

Ilesenim (2006) states that sanitation management is a concept as old as humanity, and today it is still crucial to the well-being of human beings. The Israelites gave specific instructions in the Bible over human waste management which was serious enough to be included among other vital issues for existence. The International Bible Society (1973) of New International version clearly states,

*“Designate a place outside the camp where you can go to relive yourself. As part of your equipment have something to dig with, and when you relive yourself, dig a hole and cover up your excrement. For the Lord your God moves about in your camp to protect you and deliver your enemies to you. Your camp must be holy, so that he will not see among you anything indecent and turn away from you.” Deut 23:12-14*

As Ilesenim (2006) explained there is a conventional approach to sanitation which developed as a result of threats to public health. The same writer discusses that the conventional approach has three systems for managing human waste. These are:

1. **Do nothing system:** in this system there is no defined method of waste management and no technologies used. People give due consideration to human health by removing excreta far from the immediate dwelling areas but they do not consider the environmental health issue. An example of this 'do nothing' system is open defecation.
2. **Drop and Store system:** in this kind of system the excreta is collected in a hole out of sight and stored for an indefinite period. A good example is a pit latrine.
3. **flush and discharge system:** in this system water is used to transport human excreta through underground sewers to treatment facilities where the 'pollutants' in the waste water are removed and using a combination of physical, biological and chemical processes before the treated water can be discharged into the environment.

The disadvantages of the first two approaches are environmental degradation through soil and water (underground and surface) pollution and the exposure of human and animals to the pathogenic organisms in human excrement and the consequent spread of diseases. 'do nothing' and 'drop and store' systems are the most common conventional approaches that are used in the developing world.

## CHAPTER 3: METHODOLOGY

Chainda Shanty Compound was selected as the study population on the basis of low income households, representing the low income shanty compounds in the city of Lusaka. The objective of the household survey was to extract data about how Safe drinking water is and basic sanitation in Chainda Shanty Compound. Chainda Shanty Compound has, therefore, been selected on a purposive basis. It was chosen as a sample area to perform the study on purposive because it is one of the many compounds that have been affected by poor water supply and sanitation in the period 2004-2014.

### 3.1 Sample size and sampling design

The study selected a sample size of 30 households using the purposive systematic sampling design.

A sketch map of Chainda Shanty Compound as shown in Figure 2 was used by the researcher. Chainda Shanty Compound is demarcated into sections. The researcher purposively and systematically selected houses for the research. Chainda Shanty Compound has been demarcated into eight sections. The sample was purposively selected because the study was looking for individuals who have sufficient knowledge on the topic of poor water supply and sanitation, and this was systematically done in order to ensure objectivity, validity and reliability of data. There are approximately 150 households in each section. Five households were selected from each section. The researcher started with purposively selecting one section, this was in order to select the households, and this acted as the starting point for the study. Having arrived at the starting point, the researcher then randomly selected five households in each section by picking the fifteenth (15<sup>th</sup>) in every thirty (30). The head of the house was interviewed once a house was picked.

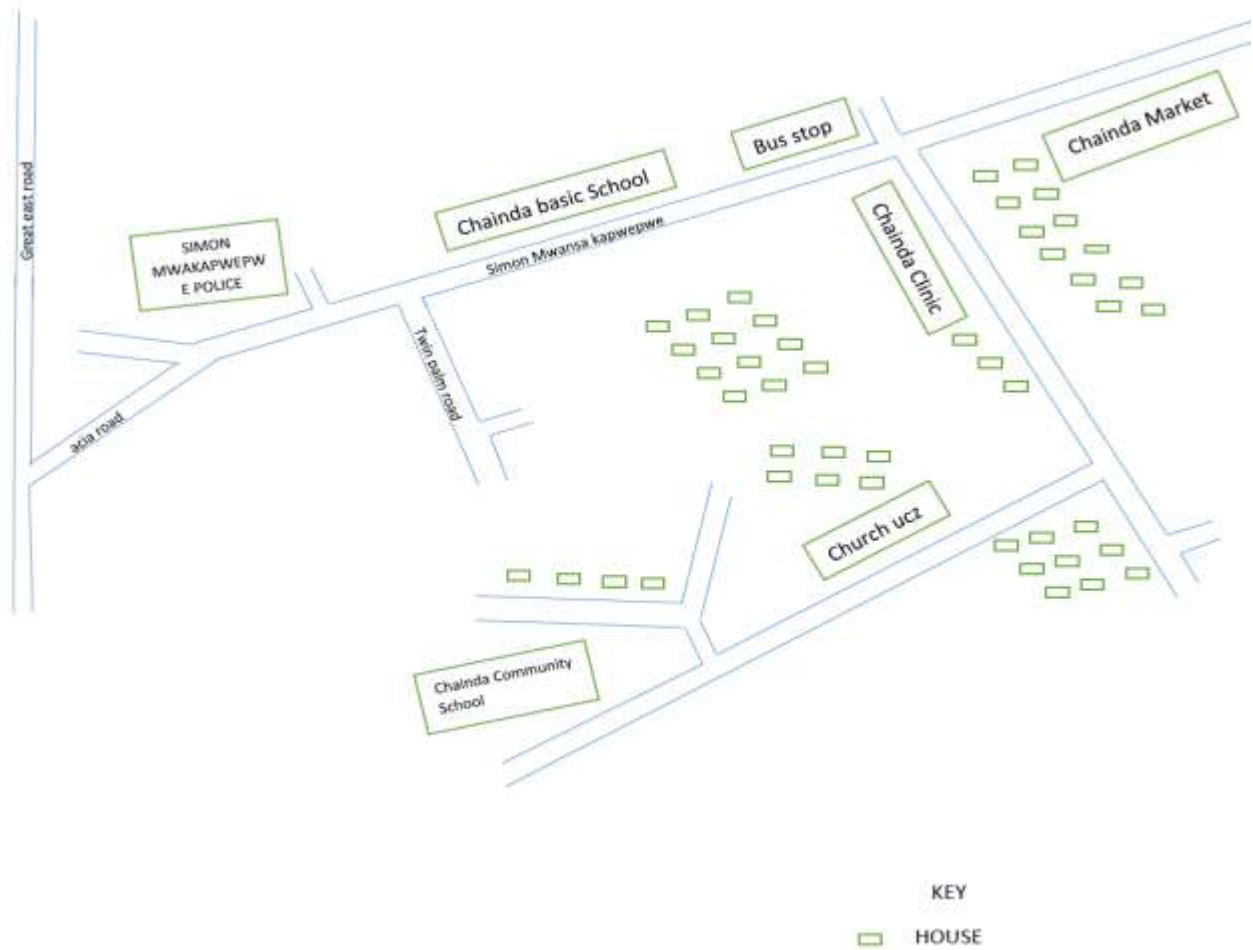


Figure 2: Sketch map of Chainda Shanty Compound in Lusaka, Zambia.

**3.2 Instruments of data collection**

Data was collected quantitatively through the use of structured interviews with 30 heads of households and these were personally administered by the researcher. This was done in order to ensure uniformity in the administration of the instruments and consequently, the validity and reliability of the collected data.

The secondary data was derived from documents and reports from the Ministry of Health (MOH), library, reports and publications on portable water and basic sanitation worldwide, in

Africa and Zambia to see the rank of Zambia, as supporting the means of the collected data by primary sources.

### **3.3 Data Analysis**

The secondary data was analyzed manually by the researcher. Microsoft Excel was used to create figures, while the primary data was analyzed using the Statistical Package for Social Sciences (SPSS version 11.0)

### **3.4 Limitations and challenges of the study**

1. The thesis is based mainly on primary data from a household survey and documentation from the limited stock.
2. The households from where the research was conducted have not yet understood the purpose of scientific study and at times they have been confusing the study with that of district policy measures and expecting something new to happen after the finalization of data collection.
3. This thesis reflects a variety of opinions, values and personal experience. Still, it is not possible to represent all different and contradictory opinions expressed by the people who participated during the research. Also the main findings are limited to the answers and translations received by other people and own interpretation. Therefore, generalization of findings is only possible to a certain extent, and findings have to be understood in the current context of this research.
4. Some of the respondents were not co-operative. They said they had been interviewed previously about their conditions of living and promises were made to them to better their condition, but up until then, nothing had been done to that effect as promised.

5. There was insufficient time in which to conduct the research and this limited the number of people to be interviewed.
6. The irregular house pattern was also a challenge.
7. Resources, especially financial, were a limitation as the study required travelling to the study area and following up the people to be interviewed.

## CHAPTER 4: RESULTS AND DISCUSSION

The results and discussion are based on the information that was collected from various sample respondents. The topics are discussed under broad headings below.

### 4.1 General backgrounds of the respondents to water usage and access to portable water in Chainda Shanty Compound, Lusaka, Zambia.

In the data collection process, the data was collected on a house-to-house basis, only 40 percent male respondents were included because of the availability as most of them had to go work or look for piece work. Most of the women had to stay home and look after the children and do house chores.

Among the backgrounds in Table 3, household size and household income per month are believed to determine the water use and demand in the households. The increase in household size will increase the demand for water. The collected data also show that as the household size increases the demand for more water increases. This can be seen from the research results where a household with 2-5 members uses approximately 120 liters of water per day. On the other hand, households with about 6-10 members use approximately 200 liters of water per day. The variation in the liters of water needed per day shows that the household size determines the liters of water need per day. This means that as the size of households increase, the amount of water needed per day also increases.

Table 3: General background of respondents to water usage and access to portable water in Chainda Shanty Compounds, Lusaka, Zambia.

Respondent background		frequency	percentage
Gender	Male	12	40
	Female	18	60
Age	16-25	9	30
	26-35	12	40
	36-45	7	23.3
	46 and above	2	6.7

Household size	2-5	13	43.3
	6-10	17	56.7
	Above 10		
Income per month	Less than k500	10	33.3
	K500-1000	5	16.7
	K1500-2500	15	50
	K2500-5000		
	K5000 and above		

#### **4.2 Water Sources for Drinking and Other Purposes**

For most of the people of Chainda compound, their source of water for washing, drinking, cooking and other household activities are public taps. Very few individuals have piped water into their dwelling or piped water into the yard, as can be seen in Figures 3 and 4 respectively. During the research, the researcher came across only one household that has a borehole.

In order to have access to water from the public taps, a certain amount is paid, depending on how many liters an individual wishes to purchase. According to the local people of Chainda compound, in the period 2004-2014 water was supplied by Lusaka Water and Sewerage Company and World Vision, but due to inadequate resources, the World Vision ended the programme of supplying water to Chainda compound. Some locals say the World Vision is carrying out supportive programmes in other areas, hence, the need to withdraw from Chainda compound. This resulted in water supply in Chainda compound being even more erratic. When conditions are extremely bad, the local people fetch their water from nearby places such as Avondale and Ibex Hill.



Figure 3: Public tap in Chainda Shanty Compound, Lusaka, Zambia.



Figure 4: Piped water into yard in Chainda Shanty Compound, Lusaka, Zambia.

The rain water is another source of water for drinking and other household activities. Rainwater runoff from roofs can be collected and stored for drinking and other household activities. Unless the rain water is affected during collection, it is believed to be of good quality. Unfortunately, the availability of rain water is limited to only the rainy season and they should have corrugated-iron sheet roofs to collect it. This being the case, availability of rain water is dependent on two conditions, it is only available during the rainy season when the community members would have access to it for a limited period in a year and the second condition is that households should have iron roofs in order to collect the rain water. Figure 5 shows description of water sources for drinking and other purposes.

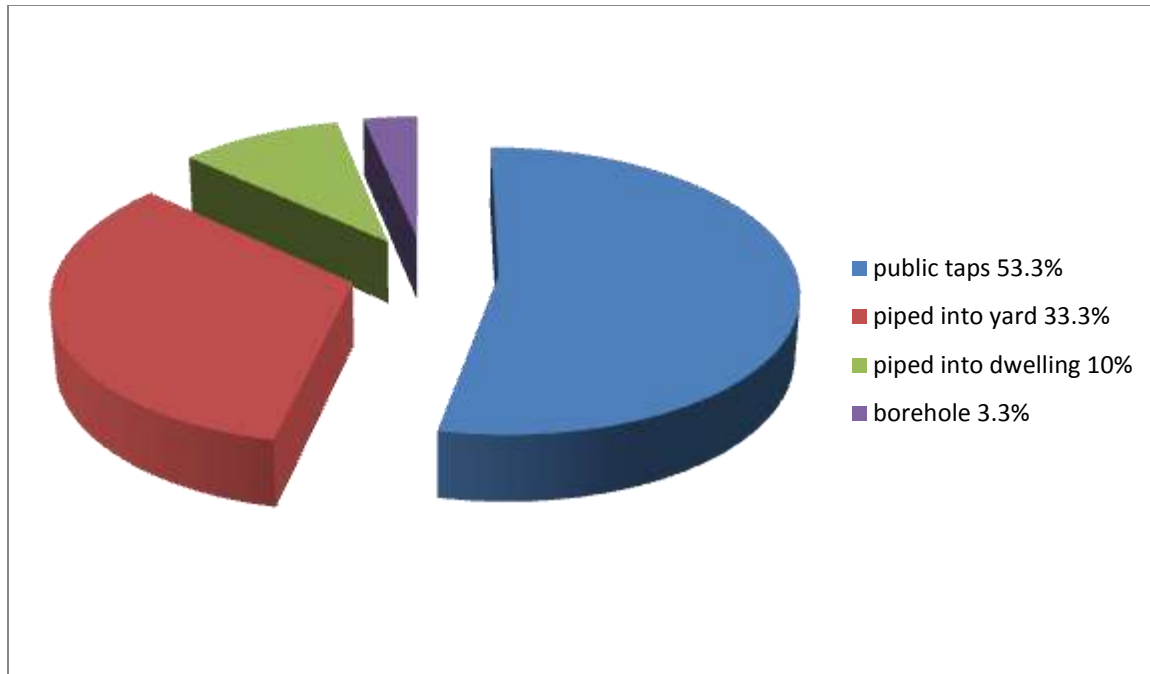


Figure 5: description of water sources for drinking and other purposes in Chainda Shanty Compound, Lusaka, Zambia.

### 4.3 Water quality

Water quality is a term used to describe the chemical, physical, and biological characteristics of water, usually in regard to its suitability for a particular purpose. Although scientific measurements are used to define water quality, but in this study it is difficult to inspect the chemical and biological purity of the water used by the local people of Chainda compound.

As can be seen from figure 3, the quality of the water is questionable, as the tap is surrounded by a lot of dirt and garbage and in the rainy harbors a lot of flies which contribute towards contaminating the water.

The community's perception towards the water quality determines the way they treat the water they get from the various sources. In Figure 6, among the respondents that were interviewed, 26.7 percent thought that the quality of the water is good, simply because it is piped. They do not take into account the linking pipes which may be the points of contamination of the water. 30 percent of the respondents said the quality of the water is bad, as most of them usually get diarrhea when they do not treat their water to drink, but when treated, they do not get the

diarrhea. 20 percent of the local people of Chainda compound said they had no idea as to whether the quality of water they drunk were good or bad. When asked whether at any point in time they suffered from diarrhea, they said they had but that could have been as a result of food poisoning or contaminated food, not necessarily bad quality water. 23.3 percent of the respondents were not sure about the quality of the water.

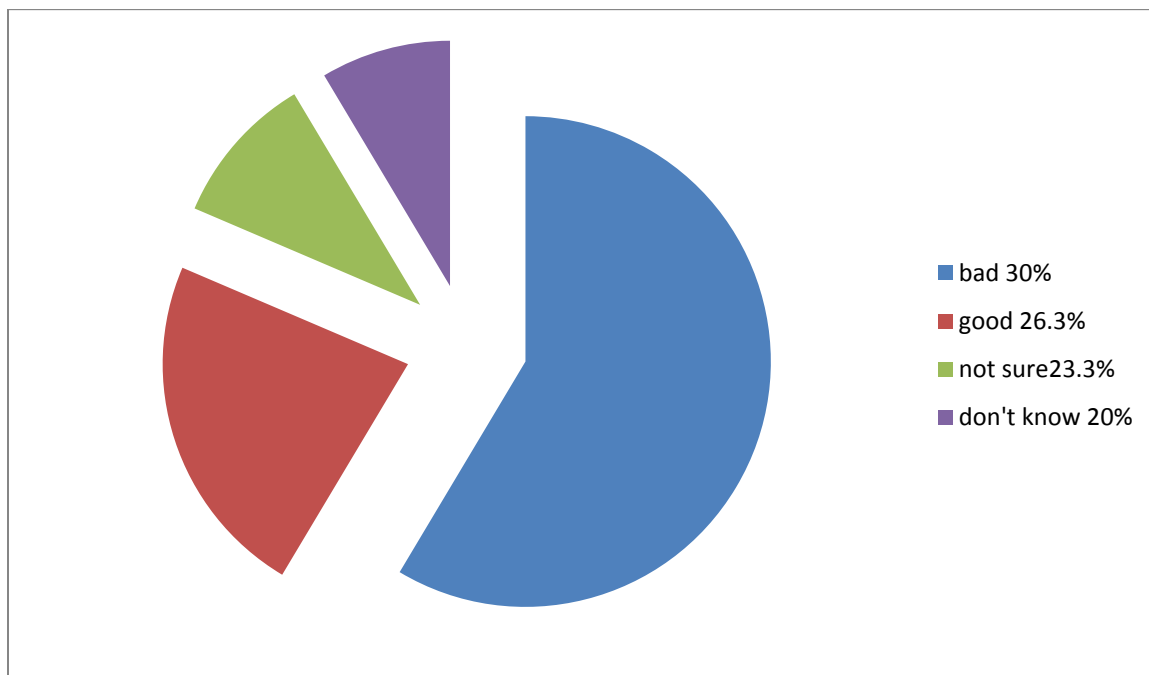


Figure 6: respondents' perception towards water quality in Chainda Shanty Compound, Lusaka, Zambia.

The respondents' response is not based on scientific knowledge rather on the basis of their perception which may include observing the clarity, sediments availability, taste or smell.

#### 4.4 Water treatment

The water quality is perceived as bad by 30 percent of the people in the community and good by 26.7 percent of the people. 23.3 percent of the respondents were not sure about the quality of the water and 20 percent did not know. Of these, the 30 percent that said the quality was bad treated their water to make it safer to drink. Those that were not sure about the quality of the water said sometimes they treat the water and at other times they do not treat it.

The methods of water treatment includes, boiling the water, adding chlorine and letting it stand and settle. Boiling the water takes the highest percentage and the easiest to apply.

It is well understood that the treatment of drinking water at home minimizes the exposure to water borne diseases; but it is neither a guarantee for great health benefits nor a replacement for a sustainable potable water infrastructure.

#### **4.5 Toilet availability in Chainda Shanty Compound, Lusaka, Zambia.**

Sanitation is the hygienic means of promoting health through the prevention of human contact with hazards of waste, as well as the treatment and proper disposal of sewage or wastewater.

Sanitation is also one of the basic human needs. Just as people have the right to water, they should also have access to basic sanitation.

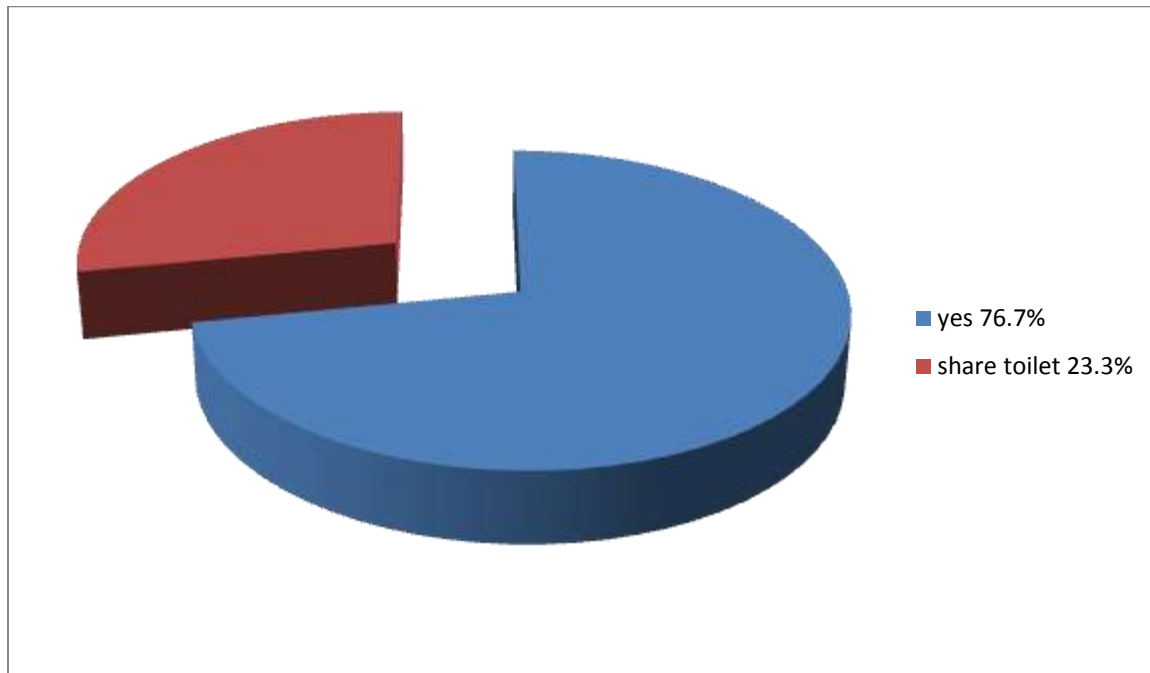


Figure 7: Toilet availability in Chainda Shanty Compound in Lusaka, Zambia.

The data collected from the sample respondents in Figure 7, shows that 76.7 percent of the community has a toilet, even those who have a toilet; the toilets do not have any facilities. They are just simply made of digging a hole in the ground down and building a wall around it and a roof. Some of the toilets are so simple that they are built with wood and plastics. The maximum numbers of households who share a single toilet are two.

As earlier stated, Sanitation is the hygienic means of promoting health through the prevention of human contact with hazards of waste, as well as the treatment and proper disposal of sewage or wastewater. The people of Chainda compound lack basic sanitation. According to the respondents, there is nothing that the council has done about sanitation in Chainda. There have not even been efforts of awareness made to this effect. Some sections of Chainda compound are clean those that have taken it upon themselves to do something about sanitation. On the other hand, other sections are very dirty and practicing very poor disposal methods of compiling garbage along the roads very close to the houses. Other local members have resorted to digging pits in which to dispose off their wastes, as shown in Figures 8 and 9.



Figure 8: dug pit for waste disposal in Chainda Shanty Comound, Lusaka, zambia.



Figure 9: waste compiled along the road in Chainda Shanty Compound, Lusaka Zambia.

#### **4.6 Impacts of poor access to potable water and basic sanitation**

There are many negative impacts associated with the poor accessibility to potable water and basic sanitation on the community daily activities. The negative impacts are not debatable, and the degree of understanding the negative consequences attached to it may vary from person to person. In this study, many agreed with the negative consequences of the poor accessibility to potable water and basic sanitation.

#### **4.6.1 Health impacts**

As the World Health Organization has stated, the poor access to potable water and basic sanitation greatly affects the well-being of the community. The health effects of unsafe drinking water and poor sanitation are not limited to illness alone. In some cases some people have died because of diseases related to water and poor sanitation. The community members are greatly exposed to diseases and those related to unsafe water and poor sanitation are common in the community. Some diseases are also life threatening because of water and sanitation problems. It can be said that the combination of unsafe drinking water and inadequate sanitation leads to a deterioration in the human resources of the country at large.

#### **4.6.2 Economic impacts**

There are some economic impacts which were stated by the community. Some of them are directly related to their health and some others are related to the time spent in collecting water.

##### **4.6.2.1 Reduced productivity due to absenteeism**

When people get sick, they are forced to stay away from work, as they are not strong enough for any activity. This reduces the household income. If the patient is the household head, the income of that particular household is highly negatively affected. Children are greatly exposed to unsafe water and poor sanitation related disease since they spend their time playing in a dirty environment. Thus, parents have to take their children to a health station if they get sick. This means that parents have to be absent from their jobs, which lessens productivity.

##### **4.6.2.2 Increasing medical expense**

Most of the members of the community have very low salaries. With this low income, they are expected to pay for their own treatment and that of their children when they get sick. Thus, high medication costs are one of the economic costs which the community regards as a great burden.

##### **4.6.2.3 Expenses for alternative drinks**

Some members of the community believe that rather than drinking the water that is not safe, they prefer to drink alcohol. As a result, they use their money on other alternative drinks. As they use the limited amount of the household income, the other members of the household suffer from a

lack of food, in most of the cases household heads or males are the ones who control the household income. And it is the household heads that often go to alcohol shops and spend their limited amounts of money.

#### **4.6.2.4 Impact on the household income**

It is well understood that the economy of a country is negatively affected by the poor accessibility to potable water and basic sanitation. The community members have also realized that unsafe drinking water and unimproved sanitation has a negative impact on their household incomes.

As shown in Figure 10, there are people who believe that the poor accessibility of potable water and basic sanitation has an impact on their household income. This group accounts for 83.3 percent of the respondents, while the rest believe poor accessibility to potable water and basic sanitation does not have any impact on their household income. Those who believe it does have an impact identify how the poor accessibility of potable water and lack of basic sanitation affects their livelihood. If they do not get potable water, then they get sick, thus they are not productive at work which will decrease their income. One of the respondents explains the consequences of unsafe drinking water and unimproved sanitation.

“If I get sick as a result of drinking unclean water, my family does not get food to eat, let alone to have all basic necessities because I am the bread winner of my family. Lack of access to potable water and basic sanitation has a huge negative impact on my household income”.

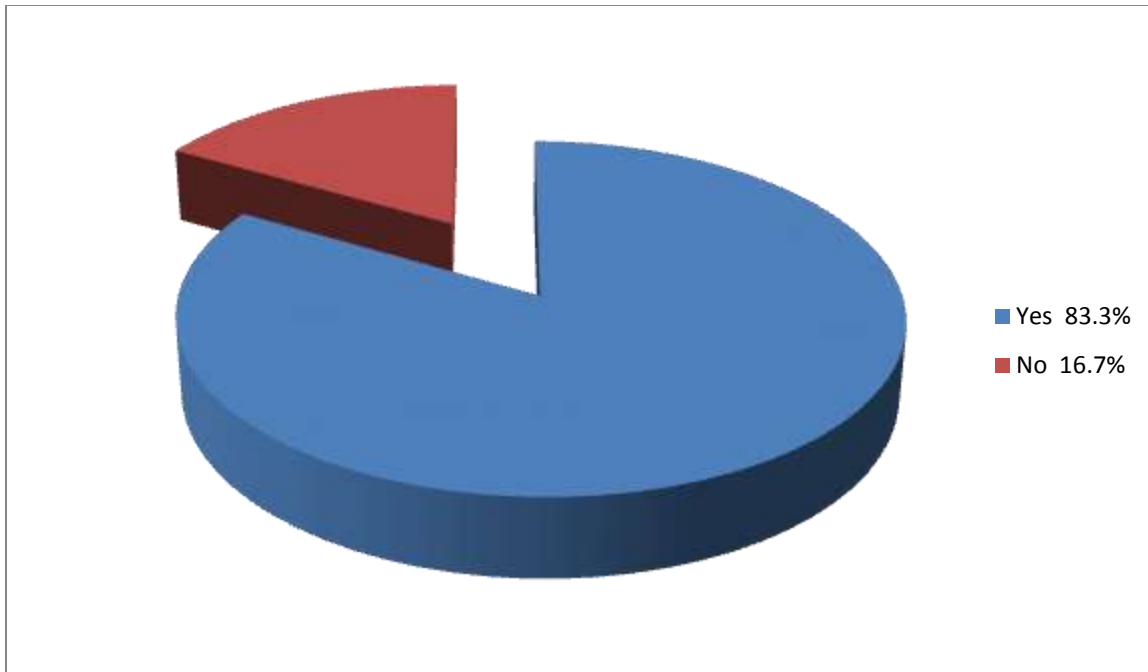


Figure 10: impacts on household income in Chainda Shanty Compound, Lusaka, Zambia.

#### 4.6.3 Environmental impacts

Most of the respondents agreed that the poor accessibility to potable water and basic sanitation have some negative impacts, however, there were very few respondents who argued that poor accessibility of water and sanitation does not have a negative impact on their daily lives. This attitude towards the current water and sanitation status helps them to easily adapt and accept the situation by drinking water from unprotected sources. Others think that though they are facing the problem of water and sanitation, they have already adapted to it and learnt how to live with it. They believe that the poor access to water and sanitation is not considered as a big challenge which the community currently faces. From the findings, there are three groups of people based on their perception towards the impact of poor water accessibility and sanitation, people who know and understand the negative consequence of the poor quality of water, people who know the negative consequences of the poor quality water but adapt themselves to it and are fine with it, and the third group is people who do not understand the negative consequences of the poor quality of water and believe it does not have any negative impacts on their livelihoods

#### **4.7 Factors hindering access to potable water**

The members of Chainda Shanty Compound identified two factors as hindering access to portable water. These factors are administration problem and failure in community participation.

##### **4.7.1 Administration problem**

Some of the respondents interviewed are of the view that there are problems in administration that hinder access to portable and basic sanitation. Some other groups believe that people in the community do not have the capability to do anything concerning water and sanitation than drinking the water they get nearby. These groups of respondents think that the community has striven to their utmost to access potable water and basic sanitation but that the government is not responding to the needs of the community.

##### **4.7.2 Failure in community participation**

Failure in community participation was one of the hindering factors for not having potable water and basic sanitation in the community. The failure to involve the community in development activities has been a very significant factor in not having access to potable water and basic sanitation. The people in the community perceive that they do not have any role in the development of overall infrastructure in Chainda. This makes them wait for what the government can bring to them. As the respondents said the community members are becoming dependent only on what the government provides them with, rather than contributing their efforts in the development of the area.

#### **4.8 Factors hindering access to potable water and basic sanitation in Chainda Shanty Compound, Lusaka, Zambia.**

When respondents were asked if they know why they do not have access to potable water and basic sanitation, they forwarded the following reasons. Some of the factors given do not have any scientific grounds which may not be sound reasons in professionals' point of view.

##### **4.8.1 Factors prohibiting building a toilet in Chainda Shanty Compound, Lusaka, Zambia.**

Some of the community members believe that having a toilet is a good thing which inspires them as they are modernized. Having a toilet makes them feel safe and provides privacy during

defecation. There are still some factors which prevent them from having their own latrines. These factors are discussed below which is given by the respondents.

As Figure 11 shows, 43.3 percent of the respondents are not able to build their own toilet because it is too expensive. Another 30 percent have another toilet available. These toilets may belong to their neighbors or relatives since they do not have their own. Other groups of people are those who do not have a proper place to build a toilet.

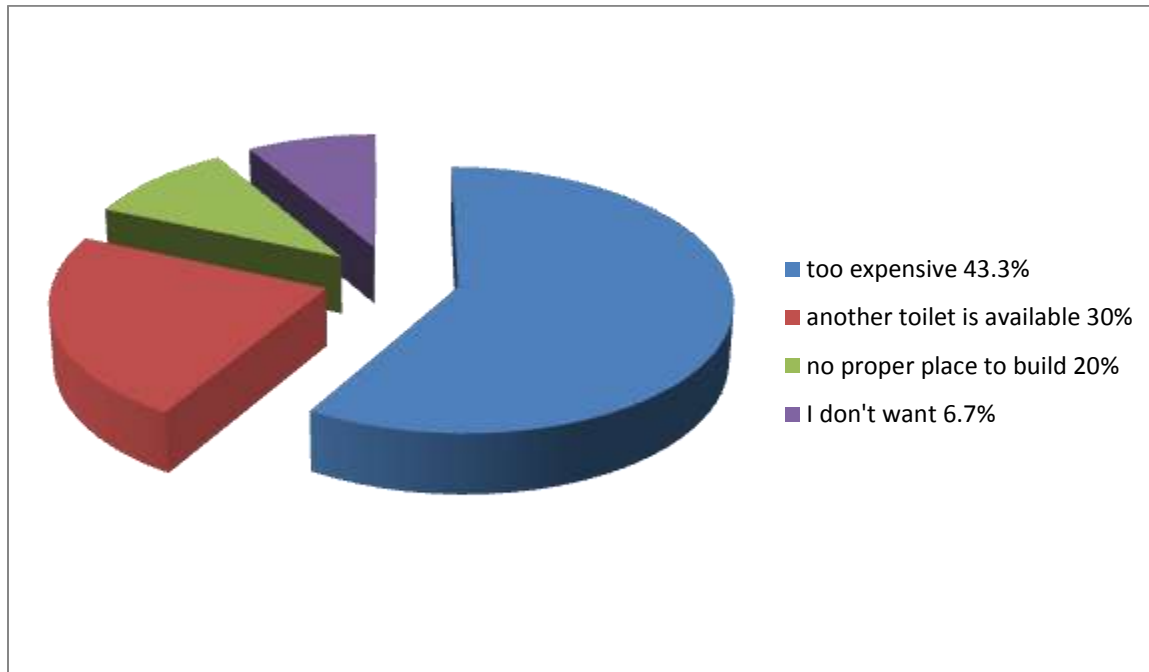


Figure 11: reasons for not building a toilet in Chainda Shanty Compound, Lusaka, Zambia.

Other than the above reasons, there are also factors which prevent the community members from building their own toilets such as, lack of facilities, time and ability and factors related to land.

#### **4.8.2 Time and ability**

The toilets in the community that are constructed by the household owners are simply done by digging a hole in the ground and lining it with wood. Some people give the reason for not having a toilet as not having the time and ability to dig a hole for a toilet. This is because:

They have to go out and look for employment and those that already have jobs report for work and so digging of a toilet would be an additional job to do. Additionally, they are not capable, financially, of building the toilet if they have to pay those who do the digging.

### **4.8.3 Lack of facilities**

In the building of a pit latrine, there are some necessary building materials that are required such as cement, steel and other materials are necessary. However, some pit latrines in Chanda compound are not durably constructed.

The materials required for latrine construction are quite expensive in comparison to the community's household income which, at times does not even cover their expenses for food and other basic necessities. As a result, even if the community members build their own latrines, they do not last long. It is because they build a simple pit latrine based on their knowledge with the local available materials which is destroyed when the rains arrive.

### **4.8.4 Factors related to land**

As the researcher observed, people in the community build their pit latrines on their own land. The difficult ground and soil condition which makes it difficult to dig deeply, means that a latrine rapidly becomes full, and a new one has to be dug. Consequently, some people use the lack of suitable land as an excuse for not constructing a toilet of their own.

## **4.9 Benefits of improving access to water and sanitation**

According to Postnote (2002) increasing access to water and sanitation is an input of development and poverty reduction. This is because it has major health benefits, as well as associated social, economic and environmental benefits. Public health will be guaranteed if there is access to potable water and basic sanitation since the highest causes of illness and death in a developing country is related to poor access to potable water and basic sanitation. As a result of this, illness and deaths reduce the productivity of the economy of a nation. Poor sanitation has an adverse effect on the environment which, in turn, may affect the source of the economy, like agriculture and tourism.

As Hutton & Haller, 2004 has stated, one of the major benefits of water and sanitation improvements is the time saving associated with better access. Time savings may occur due to the relocation of a well or borehole to a site closer to user communities, the installation of piped water supply to households, closer access to latrines and shorter waiting times at public latrines.

These time savings translate into either increased production, improved education levels or more leisure time.

Improved water supply reduces diarrhea morbidity by 6 to 25 percent, and improved sanitation reduces morbidity by 32 percent (WHO cited in Omya Healthcare limited, 2009). This clearly shows that the improvement on water supply and sanitation has a direct and concrete impact on health. The occurrence of diarrheal diseases caused by unsafe drinking water and improper sanitation would be reduced if improvements were made in water and sanitation. Since diarrheal diseases are highly associated with unsafe drinking water and poor sanitation, the improvements would, therefore, have a significant outcome.

The improvements in water supply and sanitation also have an impact on poverty and the economy, as it is logical that only healthy people are strong enough to work and fulfill their needs. As Hutton, G., et al, (2007) stated that the improvement to water and sanitation will have economic benefits of three types: direct economic benefits of avoiding diarrheal diseases, indirect economic benefits related to health improvements and non-health benefits related to improvements in water and sanitation. The direct economic benefits of avoiding diarrheal diseases include cost savings due to the reduced incidence of diarrheal disease, full health care costs, and non-health sector direct costs. The indirect economic benefits include productivity effects of improved health and the non-health benefits.

Table 4: primary and economic impacts associated with improved sanitation options (WSP-EPA, 2008)

Improvement	Primary impacts	Economic impacts
Closer latrine access and improved latrine population ratio	<ul style="list-style-type: none"> <li>• Less open defecation</li> <li>• Less latrine access time</li> <li>• Intangible user benefits</li> <li>• Improved health status due to less exposure to pathogens</li> <li>• Less use of public latrines</li> </ul>	<ul style="list-style-type: none"> <li>• Saved health care costs</li> <li>• Improved visual effects and smells</li> <li>• Increases school participation</li> <li>• Better living standards</li> <li>• Household income rises</li> <li>• Labor productivity</li> <li>• Value of saved lives</li> </ul>

#### 4.10 Water and sanitation versus development

The inclusion of access to potable water and basic sanitation in the MDGs for sustainable development shows that water and sanitation are important development indicators. It is a fact that infrastructure development and socio-economic development are much related. Infrastructure development may include road construction, water and sanitation improvements, and irrigation development. Thus, having access to such services is considered as a precondition for economic development. Accordingly, water and sanitation infrastructures also have impact on the economic, social and human development of a nation.

UNDP (2006) has stated that the water and sanitation crisis has a role of reducing income poverty. National governments are very aware of the expenditure that is needed in order to increase the access to improved water and sanitation, but they may not be curious about the economic costs of the negative consequences of unimproved water and sanitation. The child mortality rate is high due to lack of access to safe drinking water and appropriate sanitation, and this can be reduced if there was an increase in the access to safe drinking water and proper sanitation. Poor water and sanitation has resulted in many people in the world being insecure.

Access to clean water and sanitation is also a means to reducing health related costs, improving girl's education, and also ensuring a sense of human dignity. Generally, access to clean water and improved sanitation can lead to all human development goals' achievement.

#### **4.11 Measures that can be taken**

There are various measures that have been taken over the last years and several more are planned to be taken in the near future in order to improve the water supply services in peri-urban areas. NWASCO and the private investors have funded these measures. In order to secure a good service with sufficient infrastructure and keep up with the population growth in the long run, commercial utilities must have a sustainable way of funding their measures.

Some additional measures to be secured could be:

1. Increased promotion of payments of bills by customers.
2. Enhanced education of locals to emphasize the value of safe water.
3. Increased engagement of government and private investors in financial funding.

It is vital to secure the payment of bills by customers. It is essential to emphasize the importance of education in the work of providing locals with safe water. If the local people are well aware of the impact of different water qualities on the health system, they are more likely to prioritize quality over price and, as a result, choose commercial utility services. Education being important will enhance the chances of people getting employed. With this they get a steady income which enables them to pay for the water.

Increasing the financial engagement of the government in commercial utility services is another way that can be done to secure the payment of bills. This could either be done through subsidizing parts of the expenses to lower the costs of the customers or through a fully governmental financing via taxes. However, due to corruption, it is difficult to secure sustainable funding from the government. Therefore, in order to achieve sustainable governmental financing, there is a need to first fight the corruption, which of course is a major challenge in itself.

If payment of bills is secured and the number of paying customer is increased, private companies are more likely to invest in the utilities since the private companies' chances of making a profit will be enhanced.

According to the National Institute of Standards and Technology (2011), the government of the Republic of Zambia has, together with other countries, stated goals and targets for an improved water supply situation. These are part of the Millennium Development Goals and they aim to halve the proportion of people without sustainable access to safe drinking water and basic sanitation by 2015.

In 2005, the government of Zambia initiated the process of preparing Vision 2030, since it aspires to become a prosperous middle-income country. One of the goals in the Vision 2030 is to have clean and safe water supply and sanitation for all by 2030 (The Government of Zambia, 2006).

The government of Zambia devolved their authority of water supply to increase the efficiency and effectiveness in this service sector before the turn of the millennium. This was done through commercialization. Commercialization is to manage public sector institutions according to private sector principles. In this way, the government maintains the ownership but delegates the right to operate the water utilities to private companies. As a result, a combination of private sector effectiveness and authority surveillance is achieved. NWASCO (2014) states that there are 72 local authorities that have established commercial water utilities to provide water and sanitation services.

The main problems the commercial utilities and local authorities face are:

1. Demand is higher than the production and distribution capacity.
2. Dilapidated and aged infrastructure.
3. Water losses.
4. Urbanization and population growth is faster than infrastructural development.
5. Limited investment capacity both from the government and other investors.
6. Vandalism.
7. Consumer disability to pay for the water.

One of the main challenges that are faced by the commercial water utilities in Zambia today is that the demand is higher than the production and distribution capacity. As a result, people are sometimes left without enough water for drinking, cleaning and cooking. This in turn forces them to use other unsafe water sources. To increase the water production to meet the current and future demand, the commercial water utilities in Zambia are aiming to increase their output at the Kafue, Zambezi and Chongwe River and also, in the future, strategically drill more bore holes. To be able to meet the demand, utilities also need to improve the human resource productivity (Sikalinda, 2014). The problem is however that many commercial utilities cannot afford paying salaries that are competitive with private companies. Even though they manage to recruit competent workers, many of them often leave for better paid work in other companies. Therefore, more and more utilities are introducing performance rewarding systems to motivate the personnel (NWASCO, 2014).

With the transfer of water supply by the government of Zambia in the turn of the millennium, all commercial utilities and local authorities were left with inadequate infrastructure from the former authority. This left the systems deficient and suffers from water losses, i.e. non revenue water (Sikalinda, 2014). It is important to note that the speed of infrastructural development for water supply has not been high enough compared to the speed of population growth. This has resulted in the service delivery to be insufficient. In some areas, there has been complete lack of water supply systems. Due to the inadequate infrastructure and missing water supply systems, individuals and companies have started to drill boreholes indiscriminately which have resulted in depletion of the underground water (NWASCO, 2014).

In order to address the problems of the infrastructure development in relation to the growing population, an increase in government funding for the water sector is needed (NWASCO, 2014). According to Mr Topsy Sikalinda at the Lusaka Water and Sewerage Company Limited, the government rarely prioritizes the water sector when it comes to financial investments and the funding is therefore inadequate (Sikalinda, 2014). However the National Water Supply and Sanitation Council, NWASCO, established a fund in 2003 to assist the commercial water supply and sewerage utilities financially. In this way, the commercial utilities have been able to extend their services to peri-urban areas, (NWASCO, 2014).

To decrease the earlier mentioned water losses, commercial utilities plan to make district and domestic meter installations, improve the network efficiency with leak control, repair networks where it is possible and replace aged distribution networks. To be able to do this they will get financial support from the World Bank (Sikalinda, 2014).

The high rate of vandalism of water stations is also a problem the utilities face. Vandalism is caused by people, who are not able to pay for the water, trying to illegally access the water. This, of course, decreases the efficiency of the water services and brings unnecessary costs that the utilities cannot afford. However, the commercial utilities are cooperating with local authorities in development planning which has made the locals more involved and as a result the rate of vandalism has decreased (Sikalinda, 2014).

Another main challenge that impacts the quality of the service is incomplete payment of water bills by locals. To promote payment of bills by consumers, NWASCO has been engaging various stakeholders and commercial utilities are defining debt management strategies. However, this needs to be a continuous process (NWASCO, 2014).

To summarize, the measures so far taken are:

1. Increased output at key rivers and drilling of more boreholes.
2. Extended services and increased amount of water and sanitation projects (funding from NWASCO).
3. Domestic and district meter installations, leak control, repairing and replacing of already established networks (funding from World Bank).
4. Engagement of stakeholders and development of dept management strategies to promote payment of bills by locals (Done by NWASCO and the commercial utilities).

## **CHAPTER 5: CONCLUSION AND RECOMMENDATIONS**

### **5.1 Conclusion**

In the data collection process, the data was collected on a house-to-house basis. Only 40 percent male respondents were included because most of them had to go to work. Most of the women had to stay home and look after the children and do house chores. As a result, more females were included in the study. The females included in the household survey were either because their husbands were not at home or their husbands were unable to respond because of lack of time. As it is clearly seen from the discussion above, household size and household income were considered as determining factors for water demand and use.

The source of water for washing, drinking, cooking and other household activities are public taps. Very few individuals have piped water in their dwelling or piped water in the yard. During the research, the researcher came across only one household that has a borehole. Rain water is another source of water, although it is limited only to the rainy season.

The responsibility for collecting water from these sources is almost on the shoulders of women, while their frequency of visits to the water sources depends on the amount of water they need per day. The worst case for the responsibility of fetching water is children whose ages are less than 15, when they are supposed to be at school.

Most of them agreed about the poor quality of water but very few of them treated their drinking water, for which lack of awareness, time shortage, and being reluctant are some of the reasons given.

The members of Chainda compound identified community participation, other infrastructure problems and lack of awareness as some points listed under reasons for poor accessibility to potable water and basic sanitation.

### **5.2. Recommendations**

Based on the findings and analysis discussed in chapter three, the following recommendations are given:

1. Water, sanitation and hygiene education programmes should be in place. As it can be seen from the findings and analysis, the community has not received any awareness from the authorities concerning water and sanitation.
2. The education given to the community should focus on attitudinal changes towards water treatment by boiling and adding chlorine for those that can afford it and building their own toilets.
3. There should be a focus on creating awareness concerning consequences of using poor quality water and unimproved sanitation systems. From the discussion, some people in the community do not have positive attitudes towards the treatment of water. Thus, the awareness creating campaign and training would have a significant role in shaping the community's mindset.
4. Community participation should be encouraged. The community, as well as the authorities and various stake holders, should work together to better the situation in Chainda compound. Community mobilization will enhance the community's role in development of their local place.
5. The long term measure is that the local authority should work on creating and expanding the water scheme projects to Chainda compound and encourage NGOs to work in the development sectors.
6. In the short term, people in Chainda compound have to be secure from the negative consequences of the poor access to potable water and basic sanitation. This can be done through awareness-creating campaigns in order to minimize the community's exposure to preventable but easily communicable water borne, water related and poor sanitation related diseases.

### **5.3 Recommended improvement measures from the community**

The community members forwarded recommendations which may serve to prevent negative consequences for the poor accessibility to potable water and basic sanitation.

1. Government and people have to work together to improve the infrastructural development in the area, if development is to be a reality. Since the community members have seen from experience, they think they lag behind other districts in potable water

accessibility because of unavailability of infrastructure. The respondents recommended that the infrastructure can easily pave the way to ease access to potable water supply and basic sanitation.

2. There are some trends of rehabilitating natural environments in the country. This rehabilitation has to include water schemes. Thus, strengthening water scheme rehabilitation can provide a solution to the problem of unsafe drinking water in Chainda compound. On top of that, stakeholders should be strengthened and this includes health institutions, educational institutions, finance and economic development institutions which may facilitate the progress towards ease of access to water supplies and sanitation, and minimize the negative consequences of the current unsafe drinking water and poor sanitation. Though the relationship between these institutions and water supplies and sanitation seems to have less of a direct contribution, it is believed to have a significant role in increasing water accessibility and minimizing the severe consequences of unsafe drinking water and poor sanitation.
3. Despite the number of NGOs that are operating in the country, there seems to be no NGO that is currently carrying out works of any sort in Chainda compound, as was observed by the respondents. Hence, what the community members believe is, if the NGOs are working in development activities which are currently in the country, this may increase their role in alleviating the problems of poor access to potable water and basic sanitation. Thus, the government has to encourage NGOs to increase their roles in terms of money, training and knowledge transfers. On top of that, the community members have to be aware of being part of the development activity and this can be done through awareness creating campaigns and community mobilization.

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Appendix: Questionnaire on the usage and access to portable water in Chainda Shanty Compound, Lusaka, Zambia.

## **Questionnaire**

To the respondent:

The questionnaire on poor water supply and sanitation (2004-2014) has been made as a requirement for obtaining a post graduate diploma in Integrated Water Resources Management (IWRM) at the University of Zambia. The researcher is requesting you the respondent to be as free as possible as you answer the questions. The information given will be treated with high confidentiality and specifically for the intended purpose. The researcher wishes to thank you in the respondent in anticipation for your willingness to answer the questionnaire.

**Date** .....

1. Location.....

### **Personal details**

2. Sex

(2.1) Male [ ]

(2.2) female [ ]

3. Age

(3.1) Between 16-25 [ ]

(3.2) Between 26-35 [ ]

(3.3) Between 36-45 [ ]

(3.4) 46 and above [ ]

4. Religion

(4.1) Christian [ ]

(4.2) Islam [ ]

(4.3) Hinduism [ ]

(4.5)Non of the above [ ]

**5. Employment**

(5.1)Self employment [ ]

(5.2)Formal employment [ ]

(5.3)Unemployed [ ]

**6. Income per month**

(6.1)Less than k500 [ ]

(6.2)Between k500- 1000 [ ]

(6.3)Between k1500- k2500 [ ]

(6.4)Between k2500-5000 [ ]

(6.5)K5000 and above [ ]

**Household details**

7. Household size

(7.1)Alone [ ]

(7.2)2-5 [ ]

(7.3)6-10 [ ]

(7.4)Above 10 [ ]

**Water use and accessibility**

8. What is the main source of drinking water for members of your household?

(8.1)Piped water into dwelling [ ]

(8.2)Piped water into yard [ ]

(8.3)Public tap/stand pipe [ ]

(8.4)Bottled water [ ]

(8.5)Other (specify).....

9. Do you treat your water in any way to make it safe to drink?

(9.1)Yes[ ]

(9.2)No [ ]

10. What is the main source of water used by your household for other purposes such as cooking and hand washing?

(10.2)Piped water into dwelling [ ]

- (10.3)Piped water into yard [ ]
- (10.4)Public tap [ ]
- (10.5)Other (specify).....

11. What do you usually do to the water for treatment purposes?

- (11.1)Boil [ ]
- (11.2)Add bleach/chlorine [ ]
- (11.3)Let it stand and settle [ ]
- (11.4)Other (specify).....

**Sanitation use and accessibility**

12. Do you have a toilet

- (12.1 )Yes [ ]
- (12.2) No [ ]

13. If your answer is yes to question 13, what kind of toilet do members of your household use?

- (13.1)Flush [ ]
- (13.2)Pit latrine [ ]
- (13.3)Bucket [ ]
- (13.4)Other (specify).....

14. Do you share this facility with other households?

- (14.1)Yes [ ]
- (14.2) No [ ]

15. How many households use this toilet facility?.....

16. If your answer to question 13 is no, where do you and your household members defecate?.....

**Impact of poor water supply and sanitation**

17. What would you attribute the impact of poor water supply and sanitation to your household?

- (17.1)Social impacts [ ]
- (17.2)Economic impacts [ ]
- (17.3)Health impacts [ ]
- (17.4)Environmental impacts [ ]

(17.5)Other (specify).....

18. Do you know any current water and sanitation activities in your community?

(18.1)Yes [ ]

(18.2)No [ ]

19. What do you think should be done to improve the sanitation in your community?

.....  
.....  
.....

20. Is there any non-governmental or governmental organisations currently doing works on water supply an sanitation in your community?

(20.1)Yes [ ]

(20.2)No [ ]

21. If the answer to question 20 is yes, what where the results of the activity?.....

.....  
.....

22. What role do you play to increase accessibility of safe drinking water and sanitation services in the community?.....

.....  
.....  
.....