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FACULTY OF SOCIAL SCIENCES

DEPARTMENT OF LOCAL GOVERNANCE STUDIES

**WATER AND SANITATION PROBLEMS IN URBAN LOCAL
AUTHORITIES IN ZIMBABWE .THE CASE STUDY OF EPWORTH
LOCAL BOARD**

BY

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DECLARATION

I, Nyaruwabvu Try, hereby declare that this work is my own original work, that it has not been plagiarized nor submitted for similar degree in any other University.

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DEDICATION

This dissertation is dedicated to my parents, my siblings and the rest of the family, not leaving the Almighty Jehovah who assisted, guided and supported me all the way up to this end.

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Many people deserve a word of gratitude for the assistance they rendered me during my years as a student at Midlands State University and during the compilation of this research study. I will limit myself to mention a few of them.

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ABBREVIATIONS AND ACRONYMS

E F Z	Evangelical Fellowship of Zimbabwe
ELB	Epworth Local Board
ERDA	Epworth Residents development association
DAWASA	Dar es Salaam Water and Sewage Authority
IWRM	Integrated Water Resource Management
JMP	Joint Monitoring Programme
ULA	Urban Local Authorities
MDG	Millennium Development Goals
SDGs	Sustainable Development Goals
WSS	Water and Sanitation Services
ZINWA	Zimbabwe National Water Authority

Abstract

The purpose of this study was to assess water and sanitation problems in urban local authorities in Zimbabwe through giving reference to Epworth local board. The gradual decline in the provision of water and sanitation services amid the majority of local authorities in Zimbabwe has prompted the need to undertake this study. The findings of the research can therefore be useful in finding ways to improve the management and planning process of urban residential areas that respond to the issues of inadequate water supply and sanitation services. The study employed both qualitative and quantitative approach in gathering data. In dealing with the main objective of the study the research used both case study and descriptive research designs. A sample of 75 respondents that comprises of residents, council officials, councilors, NGO's, representative of Epworth Residents development association and development committee members were chosen to participate in this study. Systematic random sampling, purposive, convenient and snowballing sampling techniques were used in selecting participants during data collection. Primary data was collected through administration of questionnaires to the residents, site observations of water and sanitation facilities and then interviews with Key informant from council officials and other stakeholders. The study area was Epworth and this research was only confined to ward 1, 6 &7. The research established that water and sanitation services in Epworth are below optimum level. The study findings revealed that a number of challenges are being faced by the local board in the provision of water and sanitation services. These include low revenue base, population growth, illegal settlements, water source, vandalism, resource constrains and among others. These challenges were proven to be a stumbling block in the efficient provision of water and sanitation services. As a result, this situation negatively affects the lives of residents in Epworth as there are left exposed to water borne diseases, unstable livelihoods and interruption of economic activities. In response to the same a number of coping strategies has been adopted by members of this community to increase quantity of water, improve quality and accommodate shortages. The study concludes that the performance of the local authority in relation to the provision of water and sanitation services is not being up to the required standard. In the last chapter, the study concludes by giving recommendation based on the research findings. The recommendations include engaging the private sector to source resources, investment in more temporary water infrastructure, central government support in terms of capital projects, increased stakeholder participation in the development process and engagement of NGOs in provision of water and sanitation services

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CHAPTER I

INTRODUCTION

1.1 Introduction

Water service delivery is a key and strategic part of any local authority in Zimbabwe. Water provision is a key component of human development therefore its effective management is key to the development of the country. In Zimbabwe however over the past two decades' water service delivery has been on a gradual decline. The majority of local authorities in Zimbabwe have been finding it difficult to provide water to residents. The local authority under study is Epworth Local Board which has not been spared either. Water service delivery in Zimbabwe has been compromised and plagued by political and economic challenges that the country continues to experience. These in turn have had a ripple effect of creating financial challenges, infrastructural collapse and weak governance within the local authorities. The manifestation of these challenges severely compromised Epworth Local Board the ability to achieve some key targets of the just ended Millennium Development Goals (MDG's). Therefore, in this same vein it is likely to be a difficult process to achieve the targets prescribed in Sustainable Development Goals (SDGs) in the area of water service delivery. Therefore, this research seeks to assess the problems facing Epworth Local Board in the provision of water and sanitation. While at the same time aiming to explore on strategies that can be best implemented in order to improve access to water and sanitary services so as to meet the key targets of SDG goal number six

1.2 Background to the study

Although Urban local authorities in Zimbabwe are empowered by Urban Councils Act chapter 29:15 to partake in the provision of a plethora of social services, this study focuses only to issues to do with water and sanitation giving specific reference to Epworth Local Board. Over a decade ago local authorities in Zimbabwe has been facing a series of challenges in their quest to provide service delivery in areas of their jurisdiction. The environment in which the local authorities in Zimbabwe were operating over the past years had a negative impact of their operations. During the period 2000 to 2009 Zimbabwe was faced by economic decline which was characterized by a

hyperinflationary environment. This led to failure to sustain investments as municipal revenues were eroded by inflation. Also a serious deterioration of municipal services in virtually all Local Authorities was noticed. Ever since most urban areas are failing to provide adequate water and in most cases residents are forced to receive water for few hours of the day with some going for months- if not years- without seeing a drop from their water taps. In the same vein, Sewage Treatment Works are working with the majority of sewage treatment ponds practically abandoned. Sewer flows on the streets have become a common sight. It has taken long to remove sewage flows from the streets. Refuse collection is still erratic, inconsistent and infrequent, while street littering in towns seems to be increasing.

In as much as these problems are evident in major cities in Zimbabwe, the situation is even worse in Peri urban areas such as Epworth. Epworth Local Board is an urban local authority established in terms of the Urban Councils Act, whose mandate is to provide social services. In terms of its location it is found about 15 kilometres south east of Harare the capital city of Zimbabwe. Studies by Chirisa (2011) revealed that Epworth covers an area of 3,722 ha of land and estimates in 2010 shows that the population of Epworth comprised of 150 000 people but however a census in 2012 indicate an increase in population and currently this community has a population of 167 462 (Zim population census 2012).

Epworth local board has been struggling in vein to secure resources to provide a safe water and sewer system and this explains why over the years there has been an increase in the activities of non-governmental organisations that are directly involved in the provision of water and sanitation services. Small towns like Epworth lack the financial muscle and governance system to adopt effective coping strategies that ensure the continued smooth delivery of water and sanitation services. To further worsen the situation, the spatial design of this Peri-urban settlement is chaotic to the extent that it has been very difficult for the local authority to efficiently develop and maintain water and sanitation services. After the end of the millennium development goals (MDG) period it was established that there has been an improvement in the access of water and sanitation across the globe but what is most disturbing is that currently in Epworth there is still a huge disparity in the access of these services. Residents of this urban Peri urban settlement have to walk long distances to get water. Given this current situation Epworth resident's faces greater risk of contracting water and sanitation related diseases such as diarrhoea, typhoid and cholera

because they rely on poorly built latrines and unsafe wells. This huge disparity is a clear indication that as a responsible authority Epworth local board failed to meet the targets as prescribed by the ended (MDG) goal 7c that focused at reducing the proportion of people without access to improved, safe drinking water and basic sanitation.

The situation therefore predicts that failure to address water and sanitation problems facing the local authority the same can happen with the current Sustainable Development Goals. The mandate and responsibilities of urban local authorities in Zimbabwe eventually means they are part and parcel of the implementers of the Sustainable Development Goals Agenda (SDG) and failure to ascertain the actual problems being faced by Epworth local board in the provision of adequate water and its related services may also result in failure to meet the targets keys of SDG goal number six that's seeks to ensure that all people have access to water and sanitation. Thus against this background this research seeks to assess the problems facing Epworth Local Board in the provision of water and sanitation services and it is the results of these problems which become the bases to explore into strategies to improve access to water and sanitation services so that the local authority will be able to meet target underpinned by SDG goal six.

1.3 Statement of the problem

The performance of Epworth local board in supply of portable water and sanitation services over the years as not being up to the required standard. Currently Epworth is characterized by inconsistent supply of portable water and this is in direct contrast to the Human rights perspective to development that entails that water supply for each person must be sufficient and continuous for personal and domestic uses. As for sanitation the majority residents rely on pit latrines for the disposal of waste but what is quite disturbing is the current dire state that characterise solid waste management. Although Epworth Local Board is an urban local authority established in terms of the Urban Councils Act, with the mandate of providing social services the performance of this local authority has been declining sharply in the last decade with service delivery suffering the most. There has been a sharp decrease in the provision of public services by Epworth Local Board and such services include refuse collection, the provision of clean water and sanitation, sewer maintenance, road maintenance, street cleaning, provision of graves, maintenance of public utilities and among others. This has certainly led to the council's breakdown in the provision of clean, safe and consistent water supplies and sanitation services to the residents of Epworth.

Having said that, this research seeks to assess the problems facing Epworth Local Board in the provision of water and sanitation services and also explore on strategies to improve access to water and sanitation services so as to meet the key targets of SDG goal number six.

1.4 Research objectives

- To describe the current state of water and sanitation services in Epworth local board.
- To identify the challenges being faced by Epworth local board in providing adequate water and sanitation services.
- To determine the effects of inadequate water and sanitation services on the livelihood of residents in Epworth local board.
- To investigate the coping strategies adopted by the community in relation to inadequate water supply and sanitary services.

1.5 Research questions

- How do you describe the current state of water and sanitation services in Epworth local board?
- What are the challenges being faced by Epworth local board in providing adequate water and sanitation services?
- What effects did inadequate water supply and sanitation services have on the livelihood of residents in Epworth.
- Which coping strategies does this community use when there is a water shortage?
- What is the local board intervention with regard to the water and sanitation problems?
- What can be done to address water and sanitation challenges in Epworth?

1.6 Justification of the study

The rationality of this research is to find ways to improve the management and the planning process of urban residential areas that respond to issues of inadequate water supply and sanitation facilities through promoting inclusion and empowerment of residents and other excluded inhabitants in decision making. The research sought to study the underpinning challenges of water supply and sanitation such as inadequate raw water, pollution growth, illegal settlements, poor maintenances of water and sanitation infrastructure among others and how these have

attributed to the problem of inadequate water supply and sanitation facilities Epworth. The results of the study will go a long way in informing relevant stakeholders such as residents and sector actors that include Epworth Local Board, Ministry of Water resources Development and Management among others to embrace dialogue and informed planning across the water and sanitation sectors. In this vein it is hoped that the findings of the study will be useful to Epworth Local Board to equip its partners through mass education on proper residential development planning, economized water use, hygienic sanitation practices and participatory planning among communities to engage with sector providers and policy makers in improving access to water and sanitation.

1.7 Delimitations

The study was carried out in Epworth local board. A few sample of people were used for the research, questionnaires were directed to council employees, councilors, residents and other relevant stakeholders. Even though the legal instruments empower the local authority to partake in the provision of diverse services, this study mainly focused at issues to do with water supply and sanitation services hence the baseline being water supply. In this research, much emphasises is to explore into water and sanitation service delivery challenges and strategies to improve service delivery in order to meet the key targets of SDG goal number six.

1.8 Limitations of the study

Unavailability of respondents' during data collection as key informant had busy schedules. However, this was addressed through timely appointments and distribution of questionnaires.

1.9 Definition of terms

Sanitation - United Nations (2015) defines sanitation as the study and application of procedures and measures designed to protect public health, as in the provision of clean water and the disposal of sewage and solid waste.

Water supply - refers to the water available to a community or a region. (businessdictionary.com)

1.10 Chapter Summary

This chapter gave a brief introduction about water and sanitation challenges in urban local authorities specifically focusing at Epworth Local Board. The chapter also highlighted major constraints being faced by Zimbabwean Local authorities in the provision of basic service delivery. The objectives of the research and research questions that aims to guide the research have been addressed. This research is limited to Epworth as indicated in the delimitation of the study .The importance and necessity of this research have also been justified and challenges that the researcher will likely to face as well as their solutions have been highlighted. The next chapter will focus on literature review.

CHAPTER II

LITERATURE REVIEW

2.1 Introduction

This chapter will look into the relevant literature and review concepts related to the research area. This chapter provides theoretical structure of the research looking at the important and relevant definitions, explanations and concepts on the research area as dealt with in books, reports and journals. The researcher will focus on the provision of water and sanitation in urban areas, the challenges to it and will also examine the mandate of Urban Local authorities in providing the same. Furthermore, stemming from research objectives the chapter reviews literature on the effects of inadequate water and sanitation services on the livelihood of residents, coping strategies, the current global trends in terms of water and sanitation provision and the challenges local authorities are facing in providing adequate water supply and water from the global perspective down to local level. Empirical evidence from other countries will be looked at so as to appreciate efforts being done to ensure availability of portable water, approved litter disposal sites as well as functional sewer systems (water and sanitation.)

2.2 Literature review

It is an analysis of secondary sources that is published sources on a certain topic. It is an assessment of literature and it provides a summary, classification, comparison and evaluation (www.citewrite.qut.edu). It is used to provide a solid foundation or background to the study the researcher may be conducting, it can also be used to identify the gaps, strength and the weakness of the study as well as to give the researcher an overview of the key concepts and idea surrounding the research topic. Literature review therefore discusses analyses, evaluates, compares and summarizes particular published information related to a particular topic or subject.

2.3 Conceptual framework

The research understudy is based on Integrated Water Resource Management (IWRM) approach. Integrated water resources management (IWRM) is a systematic process for the sustainable development, allocation and monitoring of water resource use in the context of social, economic and environmental objectives GWP (2008). Katharina (undated) posits that this framework is buttressed by the notion that all the different uses of water resources are mutually dependent. Unlike the Conventional Approaches to Water Resource Management, that are mainly characterized by top-down, supply led, technically based and sectorial approaches to water management this framework aims to promote coordinated decision making across various facets. GWP (2008) posits that IWRM is based on the perception of water as an integral part of the ecosystem, a natural resource and a social and economic good, whose quantity and quality determine the nature of its utilization. In this vein, the rationality of choosing this concept is that it promotes the coordinated development and management of water, land and related resources in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems (Global Water Partnership, 2000). Using IWRM approach to underpin this study is vital because this approach focuses on all the relevant or key stakeholders involved in the management of water at all levels in the society. The IWRM approach differs from previous frameworks because it clearly challenges conventional, fractional water development and management systems and places emphasis on integrated approaches with more coordinated decision making across sectors and scales. In this case IWRM offers means of integration the competing demands for the water supply, and the needs of people as well as the environment. Unlike other frameworks IWRM is flexible as it designed to be responsive to the dynamic changes in both the economic, social and environmental conditions.

In addition, the IWRM framework plays a pivotal role to this study because unlike previous frameworks which viewed water service delivery in the realms of simply extraction and demand, the IWRM recognises the fact that extraction of water from river basins should be related to planned access to water supply. The IWRM approach recognises the individual components as well as the linkages, and that mismanagement at one point in the system will be translated to other parts of the system. Therefore, in this approach, the interests and activities that are

traditionally conceptualized as unrelated are integrated into a broader set of inter-relationships, for example, the mixture of building local governance capacity with technical training for maintaining the faucets. Furthermore, the framework is important because it draws linkages between the provision of water and human development. In this context the framework identifies water as an economic good and essential to human survival thus in the process reflecting the scarcity of water and value. The framework links the management of water by users to systems of cost recovery for water service delivery and tries to promote greater efficiency of use, which ultimately ensures greater return per drop and promotes conservation of the water supply.

Moreover, in terms of participatory development, principle two of IWRM indicates that water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels. Within this principle participation occurs only when local communities come together to make choices on water supply and management. The same can also be said to principle three which recognises the role of women in the provision and management of water at domestic levels. Within this principle IWRM recognises the need to include gender policies, programs and projects that are responsive to the different experiences among women and men in water related issues. In this vein, the women's views, interests and needs should shape the development agenda as much as men's, and that the development agenda should support progress toward more equal relations between women and men. Given this picture, the IWRM is therefore crucial because the participation and inclusion of these groups facilitates more informed decision making and more effective mechanisms that are capable of addressing the challenges of water and sanitation in urban local authorities.

In addition, the inclusive nature of this participation offers communities the opportunity to claim their rights while at the same time meeting the responsibilities. In this regard IWRM framework becomes vital in stimulating the views, beliefs, attitudes of the community and the local authority on issues to do with water and sanitation.

2.4 Theoretical framework

Theoretically this research is underpinned by the Human Rights Based Approach to development. This approach recognizes the close links between development and human rights. Favre et al (2008) that the Human Rights Based Approach to development mainly focuses on integrating the norms, standards and principles of the international human rights system into the plans, policies and processes of development. Under the human right framework, the principle that governs both economic and social developments include political and legal systems based on non-discrimination, participation, accountability, the rule of law, and an active civil society at both the national and international levels. Therefore, in order to understand approach Calaguas (1999) posits that, human rights refer to rights guaranteed by international law, and carries obligations upon governments to promote them. In this regard Human Rights Based Approach seeks to bring to light the sole responsibility of the government in the implementation of international human rights standards and operations that are directly linked to promote and protect human rights. Given this picture a human rights-based approach to development focuses on the achievement of basic rights whilst fulfilling human need.

Calaguas (1999) posits that, the purpose of development is to enable people to live in dignity and to attain the highest standards of humanity guaranteed by international human rights laws. In this context this theory becomes relevant to the study in the sense that, it touches on issues to do with water and sanitation. The theory recognises that equitable access to safe drinking water and sanitation is a human right and it is the duty of governments to make sure that this right is achieved. Favre et al (2008) indicated that, in this case approaching development from a rights perspective entails informing people of their legal rights and entitlements, and empowers them to achieve those rights. Governments, as primary duty bearers, must take concrete steps to respect, protect and fulfil the right to water and other water related rights and to ensure that anyone operating within their jurisdiction individuals, communities, civil society, and the private sector do the same. From this perspective, Calaguas (1999) highlighted that lack of access to basic services such as water and sanitation are seen as denial of human rights.

Given the foregoing Favre et al (2008) gives insights on key elements that are vital in the implementation of human rights based approach so as to realise access to water and sanitation for

all. This means that in practise water must be safe for consumption, acceptable, affordable, and sufficient and among others elements that are going to briefly explained below.

2.4.1 Safe and acceptable

Favre et al (2008) posits that general the comment no. 15 of the UN Committee on Economic, Social and Cultural Rights provides guidelines in the provision water services. Under the guidelines water must be safe for domestic use, and at the same time the minimum quantity must be safe for drinking. In this context the provision of water under Human Rights Based Approach suggest that, water have to be free from health hazards such as microorganisms, chemical substances, and radiological hazards. Not only will it be safe but also acceptable in terms of colour, odour and taste. The same can also be said about sanitation; where upon the human right to sanity could only be achieved, when sanitation services effectively prevent human, animal and insect contact with excreta. In this light water must be available for good personal hygiene, and facilities for safe wastewater disposal must be in place.

2.4.2 Affordable

Affordability of water is another element in the human right to water and sanitation. Despite the fact that the provision of access to portable water requires quite an amount of investment, human right to water and sanitation suggest that the provision water must be affordable to everyone. In this regard the UN (2006) report on development indicates that the payment of water could be deemed unaffordable when it reduces the ability of an individual to purchase other basic goods that includes food, housing, health and education. The same report went on to highlights that it's not health for a household to spend more than 3 per cent on water and sanitation issues. Therefore, using the Human Rights Based Approach to development it becomes the duty of the government and relevant authorities to make sure those policies are put in place to regulate water prices. This is the same with sanitation, where upon the human rights perspective seeks to ensure that access to sanitation services must be affordable, without reducing the individuals or household 's capacity to acquire other essential goods and services, such as food, education and health Favre et al (2008).

2.4.3 Accessible

Another important element of the human rights perspective to water and sanitation is the accessibility of the services. Within this element physical security when accessing water and sanitation should be ensured. In this situation it is the duty of government and related authorities to ensure that water and sanitary services are accessible at home, school and even at the work place. A point to note is that, the human rights perspective to development also entails that in situations where these services are unreliable, a government have an obligation to make ensure that citizens have basic access and in a normal situation the collection of water from the sources should not exceed 30 minutes. In relation to sanitation, this approach seeks to ensure the right to an adequate standard of living through making sure that toilets are within or in the immediate vicinity of, each household, public places (in particular schools) and workplace and available for use at all times of the day or night, along with associated services such as removal of wastewater and sewerage or latrine exhaustion.

2.4.4 Water quantity

This is another important element to human rights perspective to water and sanitation. The water supply for each person must be sufficient and continuous for personal and domestic uses. Within this element much emphasis is on the basic amount of water that an individual would need daily in order to fulfil their four basic domestic needs that includes drinking, sanitation, bathing and cooking Calaguas (1999). In this regard estimates by Gleick (1998) indicate that, generally about 20- 50 litres of water is required to meet the daily needs of an individual. Favre etal (2008) on the other hand noted that, the minimum human right to water as in accordance to the UN General Comment No. 15 is at least 20 litres per person per day. In light of the above the World Health Organisation (WHO) indicates that, under normal circumstances especially when there are adequate resources it is the duty of government to ensure access to at least 100 litres in order to meet all health requirements.

2.4.5 Accessible information

Another practical aspect of the implementation of the human right to water identified by Favre et al (2008) is access to accessible information. They posit that, a human right to water implies that there should be broad access to information about the government's water strategies and policies, with a view to making roles and responsibilities transparent and to enable citizens to benefit from services, participate in decision-making and demand accountability. In this context information and education are bases of the human right to water. The reason being that there are vital for ensuring transparent and accountability in the governance of water. Within this element information and education should be addressed to the general public, especially women, as well as poor and marginalised groups. The rationality behind this as indicated by Favre et al (2008) is that people will be empowered to know both their rights and the legal possibilities for enforcement, as well as their responsibilities regarding other rights-holders.

2.4.6 Inclusive

Within this element water and sanitation services provided by the government and other relevant authorities should ensure that there is non-discrimination in the delivery of these basic services. In this context Favre et al (2008) noted that, water and its related services must be accessible to all, including the most vulnerable and marginalised sections of the population, in law and in fact. In this light there should be no discrimination on the grounds of race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth, disability or other status. However, in most developing countries this is not the case as there is still disparities in the provision of water and sanitation services in which the urban poor are the most affected while at the same time slum dwellers being exposed to diseases due to absence of improved access to water and sanitary services. In some cases, the low income earners also face discrimination through disconnection.

2.5 Global overview of water and sanitation

Water and sanitation are a major global concern. This prompts world leaders across the globe to recognize the human right to water and sanitation in the year 2010 on the United Nations general assembly. In this case everyone has the right to sufficient, continuous, safe, acceptable, physically accessible, and affordable water for personal and domestic use. However according to (UN-HABITANT 2010) the state of water and sanitation in the world major urban centers found that water distribution systems in many cities in less developed countries are inadequate, usually serving the city upper and middle class community but neglecting the rapidly expanding settlements on the urban fringe. In this case the largely projected increases in the numbers of urban dwellers in these developing countries over the next 30 to 40 years implies that local authorities responsible for these sectors face very serious challenges in the years ahead. In the same vein improvement of public sanitation is another major urban environmental challenge that needs to be immediately addressed in almost all cities in less developed countries.

The Joint Monitoring Programme (JMP) (2017) report indicate that in 2015 about 71 % of the global population used a safely managed drinking water service, that is one located other premises, available when need and free from contamination. The statistics provided also shows that 89% of the global population used at least a basic service, which is improved source within 30 minutes' round trip to collect water. However, despite the progress indicated above, this report also indicates that about 844 million people still lacked even a basic drinking water service in which about 159 million people still collecting drinking water directly from surface water, sources being with 58% being found in sub-Saharan Africa. On the other hand, in terms of sanitation, the report also indicates that in 2015 about 39% of the global population are now using a safely managed sanitation service, with 29% of the global population using improved sanitation facilities connected to sewer on which waste water is treated whist 13% of the global population uses toilets or latrines. However, about 213 billion people still lacked eve basic sanitation services with 600 million people still using unimproved sanitation services.

JMP (2017) report indicates that currently about 2.1 billion people still lack access to safe drinking water at home, with more than twice lacking safe sanitation. The same report indicates that even though billions of people have gained access to basic drinking water and sanitation services since 2000, these services do not necessarily provide safe water and sanitation. Recent

trends have also shown that people have to spend over 30 minutes per trip collecting water from sources outside the home, whilst other has resorted to drink untreated water from the surface water sources such as streams or lakes. Increase in population due to natural causes and migration has over the years puts pressure on municipal services and cases of open defecation are continuously increasing in sub-Saharan Africa and Oceania. Given this picture too many people still lack access to these basic services. The most affected being the urban poor, squatter settlements and residents of Peri-urban centers. Therefore, there is need for those responsible for the provision of water and sanitation services to make it a priority to deal with such a disparity.

2.5.1 Water and Sanitation in Africa

The coverage of water supply and sanitation in Africa is relatively low than any region in the world. More than one in three Africans does not have access to improved water supply or to sanitation facilities Piers and Morel (2012). Relatively to the foregoing paragraph although both the developed and developing nations are affected by this phenomenon a large portion of people affected by lack of access to basic services in relation to water and sanitation services are generally found in developing nations and Africa in particular. Piers and Morel (2012) postulates that Africa has the lowermost coverage in terms of water supply as compared to other regions, with only 63 % of the entire population having access to improved water supply. They further argue that this dire condition is even worst in rural areas, where coverage is only 48%. On the other hand J M P (2010) reports states that approximately 2.6 billion people do not have access to basic sanitation and as a result nearly 1.5 million peoples die each year and in many cases these people live in south East Asia and sub-Saharan Africa. This is attributed to the fact that sanitation coverage in Africa is relatively poor, with only 60 % of the total population in Africa has sanitation coverage and coverage varying from 84 % in urban areas to 45 % in rural areas. Problems of sanitation continues to be a challenge even after the end of millennium development goal (MDG) framework in 2015 which witnessed the global community managing to meet the target for safe drinking water in 2010 ahead of MDG deadline of 2015.

On population growth Piers and Morel (2012) states, by 2015, urbanization in Sub-Saharan Africa will have progressed from about 32% today to about 45%. This meant that population in cities and towns will have grown from 218 million to about 400 million respectively. Difficulties

in urban areas are anticipated to occur due to an increase number of individuals residing in cities and town and as such creating challenges ahead to those responsible for the provision of services. Their major concern was that due to rapid urban expansion, the majority of people living within these cities or towns will be living in dire situation such as informal settlements without access to safe water and hygienic sanitation. As a result of rapid population growth, the capacity most countries to provide adequate services for their citizens are undermined. Local authorities are not spared and in most cases these low level tiers of government are found wanting due to failure match supply and demand as a result, this phenomenon has led to untold suffering and outbreak of diseases. This clearly shows the immediate need to improve public sanitation. Piers and morel also argued that more than one in three Africans does not have access to improved water supply or to sanitation facilities and forty percent of those living in rural areas and eighty percent of those living in urban centers have some access to safe water, but sustainability is not assured.

Therefore, due to drastic growth, about 3-6 billion people now live in urban settlements as compared to about 20 years ago. Piers and morel (2005) also pin pointed that existing water services in many African cities and towns are characterized by intermittent supplies, frequent breakdowns, inefficient operations, poor maintenance, and depleted finance. Coupled with political interference and low tariff policies have led to inefficiency and chronic financial weakness of public utilities. Such experiences become a stumbling block as far as improving access to water and sanitation in Africa. This also supported Moe and Gangarosa (2009:52) who argued that, with regard to standards for improved water and sanitation, “it is important to recognize that improved water is not necessarily safe drinking water. Improved water access includes household connections, public standpipes, rainwater collection, boreholes, and protected wells, but not water vendors, unprotected wells, unprotected springs, rivers or ponds, or tanker truck water. Improved sanitation includes connections to public sewers, septic systems, pour-flush and improved pit latrines, but not shared, traditional, or open pit latrines.” This clearly shows that improving public sanitation is a major urban environmental challenge that needs to be directly addressed in virtually all urban areas in less developed countries.

2.5.2 Water and sanitation in Zimbabwe

Zimbabwean (2012) report on Water Resource Management, Supply and Sanitation states that, over the past years there was no proper document that set guidelines as to the management of

water resources. This saw government of Zimbabwe enacting the water Act of 1998 to reform the water sector in a bid to ensure a more equitable distribution of water and a stakeholder involvement in the management of water resources. In the same vein the Zimbabwean National Water Authority Act of 1998 lead to the creation of Zimbabwe National Water Authority (ZINWA), a parastatal agency created for the sole responsibility for water planning and supply. Through this Act ZINWA partakes in the management water resources in seven different catchment basins in Zimbabwe through involving various stakeholders in each catchment area. Under the same Act ZINWA was responsible for managing water permit system, pricing, operations and maintenance of existing infrastructures at the same time executing developments projects. As a result of these reforms urban local authorities and ZINWA becomes responsible for service provision in urban areas with ZINWA providing portable water supply in major cities and towns whilst in those areas where upon local authorities cannot assume the responsibility for service provision, ZINWA operates the water supply systems whereas councils manage services from municipal water and sewerage departments and derive revenue from water sales. A point to note it that since the establishment of urban local authorities in Zimbabwe the concept of decentralization on the management of water resources was adopted with urban local authorities mandated to operate, maintain and invest in services in urban areas. However, in 2005 Government shifted urban water supply from ULAs to ZINWA.

This is also supported by African Development Bank Group Report (2010) which traces back the shift of water management in Zimbabwe when it observes that, due to unexpected institutional changes that occurred in 2005 water management was transferred from local authorities to ZINWA and then back to the local authorities only just after four years. Nevertheless in the following years the Zimbabwean report on Water Resource Management, Supply and Sanitation (2012) indicated that the water resource sector was badly hit by the economic downturn and limited investment resulting from withdrawal of financial and technical support from international development partners. This negatively affected the fortunes of this sector as epitomized by the serious outbreak of cholera pandemic in 2008-2009 with almost 100,000 cases of cholera and about 4,280 deaths recorded. The result was a large scale mobilization of humanitarian assistance by the international community to help the country address the immediate risks posed by the cholera outbreak and to support the rehabilitation of water supply

and sanitation services in both urban and rural areas. As a result, the number of cases reported in 2009-10 declined substantially.

Since then efforts were made to rebuild the existing dilapidated infrastructure and improve access to water and sanitation services to all levels. Currently water sector is being guided by (2012) National water policy of Zimbabwe which sets out the organizational arrangements for the principle institutions with responsibilities for the management of water resources in Zimbabwe. These arrangements stem from the Water Act of 1998 and the Zimbabwe National Water Authority (ZINWA) Act of 1998.

Other important legislation is:

- The Environmental Management Agency (EMA) Act [Chapter 20: 27], 2002,
- Urban Councils Act [Chapter 29:15], 1996 edition,
- Rural District Councils Act [Chapter 29:13], 1996 edition,
- Mines and Minerals Act [Chapter 21:05] 1996 edition,
- The Public Health Act and
- Disaster Risk Management Bill, 2011.

The (2012) National water policy provides the institutional framework of the water sector in Zimbabwe which includes Ministry of Water Resources Development and Management (MWRDM), Ministry of Health and Child Welfare (MHCW), Ministry of Environment and Natural Resources Management (MENRM), Zimbabwe National Water Authority (ZINWA), Ministry of Local Government, Rural and Urban Development (MLGRUD) through Urban and Rural Councils, who are responsible for water use and management at consumer level. Under this policy issues to do with planning, development and management of water resources are presided over by the MWRDM, with technical support from ZINWA, Catchment Councils and Sub-Catchment Councils. The policy undertook a coordinating and collaborative approach in which various stakeholders are involved in addressing the challenges pertaining water and sanitation.

At local level the roles of both urban and rural local authorities are clearly stipulated. Under this policy Zimbabwe has undertaken a decentralized approach in the provision of urban water supply

and sanitation services to the local people through departments of water and sewerage. Further down this policy, urban local authorities are designated as water services authorities who have a sole duty to ensure efficient, affordable and sustainable access to water services for all their consumers. The policy also gives deep insights on how a local authority can delegate its authority of providing water supply and sanitation services to private entities capable of carrying out water supply and sanitation services on behalf of the ULA. On the other note, the Zimbabwe final report on water (2015) provides deeper insight into the management of water in Zimbabwe by highlighting that Urban Local Authorities are mandated, by the Urban Councils Act (Chapter 29:15), to provide water and sanitation services to areas under their jurisdiction. This means that the local authorities are responsible for water service delivery to the residents. The roles of local authorities in relation to water and sanitation are also in the constitution of Zimbabwe. Section 73 of the Constitution of Zimbabwe Amendment (No. 20) Act, 2013 added a new constitutional right which is right to live in a clean, safe and healthy environment. Every Zimbabwean citizen is entitled to this right effective March 2013. However, this right has been enforced in a period where the economy of the country is struggling let alone support the development of social amenities for the citizens of Zimbabwe to fully realise the right to a clean, safe and healthy environment among other critical humanitarian rights

2.5.2 (i) Access to water supply

In terms of access to water supply only 73 % of the urban population and 61% of the rural population in Zimbabwe had access to improved drinking water sources. The gap between urban & rural sources remains a typical feature of the sector with 98 % of those without an improved drinking water source live in rural areas (JMP estimates, 2010). In the urban setting 35% of the population used drinking water appropriately treated at household level irrespective of source (MIMS, 2009). In rural areas only 28% of the rural population used drinking water appropriately treated at household level (MIMS, 2009). However, a survey by the Zimbabwean multiple indicator cluster (2014) indicates that in urban areas, 76.4 % of the population had access to improved drinking water sources on their premises as compared to 14.6 % in rural areas.

2.5.2 (ii) Access to sanitation

In terms of people who have access to improved sanitation the national average coverage is approximately 60% of the total population in Zimbabwe. In the rural setting 43% use improved

sanitation facilities as compared to 97% in urban areas (MIMS, 2009). Open defecation still remains the greatest menace and faecal pollution is on the increase. (MIMS, 2009) states that about 33% of the total population is still practicing open defecation at an alarming rate. As compared to other countries the erosion in Zimbabwe for access into improved sanitation service has not been severe as in many other countries in Sub Saharan Africa. The Zimbabwean report on Water Resource Management, Supply and Sanitation (2012) indicates that in the case of the rural population, the most notable trend has been substantial erosion in levels of access for Sub-Saharan Africa as a whole, from 47 % in 1990 to only 24 % by 2006.

2.6. Challenges to the provision adequate water supply and sanitation

The problems faced by urban local authorities in providing adequate portable water are many and diverse. According to the World Bank (2011) the main problems faced by water and sewerage (W &S) departments were high population growth, high losses, a high fraction of non-functioning meters and low recovery ratios on billed water. Challenges according to Nhapi (2015) include lack of investments in the water and sanitation sector, in appropriate technologies, capacity limitations, ill-defined institutional framework, and high cost of water due to non-revenue water. Nhapi (2015) in his studies on challenges for water supply and sanitation in developing countries attributed the aforesaid problems to poor infrastructure. In this case Nhapi (2015) pointed out the issue of lack of functioning meters. In his analysis people who are getting water are using more than the volume they are getting metered and charged for.

2.6.1 Aged infrastructure

Among the challenges facing cities and towns in the delivery of sustainable water and sanitation services, aged infrastructure is one of the major constrain facing most countries. The United States of America, owe the loss of about 20-30% of production water to cases of failure of old pipes to match demand and supply. This in most cases is attributed to the fact that most pipes are nearing the end of their planned lifetimes. Moe and Gangarosa (2009) indicates that such a situation has compromised the capacity of many cities and towns to provide safe drinking water to the general populace. They also argued that as a result of aged water distribution systems there is high risk of contamination of pipes water through leaks, illegal tapping among other factors which will end up compromising the safety of piped water. They base their argument from a case

study in Uzbekistan in which research shows that about 30 % of homes with indoor plumbing had no residual chlorine levels a, case which lead to residents adding home chlorine as a supplement. Studies conducted by world bank (2011) on (Water & Sanitation) departments in Zimbabwe shows due to leaking of old pipes cases of non-revenue water (NRW) are high ranging from 40 - 60 percent while at house hold level, there is lack of working meters. Therefore, the findings defy the notion that piped water is generally safe as indicated from the study where upon home treatment is necessary in improved water sources.

2.6.2 Scarcity of water resources

Water scarcity poses a greater challenge to the provision of water and sanitation services across the globe. Scarcity of water had become a challenge in most countries and this explains why in some cases the supply of this commodity is erratic. Moe and Gangarosa (2009) argues that in numerous parts of the globe, cities and towns suffer from both physical and economic water scarcity. They went on to say that, the number of countries that are categorized as water scarce as per 1995 period is expected to increase from 31 to 48 in 2015 up to 54 countries by 2050. Basing from their study, such a situation will result in the increase of the number of people living under water scarcity from approximately 460 million to 4 billion by 2050.

This is supported by United Nations Development programme(UNDP) (2017) which indicates that in 2011, about 41 countries experienced water stress, 10 of which were close to depleting their supply of renewable freshwater. This is the case with Kenya which is classified as water scarce country. In Zimbabwe some local authority's lacks raw water and this has become a problem in when it comes at delivering safe and clean drink king water. In addition, Moe and Gangarosa (2009:56) went on further to says that “, global use of water has rapidly increased in this century for agricultural, industrial, and municipal purposes.” Therefore, due the scarcity of water resources it becomes very difficult for the responsible authorities to fully carry out their mandate a situation which poses a serious problem for global stability, food security, and health.

2.6.3 Growth in population

Urban population is expanding rapidly. The United Nations (2013) anticipated that over a half of the global population now lives in cities and towns in which that proportion is expected to increase in the fourth coming decades. In this case both developed and developing nations are

faced with this increase though at different level. This is supported by Cesar (2010) who states that urban settlements in the developing countries are growing five times as fast as compared to those in most developed countries. Such an increase in population has poses a great deal of pressure in terms of the provision of basic services among nations. Growth in population becomes a major challenge when it comes to the provision of services such as water and sanitation among countries as the rate in which population is expanding has a negative bearing on the capacity of cities and towns to match demand and supply. Using United Nations (2013) figures, the world population has increased by an average 1, 3 % per annum since 1990 and currently stands at about 7 billion. This urbanization has placed serious pressure on aging water and sanitation infrastructure in urban areas Nhapi (2015).

2.6.4 Inadequate finance and funding

The issue of funding and finance is a problem in this sector. The end result is that due to inadequate funds, those responsible for providing water and sanitation utilities are finding it difficult to invest in infrastructure so as to improve service delivery. Cross & Peal (2005) indicated that political interference and low tariff policies have led to inefficiency and chronic financial weakness of public utilities. Cesar (2010) also indicated that due to limited resources, it becomes very difficult to invest in infrastructure development and in most cases resulting in developing countries failing to kip up with the needs of the growing urban population. In addition, lack of financial sustainability defies many local authorities the capacity to recover the true costs of water and sanitation system operation and maintenance without reliance on long-term financial aid from external donors. This is the case in Kenya were upon investment level in water management infrastructure was on a decline for many years, Moe and Gangarosa (2009). In the same vein in Zimbabwe liquidity crisis is the major cause of water supply and sanitation challenges faced by Local authorities. This is buttressed by Mabika (2015) who asserts that financial shortages have become a common cry in Zimbabwe local authorities.

2.6.5 Poor governance

The provision of water and sanitation is also affected by poor management. Cross & Peal (2005) attributed this to cases of inadequate maintenance in developing countries, particularly in Africa. They argued that, water and sanitation utilities in Africa are in most cases characterized by weak

finances, poor revenue collection a situation which becomes problematic in maintaining and extend services. Their argument is justified considering the fact, that statistics from JMP (2010) has shown that the coverage of water supply and sanitation in Africa is relatively low than any region in the world. The World Water Assessment Programme report (WWAP) (2006) also concurs citing that the insufficiency of potable water supply and sanitation is primarily driven by an inefficient supply of services rather than by water shortages. It stresses this to mismanagement, corruption, lack of basic geo hydrological water management knowledge and expertise, lack of appropriate institutions, bureaucratic inertia and a shortage of new investments in building human capacity, as well as physical infrastructure. In addition to the issue of poor governance studies conducted by world bank (2011) on the financial position of (Water & Sanitation) departments in Zimbabwe shows that they are misuse of funds through transfer of funds from the water accounts to other municipal uses, such as social services schools, clinics, amenities, is significant

2.6.6 Informal settlements

Another problem being faced by cities and towns in the provision of supplies and sanitation is the surfacing of the informal settlements. Cross and Morel (2005) identified the dramatic rise in peri-urban and poor settlements as a problem to effective provision of water and sanitation utilities. Nhapi (2015) also concurs citing that rapid urbanization is highest developing countries, a situation which led to the mushrooming of the informal settlements where water supply and sanitation services are almost non-existent. Cesar (2010) also indicates that due to rapid urban growth many African cities are overcrowded while in informal settlements inadequate housing, poor infrastructures such as water supplies, sanitation and waste management services becomes the order of the day. Given this picture it becomes very problematic for cities to investing in these uncontrolled developments considering the fact that there finding it difficult to invest and maintain the existing infrastructure

2.6.7 Politics

Politics has both positive and negative impact in the delivery of basic services. However, studies have shown that political interference in the operation local governance units had a negative impact especially in the provision of basic services such as water and sanitation. In Zimbabwe the operation of local authorities is compromised with the oversight role played by the government.

For instance, the call made by the then Minister of Local Governance to scrap water and utility debts of the period between 2009 and 2013 for every Zimbabwean resident ahead of the 2013 elections. Although this move was applauded by many defaulters, it undoubtedly prejudiced and incapacitated local authorities' efforts to repair, expand and deliver water and refuse collection in urban area (Dewa 2013). The perception of water as a basic need and human right inhibits societies from charging for it as an economic service. In addition, local political leaders turned to keep tariffs low. Derma, et al (2007) argues that in a bid to retain popularity, politicians aimed to keep the price of water as low as possible. In this vein, defaulters of payments for water usage in most cases are protected against disconnection through the political influence of politicians.

Moreover, political influence is also a factor in project choice and implementation where development is driven by political balance rather than economics. Studies by Makande and Gelles (2015) in many municipalities demonstrates lack of political will to deal with slum settlements through enforcement of law to regulate, govern and promote orderly in the settlements. As such this create unnecessary pressure for municipalities, for instance the logistic of providing water and sanitation services under such conditions becomes a very difficult task to implement, monitor and enforce. In most cases it is difficult for urban local authorities to plan, manage and budget for water and sanitation services in illegal settlements.

2.6.8 Low revenue inflows

2.6.8. (i) Poor collection of revenues

Poor collection of revenue has often been regarded as another factor which inhibits local authorities to properly manage services. The has a negative bearing in the operations of operations of cities as this reduces the capacity of councils to increase coverage's in terms of access to water and sanitation services. The provision of water and sanitation services requires a sound financial base and viable revenue collection methods to fully function but literature provided by Cross and Morel (2005) shows that the major contributory factor to poor sustainability of urban water management and sanitation in developing countries is issues to do with poor methods in revenue collection. They argue that poor services delivery is attributed to a series of problems chief among them being weak finance possibly as a result of lagging in the

collection of revenues. In the Zimbabwean context most council have limited finances as many resident's default paying water and utility bills in full due to the volatile Zimbabwean economic situation characterized by high rates of unemployment. Therefore, due to limited revenues it becomes difficult for local authorities to fully operate and maintain the systems.

2.6.8. (ii) Resistance to pay

Another point which make it very difficult for the provision of water and sanitation utilities is the culture on non-payment of services rendered. This is a major problem being faced by urban local authorities especially in revenue collection. Studies conducted by World Bank (2011) on the financial position of (Water & Sanitation) departments in Zimbabwe shows that due to poor services, customers are unwilling to pay resulting in low collection efficiency ranging from 30 - 60 percent. Resistance to pay for rendered service is the order of the day in Zimbabwe and this is supported by Ndebele (2012) who argues that, people not getting water are unwilling to pay monthly fixed charges. This is attributed to the fact that residence finds it very difficult to honour their monthly obligations and in most cases are unwilling to settle their bills due the current state of service delivery which is characterised by erratic supply and poor service delivery. To support this claim below is the stagnation cycle of Water and Sanitation Services (WSS) utilities in Africa according to Cross and Morel (2005):

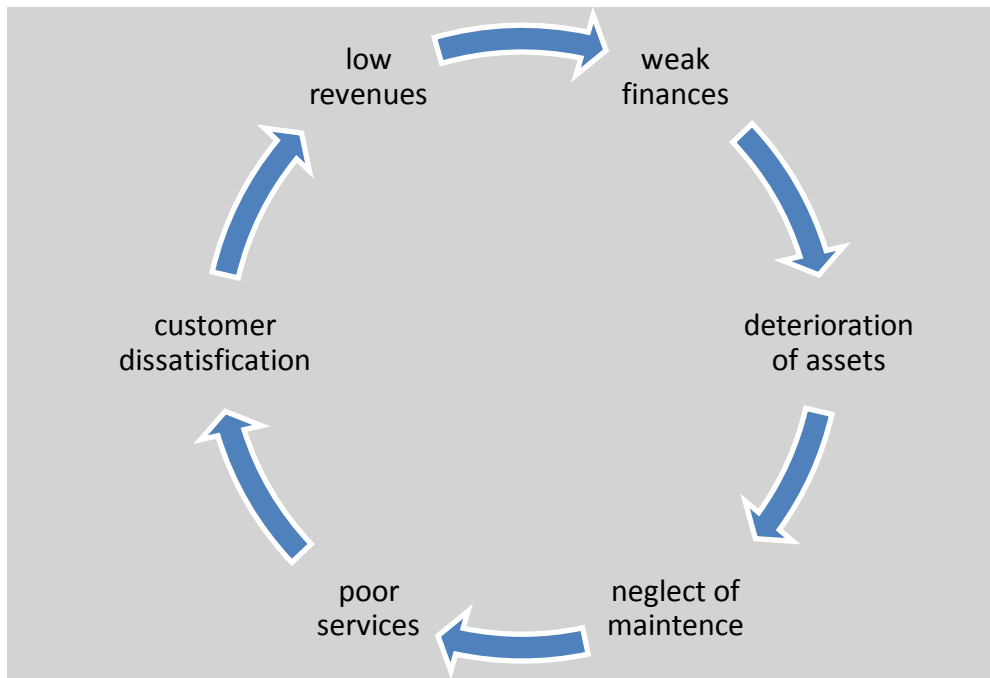


Figure1: 1 the stagnation cycle of WSS utilities in Africa

Source -Cross and Morel (2005) Pro-poor strategies for urban water supply and sanitation services delivery in Africa

2.6.9. Legal

Legal constrains also has an impact of the operations water utility sector. In urban local authorities in Zimbabwe, the minister is empowered to have an oversight role on the operations of council and in most cases can intervene through various issue directives. In this case Nhapi (2015) indicated that in some instances the legal provision at times may act as a hindrance to the operations of council. He argues that the minister, for political or other reasons may scale down infrastructure tariffs through the cost recovery, objectivity, thereby undermining service delivery, maintenance and water production capacity.

2.6.10. Shortage of skilled man power

Studies conducted in South Africa (SA) by Makande and Gelles (2015) shows that lack of skilled manpower has badly affected the ability of many urban municipalities to deliver efficient services in particular, the shortage of water engineers is critical. They indicated that a research study

conducted in 2005 (SA) in found that on average there were 3 engineers per 100,000 people managing water related works in cities during the apartheid. Given that situation they concluded that, such a ratio is too much low to deliver, operate, and maintain water in cities in a sustainable and efficient manner.

Therefore, having reviewed literature on challenges in the provision of water and sanitation services, it becomes clearer on what other scholars established and this is significant to this study. This so because one of the research objectives is to identify challenges being faced by Epworth Local Board in the provision of water and sanitation services as such the literature reviewed is relevant in that it provides a general idea of various challenges being faced by cities and towns across the globe. This will help the researcher to establish the actual problems being encountered by local authority and it is from those challenges that the researcher will then focus at core objective of the study to which to explore on strategies that can be best implemented in order to improve access to water and sanitary services so as to meet the key targets of SDG goal number six.

2. 7 Effects of inadequate water supply and sanitation services on the livelihood

2.7.1 Health Effects.

Even though the problem of inadequate access to water and sanitation occurs in both rural and urban areas, the problem is particularly pressing in cities. Lack of adequate water supply and proper sanitation services has a negative impact on the health of people in urban areas but in the most cases it is the urban poor who are most affected. This is due to the fact that in some cases the urban poor are found in densely populated areas or urban slums where there are exposed to the diffusion of pathogens. With internal migration the proportion of poor people who resides in cities is increasing at an alarming rate and this result in the urbanization of poverty.

In this case, Duflo et al (2012:13) clearly indicates that, “inadequate access to safe water and exposure to pathogens through the poor treatment of solid waste leads to adverse health consequences, particularly diarrheal diseases.” This is supported by studies by World Health Organisation (WHO) (2011) which establishes that an approximation of 25% of under-five mortality noted in developing countries is attributed to diarrhoea. In the same vein W H O went one to suggest that cases of child death under five years of age are closely related to issues to do

with insufficient water supply, inadequate sanitation, unsafe water sources and poor hygienic practices. Recent reports from WHO (2017) highlights that, in 2015 about 526 000 deaths of children under five were attributable to diarrhea. Evans (2005) share the same sentiments, arguing that an approximately 86% of all diarrhoea infections globally are credited to unsafe water supply, the lack of safe hygiene practises, and basic sanitation infrastructure.

The same can be said to Zimbabwe were upon over a decade ago about 96,591 cases of epidemic were recorded and 4,201 deaths had been reported during the outbreak of cholera and this was attributed to unhygienic and unsanitary urban conditions WHO (2009). A point to note is that, at that time one of the major contributing factors to the outbreak of the epidemic was linked to breakdown of the municipal water supply, sanitation, and waste collection programs throughout the country, especially in urban areas. In addition, elsewhere in Africa during the year 2010, the Ministry of Health in Nigeria blamed the outbreak of the cholera epidemic which claimed approximately 352 people out of 6400 cases reported in 12 its 36 states to poor sanitation.

2.7.2 (i) Economic and social effects.

Lack of adequate supply of portable water and improved sanitary services disrupts the social and economic wellbeing of any society. This comes from the fact that water is regarded as an economic and social good with many benefits to the community if provided effectively and efficiently. In this regard Holmes (undated) highlighted that the White Paper on International Development shows that the benefits of having access to improved supply of portable water and sanitary services, far much exceeds improvements to health, well-being, and quality of life. For instance, access to convenient and affordable water can save people's time and energy and enhance their livelihood opportunities. The same can be said to sanitation were upon improvements in the provision of sanitary services will improve privacy and maintains human dignity.

However, studies have shown that lack of water and sanitation is a burden to both rural and urban areas. In rural areas poor people have to work hard for their water, often fetching it from far-off sources and using it carefully and sparingly. It is a well-known fact that, the majority of people who dwells in rural areas depend on subsistence economies for survival, but due to cases inadequate water and sanitation services the time spent collecting water is a double burden, as

this reduces their available time for other productive activities. This is attributed to the fact that; people will be forced to spend a lot of their precious time collecting water.

These challenges also manifest in urban settings where upon the urban poor are forced to purchase water from private vendors. Holmes (undated) also gives insights to studies conducted by Jarman (1997) which found out that in squatter settlements in Jakarta less than a quarter of the city's population have direct connections to a piped water system and about 30% depend solely on purchasing water from vendors. The same sentiment is shared by UNICEF (1995) which states that, the majority of urban poor can spend approximately 40% of their total income on water.

2.7.2 (ii) Gender Dimension.

Lack of improved sanitary services and safe water affects mostly women. This is attributed to the fact that, when it comes to the management of water at household level women are the ones who bear the burden of carrying water for up to five hours per day (Berold ,2004). Therefore improved access to the supply of portable water and sanitary services can lead to significant and tangible improvements in the way of life of many thousands of poor people, particularly women and girls. Unimproved water supply and sanitation poses a great risk to women and girls. Studies have shown that in those areas where water supply and sanitation is poor both women and girls often suffer harassment on the way to and from community defecation areas and water sources. In terms of live hoods, the absence of water affects women economic activities. For example, the World Health Organisation (WHO) (2004) estimates that about 40 billion working hours are spent carrying water each year in Africa. In countries such as Ghana women are to take about an estimate 700 hours per person each year in fetching water a position which keeps girls out of school while at the same time limiting the economic production of women (Berold ,2004). Given this situation it becomes clearer that, literature shows that inadequate water supply and sanitation services affects the livelihood of women as lot of productive time is lost, when woman are engaged in fetching water.

2.8 How communities in urban areas cope with lack of adequate water supply and sanitary services.

The term **community** is frequently used in various circumstances and in most cases have specific meanings in some discipline. Oxford dictionary defines community as a group of people who live together in one place, sharing a common characteristic. For the purpose of this review, emphasis will dwell much on established literature of how members of the local community which includes the local authority, various stakeholders and individual households cope or respond to unreliable supply of portable water and sanitary services. This stem from the fact that, there is paucity of literature in relation to the above and the majority of existent literature focus on agricultural or industrial water supply, or reports on coping with water scarcity due to drought, climate change.

2.8.0 Category of coping strategies

Kudat et al. (1993) categorise these coping strategies as extending on Hirschman's theory on "exit, voice and loyalty", which describes consumer responses to deteriorating quality of good or service.

Using this theory to explain how communities cope with unreliable water Kudat et al (1993) are of the view that, when people are faced with a continuous unreliability of supplies, individual households may "exit" the system by adopting strategies such as drilling wells, installing large capacity storage tanks, or even relocating to areas where water supply is more reliable.

On the same note, they further went on to categorise, what they termed the voice strategy in the second category. In this scenario Kudat et al (1993) argues that, the "voice" strategy includes complaints and protests to water utilities or local authorities.

Lastly, Kudat et al (1993) categorise individual loyalty as the third category. In this scenario individual households could also be "loyal", and engage in accommodative strategies such as rescheduling activities to when water is actually available, and reducing quantity of water they use. Therefore, having said that, Kudat et al (1993) concludes by arguing that, these coping strategies are determined at various levels that includes, national, local and then down to individual household level. In this vein, Majuru et al (2016) went on to categorise the coping strategies adopted by individual households in response to unreliable water into five broad

categories. These include supplementing quantity of water available, accommodating unreliable supplies, improving water quality; and enhancing water pressure and lastly collective action and voice.

2.8.1 Coping strategies household level

2.8.1 (i) Increasing quantity of water

Majuru et al (2016) in their research on how households respond to unreliable water supplies, they identified that individuals who seeks to enhance water quantity have adopted a variety of strategies that includes, digging shallow wells or drilling boreholes, storing, and purchasing water. Baiett et al (2006) postulates that due to unreliable water supplies, residents are forced to rely on ground water sources a situation force them to drill back yards wells especially in high density areas whereas in low density areas residents drill boreholes without permission. This coping strategy has become a common phenomenon in these days as urban cities across the globe, particularly in developing nations continues to face pressure from the ever growing population demand. In Harare for instance Mangizvo and Kapungu, (2010) highlighted that, the issue of drilling boreholes and digging of back yard wells from which they draw water for various uses is very common in various suburbs.

In the same vein, studies conducted by Chaminuka and Nyatsanza (2013) shows that, in Zimbabwe individuals have now adopted the above-mentioned strategies in which households also harvest rainwater, and store it in such large capacity tanks, or in smaller vessels such as buckets and drums. Dube (2011) posits that, rainwater harvesting is now a common practise among suburbs in Harare. For instance, in suburbs such as Mabvuku Tafara, Dube (2011) indicates that, with the help of American Non-Governmental Organisation (US Aid) residents have installed water harvesting equipment's to collect water from their roofs tops.

In some occasions in an attempt to increase quantity of water, the urban poor are forced to purchase water from vendors or kiosks, neighbors who own private wells, or pay for container or tanker deliveries. Purchasing of water is common among the majority of urban poor, though at an expense of approximately 40% of their total income UNICEF (1995). This concurs with findings by Mukuhlani & Mandlenkosi (2014) in Bulawayo city council which highlighted that, due

unreliable water supply residents in Mpopoma were forced to buy water from other residents who own private wells at a cost of approximately five rand or fifty cents a bucket.

2.8.1 (ii) Accommodating Water Supply Unreliability

Under this approach, Majuru et al (2016) presented that, a local community can actually devise accommodative strategies such as collecting water from alternative sources, rescheduling domestic activities, reducing water use, or recycling water. Reports from research, indicates that the collection of water from other sources is very common and from studies conducted in countries such as Zimbabwe, Kenya and Ghana indicates that, in response to unreliable water supply individuals are forced to spend minutes if not hours, in long queues fetching water to alternative sources such as springs, boreholes, communal taps and even burst water pipe. For instance, in Zimbabwe Chaminuka and Nyatsanza (2013) discovered that, due to the continued prevalence cases of unreliable water supply from the local authority, residents in Nyanga were forced to fetch water from alternate sources such as water from the mountains. This is the same with residents in Entumbane and Mpopoma who according to Mukhlani & Mandlenkosi (2014) were forced to walk approximately two to three kilometres to nearby boreholes and suburbs to fetch water during 96-hour period when there was no water.

2.8.1 (iii) Improving Quality of water

Furthermore, Majuru et al (2016) argues that as a result of unreliable water supplies individual households can also devise various coping strategies to improve the quality water. This stems from the fact that the safety of drinking water which sometimes is provided by cities maybe be compromised as a result of aged water distribution systems where there is high risk of contamination of piped water through leaks, illegal tapping among other factors identified by Moe and Gangarosa (2009). The quality of water from alternate sources such as wells and rivers in most cases is questioned whilst at the same time water can be re-contaminated during collection and storage. Given this picture, due to poor quality Majuru et al (2016) highlighted that, individual households can resort to home remedies such as boiling, filtration or disinfection and even purchase of bottled water.

In countries such as Uzbekistan about 30 % of residents add chlorine to purify water that came from their taps. Also studies show that, communities in developing countries like Tanzania,

Kenya, Nigeria and even Zimbabwe can use one or more of the above strategies to improve quality of water. For instance, in Bulawayo research conducted by Mukuhlani & Mandlenkosi (2014) indicates that residents in Newton West suburbs treat their water using chemicals such as water guard while those who did not manage to purchase the chemical; they resort to basic remedies such as boiling.

2.8.1 (iv) Combined Action

Moreover, research by Majuru et al (2016) reflects that individuals can collectively come together to address their water needs. In this case, it is no longer individual's household strategies at play but collective action by which members of the community come together to find a lasting solution to their plight. Empirical evidence, shows that in addition to a number of coping strategies at house hold level, members of the community in Dhaka, Bangladesh, Jamal and Rahman families made some contributions that lead to the establishment of a communal tube well. In Zimbabwe, it is interesting to note that during the 2008 era collective action by members of the community became to take center stage. This is supported by Mukuhlani & Mandlenkosi (2014) whose studies reveal that, in Bulawayo boreholes becomes the property that was administered by the local Residents Association. In this case these associations were being responsible for guarding the boreholes against vandalism and abuse.

In a similar situation, Zerah (2000) indicates that, communities can employ the, voice strategy that encompasses measures such as complaints, demonstration and association to address their water needs but there is paucity of empirical evidence to support the same. However, in countries such as Turkey research shows that, families created community associations and pressured local authorities for better services. The same is supported by Mukuhlani & Mandlenkosi (2014) whose studies reveal that, in Bulawayo members of the public applied the voice strategy to address their water needs through mobilization of pressure on to the government and the local authority through residential associations.

2.8.2 Coping strategies at local government level

The foregoing has managed to show how, individual members of the community cope with unreliable water supply and sanitary services. At local governmental level, councils also devise strategies to respond to the same. In managing water resources so as to curtail challenges

associated with water shortages, an integrated and multi-dimensional approach is a prerequisite UN-Water (2007). It becomes the duty of the local authority to engage, mobilise and involves various stakeholders in finding the lasting solution to the problem of unreliable water supply and sanitary services. This is the same circumstances with, studies by Mukuhlani & Mandlenkosi (2014) in Bulawayo that indicates the role played by a variety of stakeholders that includes, the central government, local authority, nongovernmental organisations and the residents who under such arrangement managed to brings in both technical and financial support.

In terms of increasing quantity of water supply in Bulawayo research shows that, as a coping strategy the local authority rehabilitated and drilled more boreholes. In improving water and sanitation services, the local authorities also adopted other strategies that include twinning arrangements with other local authorities such a Durban city so as to learn the best practices. In accommodating water supply unreliability, the local authority adopted water trucking strategy in which the City Council began transporting water to areas that were seriously hit by water shortages so as to ease the situation. In the same vein it also introduced water shedding programme. Though normal routines such as laundry and bathing were changed, this strategy was instrumental in dealing with the water crisis as residents were in a position to tell when water will be available or not and this prepares them to store water during the periods in time when water supply is restored.

2.9 EMPIRICAL STUDIES ON WATER AND SANITATION CHALLENGES IN URBAN AREAS.

2.9.1 Tanzanian Experience

Problem of providing basic services such as water and sanitation in urban areas is not unique to Zimbabwe but also in other sub-Saharan countries such as Tanzania. A study conducted by Water and Sanitation Programme (2009) on global experiences on expanding services to the urban poor highlighted that the water supply and sanitation services in Tanzanian major cities like Dar es Salaam has over the years been in a constant state of crisis. Unlike Zimbabwe, Tanzania took a privatization approach in the provision of water and sanitation services in urban areas. The rationality behind this was that, Water & Sanitation Service (WSS) would be best managed under the free market Rugemalila & Gibbs (2015)

The national water policy of (1991) led to the creation of Dar es Salaam Water and Sewage Authority (DAWASA) a private entity formed for the task of providing Water & Sanitation Service (WSS) in urban areas (2009). However as of today Rugemalila & Gibbs (2015) indicated that (DAWASA) is now responsible for management of WSS projects in urban local areas at the same time the mandate of managing and operation of WSS is placed with Dar es Salaam Urban Water and Sewerage Corporation (DAWASCO). A point to note here is that, the approach adopted by Tanzania was towards privatization, which was meant to ensure full cost recovery in terms of maintenance and operation in urban areas. Given this picture, the commercialized approach failed to solve the water and sanitation crisis in cities such as Dar es Salaam as a result leading to marginalization of the urban poor. This is supported by the report from Water and Sanitation Programme (2009) which posits that, an estimated number of people residing in the city of Dar es Salaam is around 2.5 million and statistics shows that DAWASCO managed to cater for 86,000 customers whilst the remaining unserved population of the city were forced to obtain water through informal supplies, often of dubious quality and at a price well beyond that paid by the water and sewerage authority's customers.

The most affected was community members of Temeke Municipality and as such the experiences of this community became a feasible case study to provide insights on water and sanitation problems in urban areas while at the same time looking at how members of this communal areas managed to cope with the situation.

2.9.2 Temeke Municipality

In accordance to a situation analysis report provided by Water- Aid Tanzania (undated), Temeke is one of three municipalities that comprise the metropolitan area of Dar es Salaam. It is made up of 24 wards and 97 streets. In terms population it is estimated to have about fifty percent of the total number of people who resides in the city Dar es Salaam. Despite having a larger number of people living in this local authority Rugemalila & Gibbs (2015) argues that in relation to the provision of basic services, Temeke municipality is extremely characterized with unplanned and unserved areas. In this vein, the situation resulted in the mushrooming of swarming settlements as such making it difficult for the municipality to cater for the provision of basic services such as water and sanitary services among its citizenry. Reports from a survey conducted in (2001) by

water -Aid indicates that in relation to access of portable water , about 11 % of the residents had an individual water connection and the remaining obtained water from alternate sources that includes traditional wells, community kiosks, or purchased water from privately owned wells or water vendors . The majority of households were not connected to piped water. In terms of sanitation, the same report also indicates the existence of low level sanitary services, which was comprised of poorly built systems, unmaintained latrines, and open garbage pits and sewers.

2.9.2 (i) Causes of Water and Sanitation Challenges in Temeke Municipality.

A study conducted Rugemalila & Gibbs (2015) gives insights on underpinning root causes undermining the operation of Temeke Municipality in providing efficient basic services. It was noted that, the majority of residence in Temeke were not connected to piped water and the few connected received it sparingly. Rugemalila & Gibbs (2015) also noted that attribute this to a plethora of reasons which included low investments in (WWS), poor governance, poor billing system, lack of community participation in (WWS) programmes, and an increase in population. In this case Rugemalila & Gibbs (2015) made much emphasis's on governance failure as the major cause of the problem in Temeke community .They based their arguments, on the fact that the good governance involved the participation of different stakeholders during planning stage until the implementation stage. However, their research findings, indicates that problems of water and sanitation in the local authority was as a brainchild of limited community involvement during the planning and decision making process on issues to do with water governance in Temeke Municipality. Also related to poor governance, they also recognized a gap between policy and implementation. They highlighted that despite the aims of the 1991 National Water Policy which seeks to promote optimal, sustainable and equitable development and use of water resources for the benefit of the present and future generations; in Temeke the policies and plans are not effectively implemented.

2.9.2. (ii) Local coping strategies to water and sanitation challenges.

Coping strategies in Temeke can be categorized into three categories which are municipal, community and individual household coping strategy. Rugemalila & Gibbs (2015) noted that at municipal level, the local authority contributed in the improvement of access to water supply

through managing and spearheading the implementation of WSS projects. Under such arrangement Rugemalila & Gibbs (2015) noted that Temeke municipality investigates the location of water sources, determines the quality and quantity of water, design water schemes, prepare plans and implements them. In wards such as Jumuiya yaWatumia Maji Kilakala (JUWAMAKI), Yombo Vituka, and Mbagala Kuu the local authority managed to drill more than 130 boreholes which were later handed to water committee's and water users associations for management and sustainability.

At communal level, non-governmental organisations play a very important role in addressing water shortages in Temeke especially through the establishment of Community Based Organisations (CBO). Rugemalila & Gibbs (2015) noted that, in Mbagala kuu and Kilakala NGO's such as care international, Water and Environmental Sanitation Project Maintenance Organisation (WEPMO), were very much instrumental in involving the members of the community in the construction of WSS projects. Once the projects were completed, there were handed over to CBO for instance Rugemalila & Gibbs (2015) indicated that in the same happens in Mbagala kuu were upon (WEPMO), drilled a well and installed a pump to supply the main tank and after construction the project was given to the CBO for operation.

As indicated earlier, that not all households were being served by DAWASA and in those households which were served water supply was erratic. In this vein, at individual household levels, members of the community also devised coping strategies in response to the crisis. Rugemalila & Gibbs (2015) grouped these household coping strategies into 3 three main categories that is buying water, collecting and storing and then lastly acquiring through non-financial means. Given this picture Rugemalila & Gibbs (2015) argues that in Temeke in terms of increasing water quantity, as a coping strategy people were forced to buy water from other providers that includes vending kiosk, storage tanks and bore-wells though the prices of water varying from place to place .In their analysis on the issue of buying trends (2015) noticed that, water shortages in Temeke has disadvantaged most the urban poor given the fact that only higher income earners are able to pay for portable water supply from DAWASCO while low income earners are forced to rely on inconvenient sources, which frequently involve exposure to social, cultural or economic risk .

In collecting and storing strategy Rugemalila & Gibbs (2015) indicates that, since water supplied by DAWASCO at times is regular residents resort to purchase large water vessels or containers to collect water during the time it flows through the taps and store it for future use especially during deprived days. As a strategy most residence are forced to walk long distance to fetch water from neighboring areas and in most cases wake up as early to bit long queues at water boreholes and other community water sources. Also other coping strategy that was identified as being adopted by individual households includes rainwater harvesting where upon water is collected during rain seasons. This strategy according to Rugemalila & Gibbs (2015) is very common among Temeke residence as rainwater is considered the best alternative water source to DAWASA piped water, because it can be used for drinking without boiling.

Lastly under non- financial means category Rugemalila & Gibbs (2015) indicates that low income earners are the most affected as there are forced to collect water from unsafe alternate sources that include local wells, swaps and streams. Despite the fact that the safety of water fetched from these sources is compromised , in other areas such as Mbagala residents resorted to the use water obtained from swaps for domestic purposes such as washing ,bathing and at times cooking .Other coping mechanisms identified also includes limiting water usage through neglecting domestic chores such as washing clothes and even taking a bath .These were considers as non-essential activities .In the same vein, since poor families are marginalized in the provision of adequate water and sanitation services they also respond to this through illegal water connection . Moreover, research by Rugemalila & Gibbs (2015) also gives insights on illegal water connections in wards such as Miburani and Mbagala kuu wards in which, residence in these wards use this coping strategy to secure safe portable water though such a strategy perpetuates water problems as it results in water leaks from the system at the same time reducing water pressure and supply to those legally connected.

2.10 Gaps in literature

The foregoing literature has managed to show the global issues around water and sanitation sector. The reviewed scholarly views manage to give insights into major constraints affecting this sector and challenges to it. On a global scale, it was established that there has been an improvement in the access of water and sanitation. However, on a local level, literature has shown that in developing countries there is still a huge disparity in the access of these services. This disparity is still evident in Zimbabwean urban areas and this is disturbing considering the fact under Sustainable Development Goals Agenda local authorities are part and parcel of the implementers. It is therefore the intention of this research to ascertain the actual problems being faced by Zimbabwean Local Urban local authorities in the provision of adequate water and its related services. It is the results of these problems which become the bases to explore into strategies to improve access to water and sanitation services so that urban local authorities are able to meet target underpinned by SDG goal six.

2.11 Chapter Summary

The above chapter managed to explore water service delivery in broad by analysing the concepts underpinning the study and also pointing out the theoretical framework which is the theory which explains the study being carried out. This literature also provided diverse scholarly writings about the challenges to the provision of water and sanitation in urban areas indicating the root causes to it and the effects being faced by urban dwellers as a result. It also gave empirical evidence on the experiences of other countries. The next chapter will be focusing on research methodology.

CHAPTER III

RESEARCH METHODOLOGY

3.1 INTRODUCTION

The focus of the study is to explore water and sanitation problems in urban local authorities in Zimbabwe and Epworth local board was chosen as a case study for the research. It is therefore the focus of this chapter to present how the study was carried out in order to meet the objectives of the study. In this regard this chapter seeks to give insights on the methodology guiding this research. In this case the chapter will give much detail on the research design, target population, research instruments, data collection procedures and ethical considerations.

3.2 Research Methodology

Wegner (2003), defines research methodology as an analysis of the ways to be applied in getting data that will help the scholar in coming up with results. Research methodology covers research philosophy, research approach, research design, and target population, sample size, sampling methods, data collection methods and instruments used during a research. Research methodology further looks at how the data was collected, analyzed, presented and interpreted. It also includes issues of data validity and reliability. Kothari (1999) on the other hand gives insights on what research methodology entails. He regarded research methodology as a way to systematically solve the research problem. His arguments established that through research methodology one is able to study the various steps that are generally adopted by a researcher in studying his research problem along with the logic behind them. In this regard, he resolved that the scope of research methodology is wider than that of research methods in the sense that research methodology goes beyond just choosing methods and techniques but also the ability to explain the logic behind choosing them.

3.3 RESEARCH DESIGN

Kothari (1999:31) posits, that “a research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure.” Kothari (1999) also added that, the research design is the conceptual structure within which research is conducted and it constitutes the blueprint for the collection, measurement and analysis of data. In this light Babbie & Mouton (2001) concurs when they defined research design as a plan or a blueprint used when one intends to conduct research. In addition research designs are categorized into three categories that are descriptive design, case study design and experimental design Kothari (1999). This is in harmony with Young (2000) who highlighted that there are different research designs in particular exploratory, experimental, survey and case study. Therefore in this regard this research adopted a case study research design.

3.3 (i) Case study research design

As aforesaid this research has adopted a case study research design for the reason that it enables the research to explore in-depth a program, event and activity under study. According to Yin (2003) a case study is an approach to research that focuses on gaining an in-depth understanding of a particular entity or event at a specific time. This approach allows for the use of an array of data collection techniques to capture the issues under research. It also involves an empirical investigation of a particular phenomenon with its real life context using sources of evidence. For the purposes of this research, Epworth Local Board is used as the case study. The rationality behind this choice is that in general there are many urban local authorities in Zimbabwe who are facing challenges in providing sufficient water and sanitation services so, using Epworth Local Board as a case study will enable the researcher to conduct an in depth investigation into water and sanitation problems in a particular area instead of assessing all Urban Local Authorities in Zimbabwe. In this regard the case study approach will provide more information and an in-depth insight of the situation at hand and will also save time and resources as the research will only focus on a particular study area rather than the whole country.

3.3 (ii) Descriptive research designs

This research also took a descriptive approach. Kothari (1999) postulates that descriptive research studies are those studies which are concerned with describing the characteristics of a particular individual or of a group. Kothari (1999) further noted that the major purpose of descriptive research is description of the state of affairs as it exists at present. In this vein, this approach is relevant to the study given the fact that, one of the objectives of the research is to describe the current state of water and sanitation services in Epworth hence by adopting this design the research was able to describe the current state of affairs through using various data collection methods that includes observation, questionnaires, interviews, and even examination of records.

3.4 RESEARCH APPROACH

Kothari (1999) identified that there are two types of approaches when one is conducting a research and these are quantitative approach and the qualitative approach. Kothari (1999) advanced that quantitative approach involves the generation of data in quantitative form which can be subjected to rigorous quantitative analysis in a formal and rigid fashion whereas qualitative approach to research is concerned with subjective assessment of attitudes, opinions and behavior Kothari. In this regard the research took both the qualitative and quantitative approach in gathering data. The rationality behind taking both approaches is that for the objectives of this research to be achieved, qualitative and quantitative data was equally important. Quantitative data was useful in quantifying the number of respondents who provided responses in relation to the objectives of the study. On the other hand, qualitative data was very useful in regard to the perceptions of residents, council official and other relevant stakeholders in Epworth regarding the problem of water and sanitation in this community.

3.4 (i) Qualitative Research

The qualitative approach is important for this research because it is concerned with the way people interpret data through their experiences and patterns of behaviour. According to Babbie and Mouton (2005), qualitative research seeks to gain first hand holistic understanding of a phenomenon, using flexible methods such as interviews, open ended questions and questionnaire. They further added that qualitative approach aims at gaining the subject's experience of a certain phenomenon. The use of qualitative approach in this study is based on of advantages associated

with it. Taking for instance was useful in allowing the researcher to describe and evaluate the performance of programs in their natural settings, focusing on the process of implementation rather than on quantifiable outcomes.

In addition, qualitative data collection methods result in descriptions of problems, behaviors and events and can provide narrative descriptions of people's thoughts and opinions about their experiences, attitudes, and beliefs. Therefore, qualitative data was collected using interviews, closed and open ended questionnaires which allow the respondents to express their opinions, attitudes and feelings in regard to the state water and sanitation in their community. Observations were made with regard to the quality of the water and sanitation. In this respect qualitative approach was very instrumental during the research as it assisted the researcher in hearing the views of the targeted in responds to the provision of water and sanitation services in Epworth.

3.4 (ii) Quantitative Research

Quantitative research is a systematic empirical investigation of variables via statistical, mathematical or numerical data. Bell (1987) stated that quantitative approach entails counting and measuring of events and performing statistical analysis of a body of numerical data. The closed ended questionnaires were used to collect quantitative data for the simple reason that the approach focuses on numbers rather than statement, there eliminating subjective judgment. Leedy (1980) stated that quantitative methods provide specific statistical based facts to decision makers which can easily be used to make accurate and informed decisions.

3.5 RESEARCH POPULATION

Hair et al (2003) defines research population as a complete group of objects or elements relevant to the research project. On the other hand, Wegner (2009) defines a population as a collection of all observations of random variable under study and about which one is trying to draw conclusions. The study focused in Epworth. Epworth is a high density, informal and peri- urban settlement which is located about 15 kilometres south east of Harare the capital city of Zimbabwe. Epworth has a total population around 167 462 (Zim Population Census 2012).

3.5.1 Target population

The above population statistic was used as the target population for this research. Since this research seeks to study water and Sanitation problems in Urban Local Authorities in Zimbabwe, Epworth local board which has an administrative authority of the area became the primary respondent together with the Epworth residents' community, representatives from NGOs and development committee members. The reason behind choosing these respondents was that these parties are considered to be knowledgeable enough to provide relevant information relating to the water and sanitation situation in Epworth.

3.5.2 Sampling

Trochim (2006) defined sampling as the process of selecting units from a population of interest so that by studying the sample we may fairly generalize our results back to the population from which they were chosen. Kumar (2009, p.148) states that "sampling is the process of selecting a few from a bigger group (the sampling population) to become the basis for estimating or predicting a fact, situation or outcome regarding the bigger group." The rationality of taking a sample of the target population is vital as it makes the research manageable, economic and complete on time. In this vein the sample chosen in a research should be representative of the entire population.

3.5.3 Sample size

In conducting research, it is always the case that researches uses samples. The reason being that in conducting researches it is always difficult to study the entire population. In this regard a sample size can be described as a subset of the total population being studied in which the findings reflect a true representation of the characteristics of the studied population Catherine, (2002). Therefore, for the purposes of this study, a sample size is drawn from officials from Epworth Local Board, residents in wards 1, 6 & 7, representatives from NGOs operating from the area, development committee members and Epworth Residents development association. The reason behind choosing the sample from these parties, as aforesaid these parties are considered to be knowledgeable enough to be able to provide relevant information relating to the water and sanitation situation in Epworth. The sample size was 75 and this is presented on the diagram below.

Table 3.1 distribution of target population

Category	Sample size	Sampling technique
Households in ward 1, 6 & 7	60	Systemic Random Sampling
Councilors in ward 1, 6 & 7	3	Purposive sampling
Officials from Council	5	Purposive sampling
Epworth Residents development association	1	Purposive sampling
Representatives from NGOs	5	Snowball sampling
Development committee members	1	Purposive sampling
Total		75

Source: Research Data 2017

3.6 Sampling technique

The following are the sampling techniques which were used during the research.

3. 6. 1 Systematic Random Sampling

Systematic Random Sampling technique is used to select participants in such a way that every participant has an equal chance of being selected. In systematic random sampling, each individual is chosen randomly and entirely by chance. This sampling technique was used in conjunction with other sampling techniques mentioned below. This sampling technique was be used in wards 1, 6 & 7 in identifying and selecting households that were used in the research. In selecting the households, the researcher adopted the strategy of selecting one household after every 10 in between. Therefore, the sampling technique was useful in selecting 60 households in ward 1, 6 and 7 in Epworth.

3. 6. 2 Purposive sampling

This study also employed purposive sampling in selecting participants for data collection. Catherine, (2002) states that purposive sampling technique is a type of non-probability sampling that is most effective when one needs to study a certain domain with knowledgeable experts within. The bias involved in selecting participants under purposive sampling makes the selection criteria rich in terms of data quality and reliability. In this respect Patton (1990) highlights that the logic and power of purposive sampling lies in selecting information rich cases for the study. Information rich cases refer to those respondents from which the study will gather informative data of central importance to the research study thus the term purposive sampling. Purposive sampling was useful to the researcher in selecting key informant from ELB and experts within Epworth who provided well-informed information with regard to water and sanitation issues. These included the executive staff from administration, housing and engineering departments. The rationality of targeting these emanate from the nature of their job description that has direct bearing on the provision of water and sanitation around Epworth.

3. 6. 3 Convenience sampling

Convenience sampling is another qualitative non-probability sampling technique whereby respondents that are selected by this technique are selected because of their close proximity to the researcher. The sampling technique relies more on chance encounters with the targeted respondents. The sampling technique was used to gather data from residents in wards 1, 6 & 7 and council officials. This sampling technique plays a pivotal role in the research as it enabled the researcher to reach out to those residents that who were available at their households. The sampling technique was used by the researcher in gathering information from council official that were available at the time of data collection. In this regard convenience respondent were interviewed and at the same time questionnaires were administered.

3. 6. 4 Snowball sampling

This research also employed this sampling technique to gather data from respondents. Crossman (2017) is of the view that snowball sampling is a non-probability sampling technique in which a researcher begins with a small population of known individuals and expands the sample by asking those initial participants to identify others that should participate in the study. Barnett

(2002) on the other hand posits that, this sampling technique focuses more exclusively on the rare members of the population and progresses one case to another through successive stages of referral. In this vein, the researcher used this technique to gather information from key informants through soliciting information regarding other stakeholders or players who are operating in Epworth in the provision of water and sanitation.

3. 7 Data collection

Maxwell, (2012) defines data collection as a systematic approach to gathering information from a variety of sources to get a complete and accurate picture of an area of interest. Best and Kahn (1993) also argues that data collection procedures involve the following steps, making appointments with research subjects, through telephone, fax, or letters, distribution and administering of instruments of the sample for example by hand, mail or through research assistants and lastly through retrieval of instruments. In this research both primary and secondary sources of data were used in gathering information relevant to this study.

3. 7 .1 Sources of data

Basically there are two sources of data namely primary and secondary data sources. Kothari (1999) ascertain that primary data as those which is collected afresh and for the first time, and thus happen to be original in character. In general term it is the type of information that is obtained directly from first hand sources by means of surveys, observations or experimentation. The secondary data, on the other hand, are those which have already been collected by someone else and which have already been passed through the statistical process Kothari (1999).In this vein, secondary data is the data that has been gathered for different purposes other than the immediate study at hand. These include data sources such as publications and reports by different organisations.

3. 7 .2 Primary data sources

In a research, primary data source refers to the original research material on which the research is founded. In this case, it refers to the data and experiences gathered in the field under study. In other words, such information would not have been gathered and evaluated before the study. Under this study, the primary data sources were gathered through administering questionnaires, site observations, and interviews.

3. 7 .3 Secondary data sources

Secondary data involves analysis of existing data, the use and further analysis of data collected for another purpose and found by means of desk research (Leedy, 1980). This involved the use of journals, newspapers, textbooks and internet; this is cheap and easy to assemble and as it provides a wide and global coverage of research. This research also made use of secondary data sources such as newspaper articles, municipal minutes, council records and reports.

3. 7 .4 Data collection Methods / Instruments

These actually refer to the tools used to gather information relevant to the research study. To capture the much needed data of the study the researcher will make use of questionnaires, interviews and site observations as tools for gathering primary data. The researcher administered questionnaires to the selected sample and interviews were used to solicit information from the Key informant. Direct observations on the variables on the ground were made to complement information given through the use of questionnaires and interviews

3. 7 .4 (i) Questionnaire

Rowlin (2004) observed that a questionnaire is a document containing questions designed to seek information that is appropriate for analysis. Questionnaires were distributed randomly to members of the community in the Epworth area. The questionnaires prepared were administered to the residents residing in ward 1, 6 and 7. The rationality of using residents is that, they have the first-hand experience and also they are in a strategic position to tell how the local board is delivering water and sanitation services. The researcher will administered 60 questionnaires to residents to answer and from each ward 20 were administered to balance the results of the research.

Advantages of questionnaires

- The use of questionnaires was vital to the researcher because of high turnout response rate that was achieved
- The questionnaires instrument allowed wider coverage in terms of numbers at minimum effort and time.

- Questionnaires because of anonymity, allows respondents to give truthful answers without fear of being victimized.

Disadvantages of questionnaires

- Questionnaires proved to be difficult to use to those respondents that were illiterate and physically handicapped people who are not able to read and write. Observations complemented questionnaires to overcome this setback.
- The researcher also faced costs in printing these questionnaires this meant that with inadequate questionnaires research findings were to be compromised as only a few respondents would be given questionnaires thus affecting the validity of the research. To overcome this researcher however sought adequate funds for the whole research

3.7. 4 (ii) Interviews

Interviews are designed to elicit the subjects' thoughts, opinions and attitudes on the related matter (Barbie and Mouton, 2000). Interviews help in gaining more information from the related and relevant players in service delivery in resettlement areas. An interview both formal and informal was instrumental in exploring related areas where questionnaires would have failed to reach. The researcher hoped that interviews would provide useful information in addition to that directly asked for, provide gains in terms of time, afford chances to clarify data and offer the possibility of more data. The researcher conducted interviews with key informants from the ELB, councilors from ward 1, 6 & 7, representatives from resident associations, and a representative of development committee. Interviews helped the researcher to obtain and triangulate data collected from these respective respondents.

Advantages of interviews

- Interviews gave the researcher the opportunity to solicit more information in scenario whereby questions asked were repeated to ensure that they are adequately understood.
- Respondents were also given an opportunity to make a follow up or seek further clarification to the questions asked.
- Data collection was immediate.

Disadvantages of Interviews

- This approach proved very expensive as the researcher had to travel to the source of data and more time was taken interviewing the individuals. To avoid time wastage in capturing data the researcher used recordings in capturing data.
- The presence of the interviewer may hinder free expression of the respondent. The researcher made sure that the interviewee feels free to express themselves and assured them that there will be confidentiality and would not be capturing any sensitive information and to avoid the use of names of respondents.

3.7.4 (iii) Site Observation

Observations enabled the researcher to describe existing situation using the five senses, providing a written photograph of the situation under study (Kawulich 2005). Field work involves looking, improving memory, informal interviewing, writing detailed field notes. Observations were used as a way to increase the validity of the study, as observation may help the researcher to have a better understanding of the context and phenomenon under study (Kawulich 2005). The use of observation as primary research tool allowed the researcher to directly translate findings to the situation on the ground. This is so because the primary basis for observations is to verify whether what people say tally with reality (what is physically present in the field). In this light the researcher was able to observe the current situation in terms water service delivery, sanitation facilities and even the coping strategies.

Advantages of observations

- The researcher was able to directly observe the situation without relying on what the respondents said.
- The researcher was able to collect data at the specific point where the event or activity was occurring.
- The researcher was not forced to rely on the participants' willingness to provide information.

Disadvantages

- There is the probability that the observations can be susceptible to the observer bias. The researcher made sure that real events were recorded.

3.8 Validity and reliability

Credibility which refers to the extent to which information is valuable and reliable is of utmost importance in research. Jackson (2011) posits that reliability is the extent to which research instrument gives the same results during its repeated use; it is the degree to which it is consistent in producing the same results. In this regard, the process of determining the suitability of the questions and their structure was cautiously conducted so as to uphold data reliability. According to Saunders et al (2009) research is valid only if it actually studies what it is set to study and only if findings are verifiable. Therefore the researcher crafted questions that only sought to give answers to the study's research questions. In this way data gathered and results was valuable.

3.9 Ethical considerations

Research ethics are critical in every research. The researcher did not fabricate data gathered through interviews and observations as well as the results thereafter but will presented them as they are so as to give a true picture of the state of water and sanitation in urban areas. All the respondents were assured of privacy and confidentiality in that information they give was solely used for academic and professional purposes and not otherwise. In line with privacy and confidentiality, no respondent was asked for his or her name.

3.10 Data presentation and analysis

The presentation of findings was done using qualitative and quantitative content analysis that is qualitatively data was presented using descriptive statements through the use of Microsoft word and quantitatively data was presented using visuals such as graphs, tables and charts, Microsoft Excel was used to create graphical presentations. The purpose of putting results of experiments into graphs, charts and tables, was justified as easy to understand and also that they give a clear depiction of trends and clearly illustrate a summary of the information.

3.11 Chapter summary

This chapter has provided a detailed approach that guides the study. It clearly highlights that this study assumes both qualitative and quantitate approach. The chapter also sets out how data was collected using identified research instruments.

CHAPTER IV

DATA PRESENTATION, INTERPRETATION AND ANALYSIS

4.0 Introduction

This chapter presents data which was collected through interviews, questionnaires and observations in Epworth, in relation to water and sanitation problems in urban local authorities in Zimbabwe. This data was obtained through primary instruments such as questionnaires, interviews and observations and secondary sources such as reports and other relevant literature. Presentation of data was done through tables, charts, graphs and pictures.

4.1 Response rate

The following tables 4.1, 4.2 and 4.3 summarizes the response rates on questionnaires, interviews and the overall total response rate which is the total number of respondents against the sample size.

Table 4.1 Questionnaire response rate

Respondents	Sample	Response	Response rate
Residents in ward 1	20	20	100%
Residents in ward 6	20	20	100%
Residents in ward 7	20	20	100%
Total	60	60	100%

Source: Primary data (2017)

A total of forty (60) questionnaires were distributed to 3 different suburbs in Epworth which are ward 1, 6 and 7. In each ward the researcher distributed 20 questionnaires and the above table shows that all of the questionnaires were answers and returned .As table 4.1 above summarizes, the questionnaire response rate was 100%, as such the researcher considered this respond rate suitable for making meaningful conclusions.

Table 4.2 Interview response rate

Respondents	Sample	Response	Response rate
Officials from Epworth Local Board	5	2	40%
Councilors	3	3	100%
Epworth Residents development association	1	1	100%
Development committee members	1	1	100%
Representatives from NGOs	5	-	-
Total	15	7	46.7%

Source: Primary data (2017)

From the fifteen (15) interviews that were supposed to be conducted only seven were (7) were successful and the interviews with representatives from NGO, s were fruitless and this lead to the researcher to relay of secondary data on the role of NGO, s in Epworth. The other 3 interviews with council management were not done due to the respondents' absence as a result of their demanding duties; and overall response rate was 46, 7% of all interviews.

Table 4.3 Total response rate

Sample size	Participated respondents	Response rate
75	67	89.3%

Source: Primary data (2017)

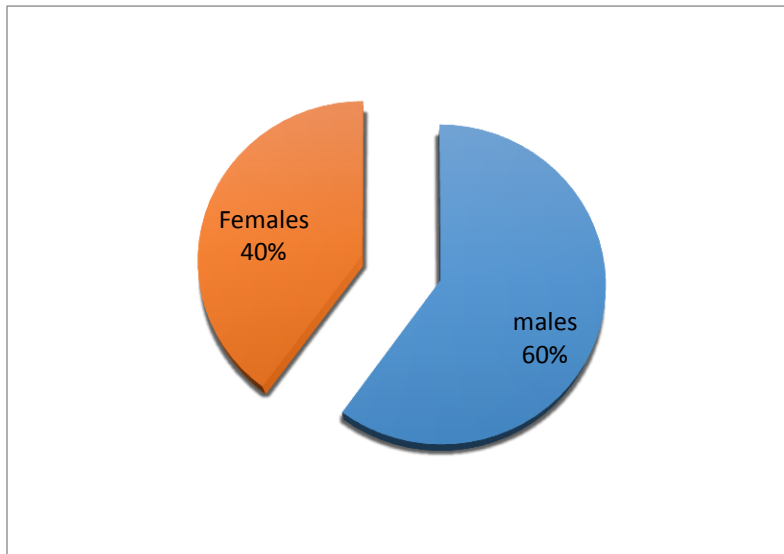
As table 4.3 above shows out of a sample size of fifty five (75), forty eight (67) respondents participated in this research which is 89.3% response rate, according to Yin (2009) a response rate should fall between 20% and 94% to be considered acceptable.

4.2 SECTION A: Biographical data for respondents

Table 4.4 Distribution of Gender

Type	frequency	Percentage %
Male	36	60 %
Females	24	40%
Total	60	100%

Fig 4:1 Gender distribution



Source: Primary data (2017)

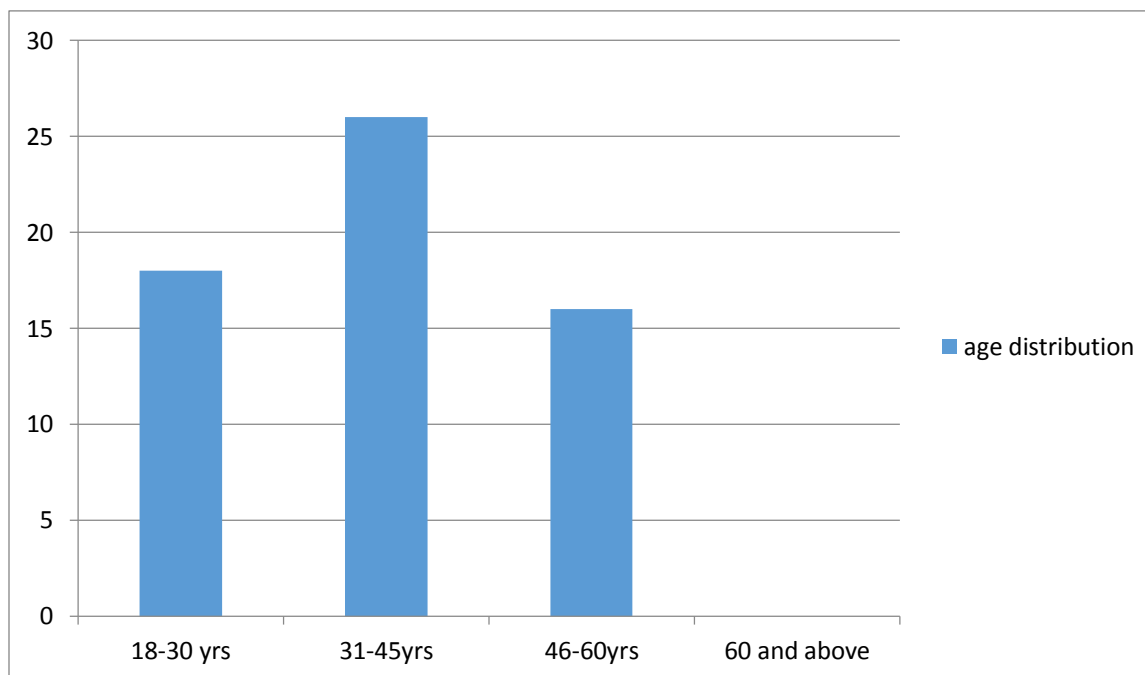
The above diagram shows that the majority of the respondents were males. As indicated 60% of the respondent were males while females constitute 40%. From the interviews which were done by the researcher, with various respondents from council officials, councillors, representatives from residents association and members of ward development committee most of the respondents were males. How high turnover of women was noticed during the administration of questionnaires and this might be due to the fact that females are the ones who are mandated to manage water and sanitation at household level. However through the administration of questionnaires in ward 1, 6 and 7 the response rate of women started gaining ground and this might be attributed to the fact that women are the ones who are most affected by inadequate water and sanitation owing to their gender roles that makes it mandatory for them to manage water and sanitation at household level.

4.2.2 Age profile of respondents

Table 4.5 distribution of age of the respondents

Age group	frequency	Percentage
18-30	18	30%
31-45	26	43.3%
46-60	16	26.7%
60+	0	0%
total	60	100%

Fig 4:2 Distribution of age of the respondents



Source: Primary data (2017)

The data that was collected through administering questioners in Ward 1, 6 and 7 shows that 18 of the respondent are aged between 18-30 years old, 26 between the age of 31-45, 16 are in the

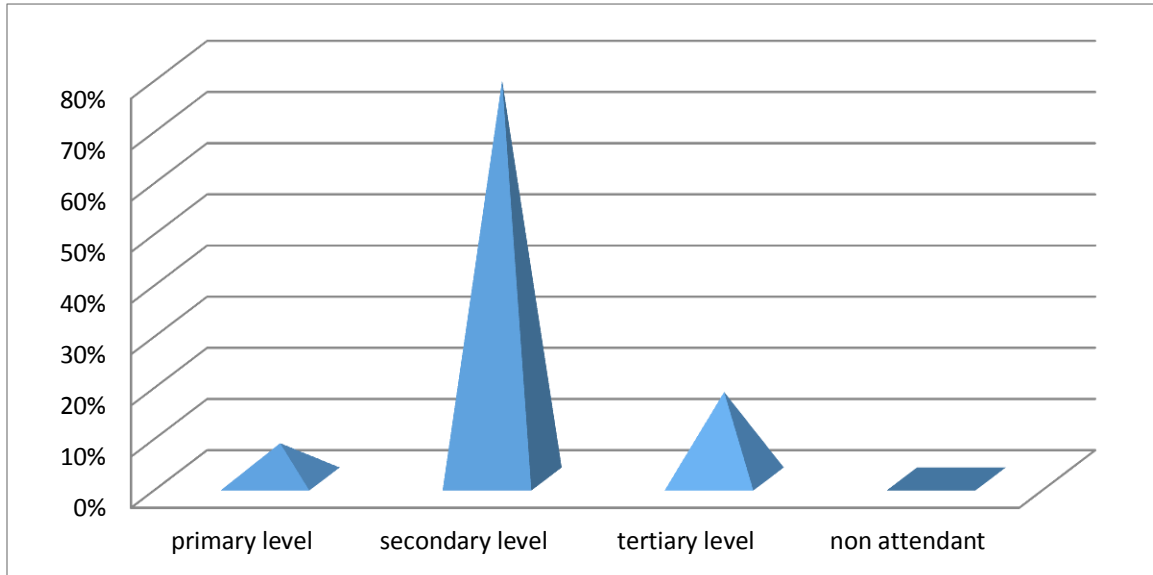
category of 46 to 60 and lastly there is none in the above 60 category .As presented above, it can be noted that the majority of the respondent are between the age of 31-45 years which means that data was obtained from individuals who are economically active and also in a better position to provide insights in respect to their experiences in issues to do with water and sanitation in their respective wards.

4.2.3 Educational level of respondents

Table 4.6 shows the distribution of educational level of respondents

Educational level	No of respondents	Percentage of respondents %
Primary	4	6.7 %
Secondary	46	76.7%
Tertiary	10	16.7%
Non attendant	0	0%
total	60	100%

Fig 4:3 shows the distribution of Educational level of respondents



Source: Primary data (2017)

The above diagram shows that the majority of the respondents reached secondary level. As indicated by the graph 76.7% of the respondents managed to reach secondary level, 16, 7% reached tertiary level while only 6.7% indicates that they reached primary level. Thus the general majorities of the respondents were literate enough to answer the questioners and were in a position to fully explain the nature of water and sanitation within their respective wards.

Table 4.7 Distribution of number of years residing in Epworth

Category	Number of respondents	Percentage
0 -5 years	4	6.7%
6-10 years	9	15%
11-15years	15	25%
16 -20 years	11	18.3%
20+	21	35%
Total	60	100%

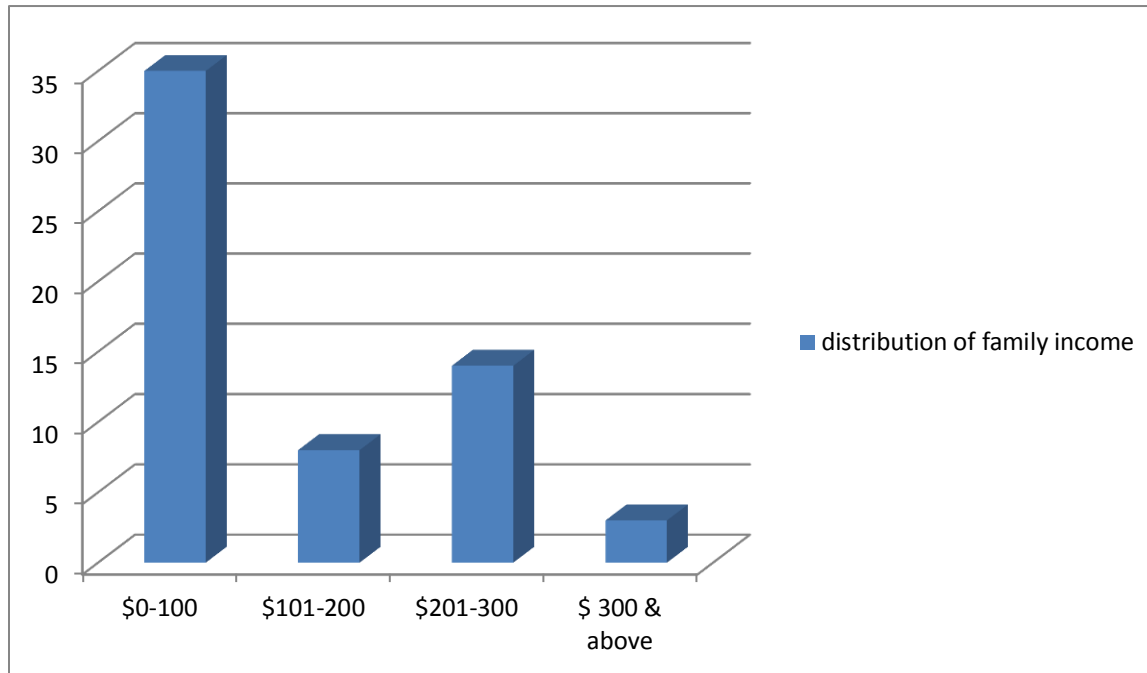
Source: Primary data (2017)

In order to determine the nature of water and sanitation services and its adequacy in Epworth, the respondents were categorized into number of years they have stayed in their respective wards. The table above shows the number of years the respondents has stayed in Epworth, 35 % of them indicated that they has been residence of Epworth over a period of 20 years and above, 25 % has lived in this community for about 11-15 years, while 18, 3% have been residents for a period of 16-20 years and only 6, 7 % has been residents for a period below 5 years. This can be attributed to a number of factors chief among them being the issue of land tenure. Sources from the ELB indicates that, almost half of the residents in Epworth rent their dwelling whilst the majority being land lords. This explains why in ward seven and six the number of respondents indicated that they has been residents for a period below 5 owing this to the fact that there are tenants , while those above 20 are landlords who are in most cases are in ward 1 .

Table 4.8 Monthly Family income

Rate of income	No of respondents	%
\$0-100	35	58,3 %
\$101-200	8	13,3%
\$201-300	14	23,3%
\$300 above	3	5%
Total	60	100%

Fig 4:4 Distribution of Monthly family income



Source primary data (2017)

The above diagram shows the distribution of income of residents in Epworth. 58, 3% of the respondents indicate that they survive with less than \$ 100 per month, 13.3% shows that their families' income is between 101-200 , 23,3% are within the range of 200 -300 while only a small portion 5% are above \$ 300 .This clearly show that the generality of the residents live below the poverty datum line.

4.3 State of water and sanitation services in Epworth

Access to clean water and sanitation is a basic right guaranteed by the international law and Zimbabwean constitution also guarantees the right to water. It is against this background that this section focuses on the current state of water supply and sanitation services in Epworth.

Table 4.9 shows the distribution of water and sanitation services across ward 1, 6 and 7 in Epworth

State of WASH Infrastructure	Respective ward		
	1	6	7
Reticulated water	Available	Available	Not available
Deep/shallow wells	Not available	Available	Available
Reticulated sewer	Available	Not available	Not available
Pit latrines	Available	Available	Available

Source: Epworth Profile Report (2012)

This table shows the distribution of water and sanitation services across ward 1,6 and 7 in Epworth. The information given by this report indicates that households in ward 1 and 6 has access to portable reticulated water exclusive of ward 7 which has no access to portable reticulated water and as such they rely on shallow wells. In terms reticulated water sewers only ward 1 has access to reticulated water sewer whilst the rest make use of other facilities such as pit latrines.

Table 4.10 Residents' perception on the current water and sanitation services being offered by the local authority.

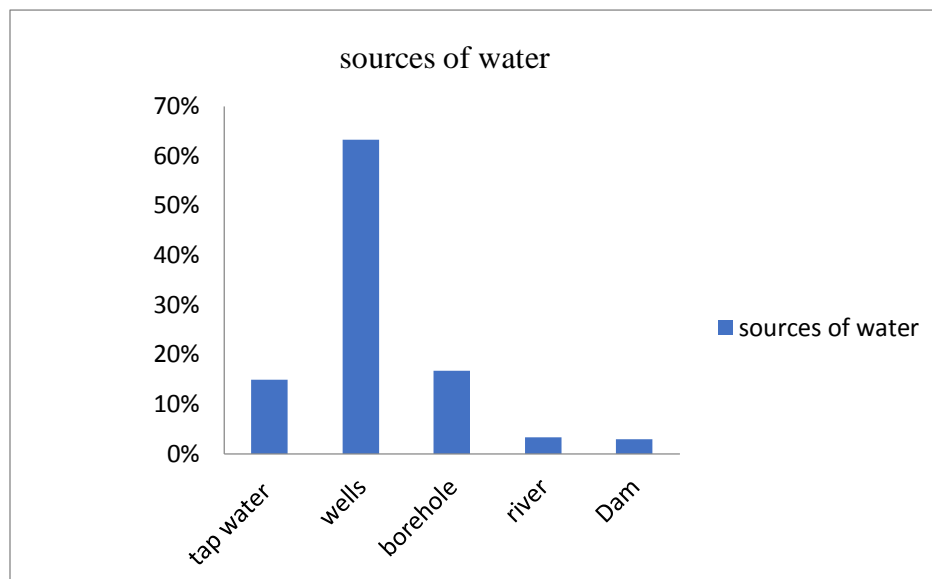
Perceptions	frequency	%
Excellent	-	-
good	-	-
Fair	11	18.3%
poor	49	81.7%
Total	60	100 %

Source: field survey (2017)

From the 60 questioners administered in ward 1, 6 and 7 the study reveals that the majority of the respondents are dissatisfied with the services being offered by the local authority with regard to the provision of water supply. Findings from the research indicate that about 81.7% of the respondents noted that the performance of ELB in the provision of water is very poor while the remaining 18.3% indicate that the provision of water services is fair. Given this picturesque the majority of the residents are displeased with the services being offered by council. The rationality behind this perception is attributed to the fact that despite the fact that most of the residents in ward 1 and 6 are connected to reticulated water they barely receive water and in most cases taps runs dry for weeks. This situation compromises access to safe water as many are forced to look for other alternate sources of water.

4.3.1 Sources of water

Fig 4.5 Main sources of water used residents in Epworth



Source: field survey (2017)

The diagram shows the main sources of water used in sampled residents in ward 1, 6 and 7. Most of the respondents indicated that they rely on water from wells dug in their backyard. In ward 1 and 6 there is water infrastructure and every household is connected to reticulated water and the respond given by residents in these two respective wards reveals that residents depend on both

tape water and wells. 15 % of the respondent's expressed that they make use of water from tapes though they receive it erratically probably once or twice a week and in most cases for few hours. This was reflected by one respondent who indicated that, "*we barely receive water from our tapes and when council water is available it is only for a few hours probably 1 to 2 hours*". An interview with key informant at ELB revealed that the problem of continuity of water supply is affected by inadequate supply from the City of Harare as Epworth does not have its own water treatment plant and it relies on Harare city council. This situation has forced many of the residents to rely on other alternate water sources that include wells dug within their yards. In ward 6 most of the respondents indicated that water last came out of their tapes in 2010 and currently they are getting water from wells. This explains why 63, 3% of respondents indicate the use of water from wells. The researcher also observed that the most compromised water sources are found in ward 7 which the majority of the residents get water from shallow wells and in most cases from unprotected wells. The table also shows that 16, 7% get water from boreholes, 3, 3% from rivers and only 1, 7 % make use of dam water.

The findings of the research clearly indicate that in terms of water supply, the performance of the local authority is below the optimum level. This was confirmed by key informant from the ELB who after being asked to describe the current water and sanitation in Epworth admitted that the performance of the local authority in providing the same has not been up to the required standard. Therefore, as indicated above the local authority is finding it difficult to provide sufficient portable water to its residents and as such failure to ensure that residents get access to adequate water supply is in direct contrast to the Human rights perspective to development that entails that water supply for each person must be sufficient and continuous for personal and domestic uses.

This study shows that in Epworth there is poor coverage in terms of municipal water supply as indicated by the majority of the residents who painted that they rely on wells. This is parallel to the studies of Piers and Morel (2012) who posits that coverage of water supply in Africa is relatively low than any region in the world in which one in three Africans does not have access to improved water supply. In addition, as Favre et al (2008) posits the availability of water is very vital for good personal hygiene but given the current water supply situation in Epworth, lack of

reliable tap water endorses poor sanitation practices which will in turn make residents vulnerable to water related illness.

Plate 4:1 protected water source



Source: primary data (2017) protected well in ward 1 and 6

The above picture shows typical protected water well in which most of residents Epworth derive their water for domestic chores. This is against the background where upon council is failing to provide sufficient water for residents and as a result most residents ever since been using this alternate source of water to meet the daily needs. The researcher observed that in most areas toured during data collection the above well is most found in each household serving at approximately 6 to 10 individuals.

Plate 4:2 unprotected water sources



Source primary data: An unprotected water source in ward 7

The above shows the dire situation in ward seven in which the researcher observed the use of unprotected wells for domestic use. As aforesaid the most compromised water sources are found in ward 7 in which the majority of the residents get water from shallow wells and in most cases from unprotected wells. The reason being that ward 7 is entirely an informal settlement where there is no basic services being provided by council and as such most of the residents rely on unprotected water sources. In this case key informant indicated that although access to safe water does not tally with demand, the most vulnerable groups are those found in ward seven. Key informant indicated that residents around this area dug shallow wells for themselves and they use that water which is not safe to drink.

4.3.2 Distance travelled to water sources

The findings of the research demonstrate that 80% of the respondent have individualised water supply (wells) and time taken to fetch water from these wells is less than 30 minutes. However, the remaining 20% reveals that they travel for more than an hour when fetching water from community boreholes.

4.3.3 Rating of water safety

The researcher in an effort to find out the views of residents on the safety of the water they draw from different sources, respondents were asked to rate the level of water safety. The response given by the residents shows that 20 % indicated that water they get from their source is safe, 20 % revealed that it is very safe while the remaining 60 % posits that it is unsafe. Those that said that water they get from their sources is very safe owe this to the fact that ever since they have consumed it, they haven't not yet suffered from water related diseases. Those that indicate that it is very safe owe this to the fact that they trust that borehole water is safe while the remaining who posits that their water sources are unsafe owes this to the fact that they do not trust water they draw from unprotected shallow wells. In this vein, the researcher managed to observe some of the water sources. Through observation, the researcher noticed that household stands in ward seven are so small to the fact that water sources and pit facilities are few meters away and as such this has the capability to contaminate ground water hence risking conducting water related diseases. Therefore from the above statistics the response given by the majority of the respondents reveals that 60 % rely on untreated water sources from unprotected shallow wells. This was stressed out by one respondent in ward seven who said, "*I don't trust the safety of water from these wells but I don't have an option.*" Therefore failure to have access to safe portable water contradicts the perspective of the Human Rights Based Approach that recommend water to be free from health hazards.

4.3.4 Litres of water per day

The water supply for each person must be sufficient and continuous for personal and domestic uses Favre et al (2008). The research establishes that in terms of water consumption 78% of the respondents indicated that they require about 20-60 litres per day, 18% indicates that they use more than 60 litres of water daily whilst the remaining 5 % indicate that they utilize less than 20 litres of water per day. However as aforesaid in ward 1 and 6 where there are reticulated water supplies, council is failing to provide adequate water supply to the residents. For the few hours when water is available, residents are able to acquire few litres of water that sustains them for only a day but the rest of the week are forced to look for other alternate sources.

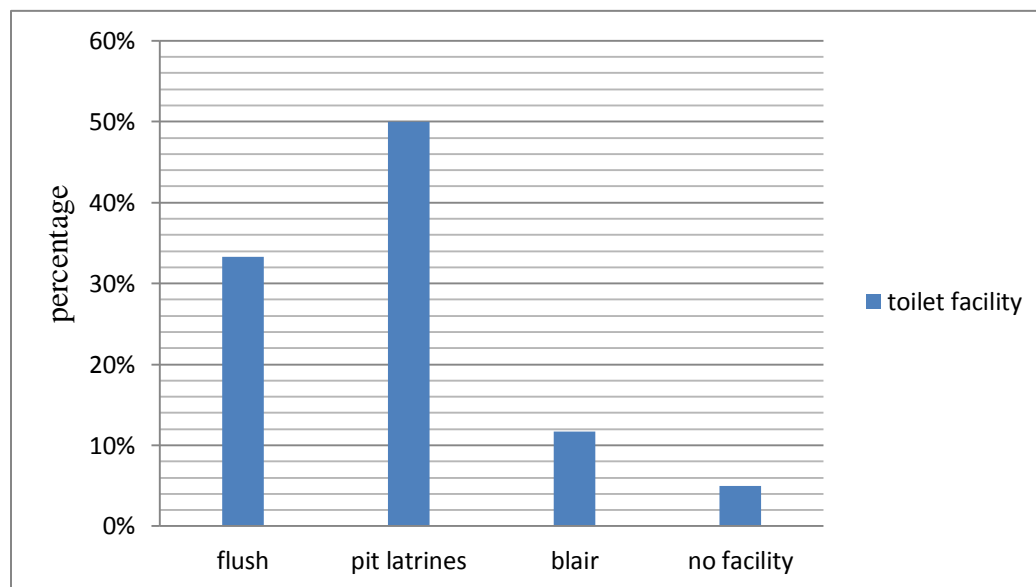
An interview with key informant from ELB revealed that this situation is as a result of inadequate water supply from city of Harare in which the local board receives only 30 mega litres out of the daily requirement of 62 megalitres. As a result this creates a situation where upon the average per capita water supply is less than 30 litres per day.

This shows that water services provision by council is in direct contrast with the international accepted standards. Gleick (1998) specifies that, generally about 20- 50 litres of water is required to meet the daily needs of an individual. Information from the key informant clearly shows that council fall short of this requirement given the fact that, ELB only provide access to portable water once per fortnight depriving residents their right to receive sufficient and continuous water supply as outlined by Favre etal (2008) who noted that, the minimum human right to water as in accordance to the UN General Comment No. 15 is at least 20 litres per person per day.

4.4 State of sanitation in Epworth

In an effort to establish the state of sanitation in Epworth, the researcher observed that most households in Epworth rely on either pit latrines or Blair and flash system in the disposal of human waste. During data collection the response given by respondents in relation to sanitation facilities they use in the in their house household is presented below:

Fig 4.6 Distribution of toilet facility in Epworth



Source author (2017)

The research established that 33.3% of the respondents make use of the flush system in the disposal of human waste. Half of the respondent that constitute 50% indicate that they use pit latrines and these are mostly found in ward seven ,11.7% highlighted that they use the Blair system while 5% of the respondents indicate they have no facility hence they rely on neighbours toilets but in worst circumstances this situation might force them to practise open defecation. The researcher observed that in ward 1 regardless of the fact that this area is connected to sewer reticulation, residents are still using blair toilets due to the fact that the sewer infrastructure has been not be active. In the same vein the study established that the situation is most disturbing in ward seven where residents make use of pit latrines to dispose their human waste. Residents in ward seven indicated that their stands are generally too small a situation which makes it impossible in the event that they want to build new Blair toilet once the current one filled up. This was also observed by the researcher who noticed that in ward seven most of the latrines were poorly built and in most cases the stands in this area are so small, a scenario which has resulted in water sources being dug few metres away from the pit latrines. These circumstances create a situation which might results in the contamination of ground water and chances are high that this might contaminate water wells.

Plate 4:3 Pit latrines in Epworth



Source: primary data (2017) Typical pit latrines in ward seven and six

The above picture shows the typical state of pit latrines that are being used by residents in Epworth. The researcher through observations established that the above mentioned toilet facility is also used for bathing purposes. An interview with key informant indicated that the most vulnerable group is found in informal settlements in ward six and seven in which the above type of sanitation facilities are most common. Given this picturesque the research findings suggest that due to poorly built pit latrines that are few meters away from water sources chances are high that for residents in ward six and seven face to contract sanitation related diseases such as diarrhea, dysentery and cholera. The above poorly built latrines are a clear testimony of the poor state of sanitation facilities in urban areas and this is related to the statistics from JMP (2017) report that point toward that approximately about 2.3 billion people still lacked access to basic sanitation services with 600 million people still using unimproved sanitation services.

4.5 Solid waste management

Solid waste management in Epworth is not being properly managed. Research findings from the study indicate that ELB is failing to manage solid waste; from the 60 questioners distributed by the researcher almost every respondent indicated that council is failing to collect refuse, 96.7% of the respondents revealed that the responsible authority is failing to collect garbage whilst the remaining 3.3% indicates that council is indeed collecting solid waste though once per month.

An interview with key informant from council revealed that failure to conduct door to door collection is as a result of inadequate vehicles as currently ELB only have one refuse compactor, single tipper and a tractor which is being used to collect garbage though mainly at shopping centers. The key informant also owes the challenge of littering to the continued sprouting of vending sites around Epworth community. This has created a situation where garbage accumulates in streets and also the sprouting of illegal dumping sites. In the same vein the researcher managed to observe the state of solid waste management around the Epworth community.

Plate: 4:4 state of solid waste management



Source: primary data (2017)

The above shows the state of waste disposal in Epworth. During data collection the researcher observed that residents have resorted to dumping their solid waste along roads and even with the drainage system. At household level, the researcher noticed the absence of receptacles and records from the Local Board indicate that council is not providing the same to residents. As indicated above most residents in ward seven and six have resorted to digging backyard pits in which they dump refuse and in most cases burn garbage. The study also reveals that in ward 1 where the area is most formal council is also failing to collect refuse and residents has resorted to the disposal of refuse even in drainage systems as indicated in Plate 4.4.

The service being offered by council is in direct contrast to the right to live in a clean, safe and healthy environment as provided by Section 73 of the Constitution of Zimbabwe Amendment (No. 20). Therefore, the presence of uncollected garbage poses a greater risk to the residents a situation where solid waste comes in contact with water sources. The rationality being that literature has shown that in most cases over the years, Zimbabwe local authorities' has been failing to manage garbage, refuse collection, sewerage and this has contributed to the contamination of the water sources and increases the risk in terms of exposure to water borne diseases like cholera and typhoid.

Table 4.11 Resident’s perceptions on the performance of council in the provision of water and sanitation

Perception	Frequency	Percentage
Extremely poor	45	75%
Poor	10	16.7%
Good	5	8.3%
Very good	-	-
Total	60	100%

In an effort to determine the perception of residents in relation to water and sanitation services, residents in Epworth were asked to rate service provision being offered by the local board. A questionnaire survey was conducted with 60 residents in ward 1, 6 and 7. Research findings revealed that about 75 % of the respondent indicated that services being provided by the local authority are extremely poor and they base this argument on the fact that the state of water and sanitation in Epworth is characterised by unreliable water supply, non-collection of refuse among other factors discussed earlier. In this light a resident in ward one highlighted that:

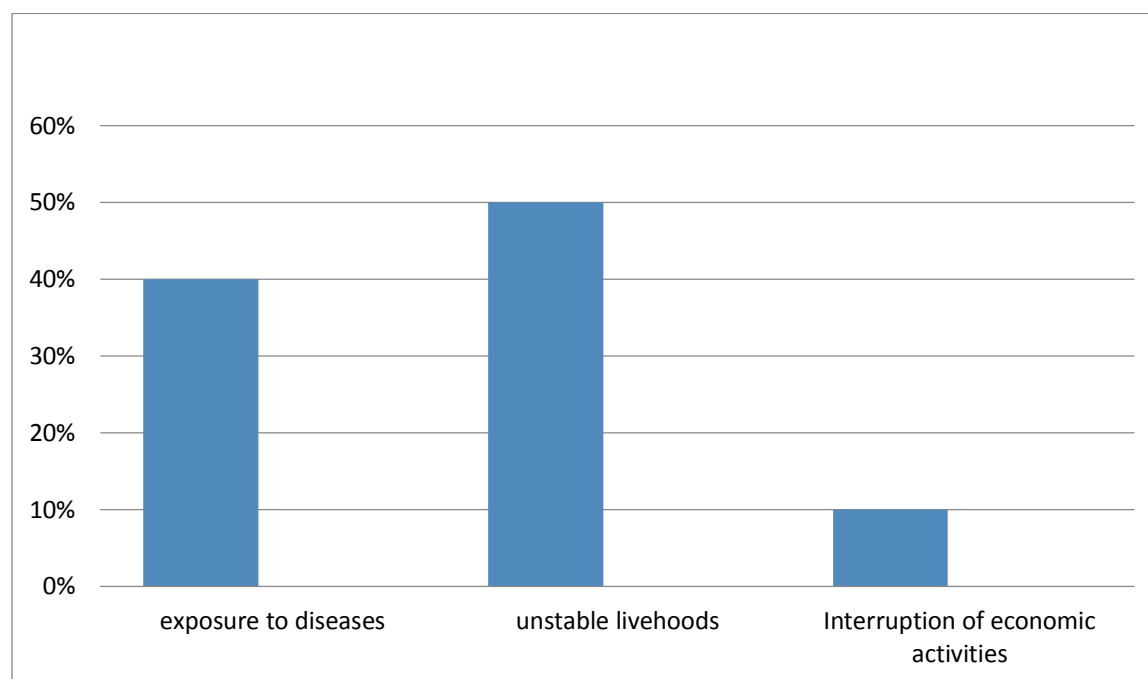
“tinoshandisa mvura yemugodhi nekuti mvura chaiyo mumatapes haiuye” (we use this well here because the water does not come from the tape). Another resident in ward 6 also shares the same sentiments indicating that: “ I have three kids, they need to wash, the baby is still in diapers, if there is no water it means I can’t wash the diapers and this is filthy”.

In addition 16.7% noted that service provision is poor. Responds from residents indicated that due to shortage of water to flush the toilets, in worst case scenario they are forced to relief themselves during the night in the nearby bushes. Moreover 8.3% highlighted that it’s good. The study revealed that those that indicate that the services being offered by council is good, base their arguments on the fact that though council was failing to provide water on a regular basis it had managed to least drill boreholes in the area to compensate for their short comings.

4.6 Residents views on the effects of inadequate water supply and sanitation services in Epworth.

In as much as water and sanitation services are essential for human survival the study revealed that residents in Epworth had been denied this basic right. In an effort to answer one of the objectives of the research which aims at establishing the effects of adequate water and sanitation services in Epworth, the study revealed that indeed inadequate water and sanitation has negative effects to the lives of residents in this community.

Fig: 4.7 Effects of inadequate water supply and sanitation in Epworth



Source author (2017)

4.7 .1 Exposure to diseases

Lack of access to inadequate water supply and sanitation services put the lives of residence at risk of contracting water borne diseases. Report by the Ministry of Health and Child Care revealed that, in Zimbabwe since the beginning of 2017 about 854 cases of typhoid were suspected, 59 confirmed whilst five death occurred. Therefore, in this vein, the study revealed that the current water and sanitation challenges in Epworth expose the residents to diseases. In a bid to ascertain

if such cases are also evident in Epworth the responses given by the residents confirm that they live in constant fear of contracting water borne disease owing this to poor sanitation and unreliable water sources. Out of 60 questionnaires distributed by the researcher 40 % of the respondents confirmed that waterborne diseases are prevalent in their community while others noted that, they last experienced water related diseases some few years ago. Asked to identify the common diseases outbreak in the area, residents highlighted that the main common disease identified was diarrhea. All respondents sampled stressed that there were no cases of cholera or typhoid. However, the report from UNICEF Zimbabwe (2017) outlined that of all the suspected cholera cases in Zimbabwe 50 % of those are found in Chipinge, Chiredzi and Epworth.

In terms of sanitation, the research revealed that there is poor waste disposal in Epworth and this has also impacted negatively on the lives of the members of this community. On being asked about how poor management of waste has affected their lives responses given by residents confirm that, due to poor waste management, causes of diseases are prevalent. This was shared by one resident in ward one who said that, *“around this area when our toilets are overflowing, it’s difficult to use them and its unseating, we end up relieving ourselves in the fields because we have no other option when the toilets are full they burst and mess up this whole area. Our children play in the sewage .They start getting sick from the sewage.* On being asked about which age group is most affected by poor waste management, the study reveals that the most affected group was children below the age of five years. This was confirmed by one respondent in ward six who highlighted that her child suffered for days after getting sick from playing with the effluent.

4.7 .2 Unstable lives

Lack of adequate supply of portable water and improved sanitation services disrupts the social and economic wellbeing of any society . Literature has shown that lack of sufficient water supply poses a great burden to both the rural and urban areas. Studies conducted by Behold (2004) pointed out that women and girls are the most affected given the fact that at household level there are the ones responsible for water management and as such during water shortages they bear the burden of carrying water for up to five hours per day. This is the same with responses given by residents in Epworth who on being asked if there are any cases of scarcity of water 50% of the respondents confirmed that shallow wells are not reliable as they tend to get dry during the period of

October and for more than a month there are forced to rely on community boreholes until rain season resumes. The findings of the research shows that water scarcity had negative effects on the lives of people in Epworth as this has resulted in unstable live hoods.

The study revealed that, residents in this community are forced to wake up as early as possible to queue for water at the community the boreholes. On being asked on how shortage of water have affected their lives one residents in ward 6 (overspill) highlighted that in her area although they make use of water from wells, in most cases the wells are few and unreliable while at the same time despite the fact that there are boreholes in their area others are not functional. In this vein they are forced to walk long distances to other location in search for water. Another respondent in ward 7 also share the same sentiments stressing that around their area there is only one functional borehole which serve the entire community. Given this situation, the study revealed that due to few functional boreholes residents are forced to wakeup even around midnight so as to acquire one bucket of water. However, the situation is even different in ward one despite the fact that the area is connected to council water, the availability of this precious liquid is not always available and this has affected negatively residents in this community as they are forced to buy water from neighbors private wells at a cost of \$3 per month. To support the point of purchasing water UNICEF (1995) states that, the majority of urban poor can spend approximately 40% of their total income on water.

In this vein the study has revealed that the problem of water and sanitation affect differently residents in these three communities.

4.7 .2 Interruption of economic activities

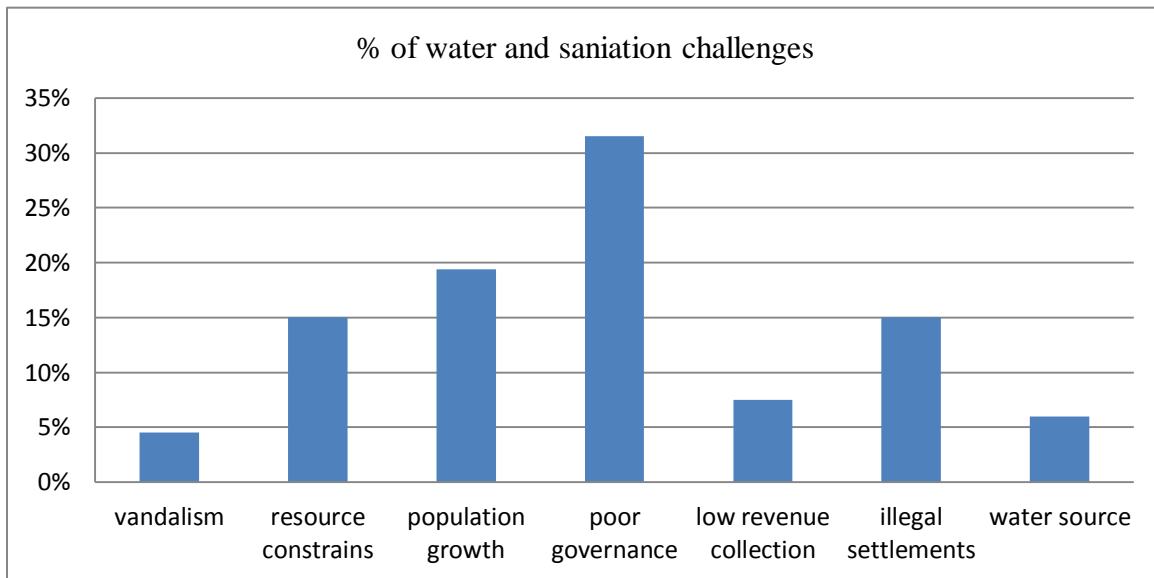
Closely related to the issue of unstable live hoods it was established that shortage of water has direct bearing on the economic activities of the people in this community. Literature has shown that limited access adequate water and sanitation services reduces the available time which is much needed for people to engage into productive activities . Holmes (undated) is of the view that access to convenient and affordable water can save people's time and energy and enhances their livelihood opportunities. In this vein the absence of water affects women economic activities and the finding of this research also confirms the same. As literature has shown that the majority of the residents in Epworth are engaged into the informal sector, women in Epworth are also

engaged into small income generating projects that include selling vegetables or firewood even owners of small canteens. It was established that shortage of water in ward one (Muguta) is affecting women who owns small canteens selling (sadza). In this vein asked about how shortage of water has affected their live hoods a respond given by one resident who owns a canteen highlighted, she needs a lot of water to run her canteen but due to shortages of water she is losing income as she is forced to close her canteen and went to fetch water from a local borehole which in many cases she has to spend a lot of time queuing at the borehole at the expense of engaging into her productive work. Another owner of a canteen, however highlighted that in order to cope with water shortages, she has resorted to employ services of water vendors who charge her 50c per 20 litre bucket. Given this situation it becomes clearer that, inadequate water supply affects economic activities of women as lot of productive time is lost, when they are engaged in fetching water. This is supported by estimates from WHO (2004) which posits that about 40 billion working hours is lost carrying water each year in Africa.

4.8 Challenges faced by Epworth local board in the provision of water and sanitation services.

In an effort to establish the key challenges being faced by the local authority in the provision of water and sanitation services, the responds given by the residents, councilors, key informant from council and representative from resident association are presented in Fig: 4.7.

Fig: 4.8 Distribution of challenges to the provision of water and sanitation in Epworth



Source author (2017)

4.8 .1 Resource constrains

The general underperformance facing the country economy has impacted negatively the operation of Epworth local board in the maintenance and investment in water and sanitation infrastructure. The research established that 15% of the responds given by the respondents owes the current water and sanitation situation in Epworth to lack of adequate resources which is much needed to develop and service residential areas. Interviews carried out with council officials noted that the local board had serious challenges in terms of water and sewerage provision. This was emphasized by key informant who revealed that the board lack adequate equipment for service delivery in which the local authority has one tractor and a grader which makes it impossible to carry out the mandate of servicing land and developing it against an increase in population. Through the same interview key informant said,

“As council we are not operating in a different environment than other local authority in terms of economic challenges, as such if you look at our revenue base it is very low so much that to do very significant projects it’s very difficult.”

This concurs with Cesar (2010) who highlighted that due to limited resources, it becomes very difficult to invest in infrastructure development and in most cases resulting in developing countries failing to keep up with the needs of the growing urban population. The same was also mentioned by one councillor who on being asked about the reason why Epworth local board is failing to provide adequate, reliable water and sanitation services councillor for ward 6 said that,

“The situation in WASH infrastructure is mainly caused by the lack of resources on the part of the local authority and as such the little revenue collected by the board is so little to develop the infrastructure”. The unavailability of funds to construct both offsite and onsite infrastructure, is the reason why council has been forced to parcel out unserviced land.

Through documentary analysis from council records, it was established that an approximately over 4, 000 households in ward 6 are not served with sewage system. This is the reason why in some section in ward 6 residents have developed and occupied houses in areas that are not serviced by council.

4.8 .2 Water source

The research findings also reflect that about 6% of the respondents attribute the challenges to the provision of sufficient water and sanitation services in Epworth to the issues to do with sources of water. The Zimbabwean (2016) peer review annual report for service level benchmarking for urban water supply, sanitation and solid waste management revealed that in Zimbabwe some local authority's lack raw water and this has become a problem when it comes to delivering safe and clean drinking water. An interview with officials from council revealed that the local authority do not have a water treatment plant of their own they rely on the city of Harare for water supply. In this case key informant from the local authority said that,

“ due to insufficient water supply from Harare, it has become very difficult to supply water to residents and this explains why there is erratic water supply to the residents in which they receive water for just few hours a day.”

Another official from the Local authority shares the same sentiment highlighting that *Epworth local authority receives less than 30 mega litres out of the daily requirement 62 mega litres*. In this vein through documentary analysis from council records, the investigation revealed that when water is available the average per capita water is less than 30 litres per day. Therefore the

shortage of sufficient water becomes a key challenge to the operations of council as water they receive from Harare fails to cater for the needs of the growing population Epworth.

4.8.3 Low revenue collection

The study revealed that 8% of the respondents owe the challenge to the provision of water and sanitation services to issues to do with low revenue collection. In this regard information given by key informant indicated that, *“Council is entitled to collect rates from residents so as to provide services in those areas but due to bad publicity the situation as resulted in generally low revenue collection efficiency levels.”* Key informant from ELB argued that failure of rate payers to honour their legal obligation through payments of rates to council has affected the operations of the local authority in the provision of water and sanitation services in Epworth and currently the local board is owed more than 5, 12 million by residents. In this case the study revealed that information given by the key informant owes the current water and sanitation situation to residents reluctant to pay their rates to council. However the responds given by the residents painted a different picture. The study revealed that on being asked about payment of rates about 49% of the respondent indicated that they honour their rates and in areas that do receive tap water they are required to pay about \$ 6 – 10 per month. However the remaining 51% indicated that they are reluctant to pay rates due to poor service delivery. One of the respondents in Ward one (Muguta) said that, *“at the moment we don’t have any water and soon we will get a bill for water that we don’t have”* The same sentiment was also shared by a respondent in ward, one who said that,

“I don’t know why there are charging me where there isn’t any water .We fetch water from the boreholes, my daughter fetches the water , usually three buckets and we fetch two additional buckets for toilet use .”

Therefore to support the issue on non-payments studies conducted by World Bank (2011) on the financial position of (Water & Sanitation) departments in Zimbabwe shows that due to poor services, customers are unwilling to pay resulting in low collection efficiency ranging from 30 - 60 per cent. Resistance to pay for rendered service is the order of the day in Zimbabwe and this is supported by Ndebele (2012) who argues that, people not getting water are unwilling to pay monthly fixed charges.

4.8 .3 Poor governance

Cross & Peal (2005) attributed the challenges to the provision of water and sanitation in Africa to the issues of poor management .The study revealed that poor governance in Epworth was a contributing factor hindering the effective provision of water and sanitation services in Epworth. From the questioners distributed to the residents, about 31% of the respondent revealed that the Local authority is to blame for poor service delivery. One resident in ward 6 accused the responsible authority of parcelling out of stands without paying much attention to the need for water and sewage reticulation infrastructure. Observation made by the researcher indeed revealed that in ward 7, there is absence of WASH infrastructure whilst in ward 6, sprouting of informal settlements is gaining much ground though the area lack basic services.

In an interview with representatives from resident association, the respondent accused the responsible authority of playing partisan politics in sub diving and selling land. In this light the respondent highlighted that council is not being serious with regard to water and sanitation services and based this argument on 2015 council's proposed budget that showed no allocation for sewage and water facilities. However key informant from ELB indicated that although there are formal structures which are followed in giving out stands, actions by some politicians has been a challenge perpetuating the water and sanitation crisis in Epworth. The respondent revealed that most of the illegal settlements have ties to politics in which in a bid to retain popularity some action by politicians has been over the years resulted in the allocation of stands in areas that are not served by council. This has put a burden to the operation of council given the fact that the local authority is responsible for providing water and sanitation service

4.8 .4 Rapid population growth

Studies by Chirisa (2011) revealed that Epworth covers an area of 3,722 ha of land and estimates in 2010 shows that the population of Epworth comprised of 150 000 people but however a census in 2012 indicate an increase in population and currently this community has a population of 167 462 (Zim population census 2012). On being asked about the challenges to the provision of adequate water and sanitation in Epworth, 19 % of the respondent attributed this to an increase in population. The information given by key informant from the local authority revealed that the challenge water and sanitation in Epworth is also caused by rapid population which has strained the capacity of the local authority to service land and as such has forced residents to develop and

occupy houses in areas that are not serviced by council. To support the issue of urban population Nhapi (2015) highlighted that rapid urbanization has placed serious pressure on aging water and sanitation infrastructure in urban areas. Without paying much attention to investment in water and sanitation infrastructure such an increase in population has poses a great deal of pressure in terms of the provision of basic services in Epworth.

4.8 .5 Illegal settlements

15% of the respond given by respondents revels that the continued rise of illegal settlements is a challenge to the provision of water and sanitation services in Epworth. The interview with council officials revealed that, sprouting of illegal structures in areas that are not connected to the existing infrastructure is a challenge to the provision of water and sanitation services. Documentary analysis from council revealed that in ward 6 and 7 there has been an increase case of illegal settlements. In ward 7, the researcher observed that the area lacks all essential WASH infrastructures and council is not providing services to this area. The study revealed that residents in ward seven developed and occupied houses in areas that are not serviced. To support the problem of illegal settlements Nhapi (2015) argues that rapid urbanization is highest in developing countries, a situation which led to the mushrooming of the informal settlements where water supply and sanitation services are almost non-existent. Given this picture information given by key informant from council pointed out that investing in these uncontrolled developments is problematic considering the fact that the local board is finding it difficult to invest and maintain the existing infrastructure?

4.8 .6 Vandalism

In addition as indicated by Fig 4.7 about 5 % of the respond given by the respondents owes the challenge to the provision of water supply to vandalism of water infrastructure. As such through documentary analysis of council records, the researcher noted that cases of vandalism of council property are prevalent in Epworth. The same is also admitted by key informant from ELB who revealed that, due to unreliable of water in ward one; some individuals in (jacha) area had been getting water from a council bust pipe in which in most cases the water maybe contaminated and may not be safe to drink or for domestic use. The researcher managed to observe one of the burst pipe were residents unlawfully get water from the burst pipe. Below is a typical water leakage

Plate: 4:5 Busted council pipe



Source author (2017)

The above picture confirmed that water supply in Epworth is not properly managed as evidenced by this vandalized pipe in which residents have resorted to get water from such sources hence risking their health to water borne diseases

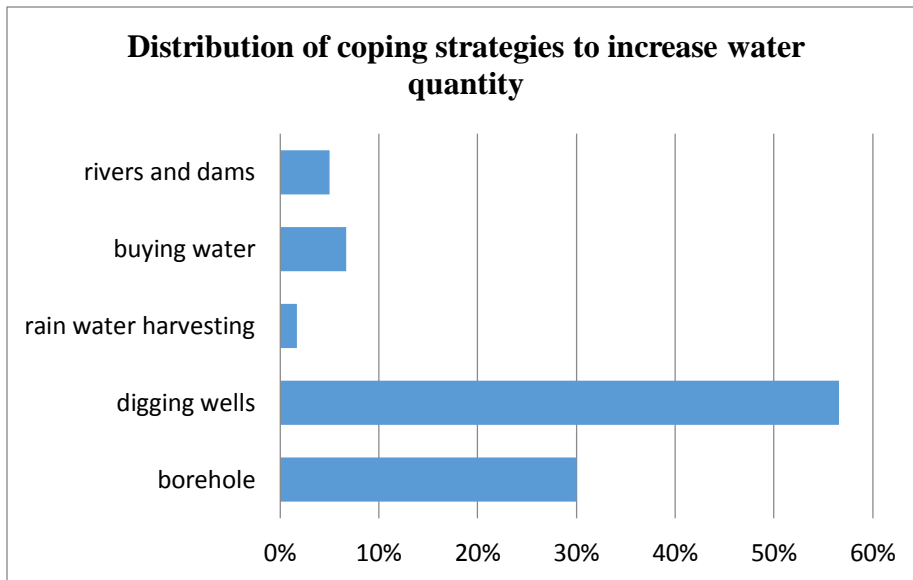
4.9.1 Coping strategies to address the problem of water and sanitation in Epworth

It emerged through the research findings that although in ward one and six there is indeed water network, the local authority has been finding it difficult to provide reliable water supply to its residents and as a result has forced residents to respond to this situation through adopting various coping strategies. During data collection it emerged that in ward one and six residents relied on council water but due to erratic supplies, there are forced to look for other alternate sources of water such as digging wells at their premises, buying water from neighbors and the use of communal boreholes. However in ward seven it emerged that there is no water infrastructure and residents rely on wells, rivers and dams for water supply. In cases where wells dries up as a coping strategy resident's rely on boreholes, rivers and dams for supply.

Table: 4.12 shows household coping strategies to increase water quantity

Coping strategy	Frequency	%
borehole	18	30%
digging wells	34	56.6%
rain water harvesting	1	1.7%
buying water	4	6.7%
rivers and dams	3	5%
total	60	100%

Fig 4.9 Coping strategies employed by residents in Epworth to increase water quantity



The above graph shows the distribution of household strategies employed by residents in ward one, six and seven in Epworth to cope with water shortages. In an effort to increase the quantity of water, the graph shows that 56,7% of the residents in this community supplement water shortages through digging wells ,30 % resort to the use of borehole, 6,7% buy water, 5% make use of rivers and dams while only 1,7 % have rain harvest technology.

4.9 .2 Coping strategies to accommodate water shortages

The research findings reveal that residents in this community uses water derived from these various sources for different purposes. In ward one and six it was established during water shortages water from the boreholes is mainly used for drinking and cooking purposes whilst the one they get from digging wells is reserved for other domestic chores such as bathing, cooking and even flushing the toilets. It is the same with respond given by residents in ward 7 who indicate that, water from shallow wells is not always reliable as they usually dry towards rain season hence as a coping strategy they are forced to travel long distances to fetch water from community boreholes. In ward seven given the fact that the area is not serviced, there also make use of water from rives to supplement water shortages. The water from the rivers is mainly used for washing clothes and in worst cases even for bathing.

4.9.3 Strategies for water quality

Another coping strategy identified by the study is that residences in this community do treat water for safety or to improve quality. On being asked about if they treat water about 30 % of the respond given by the respondents pointed out that they do not treat water. They based their argument on the fact that they trust that water they get from boreholes and their protected wells is safe as compared to municipal water. One respondent said, *“We trust that ground water is safe and so far we haven’t suffered from any illness after consuming it.”* However, the remaining 70% of the respondents highlighted that they treat water for the reason that they don’t trust the safety of water they get from shallow wells. Those that treat water stressed they usually use aqua tablets or simple boiling method for purification.

4.10 The involvement of the community in relation to water and sanitation services

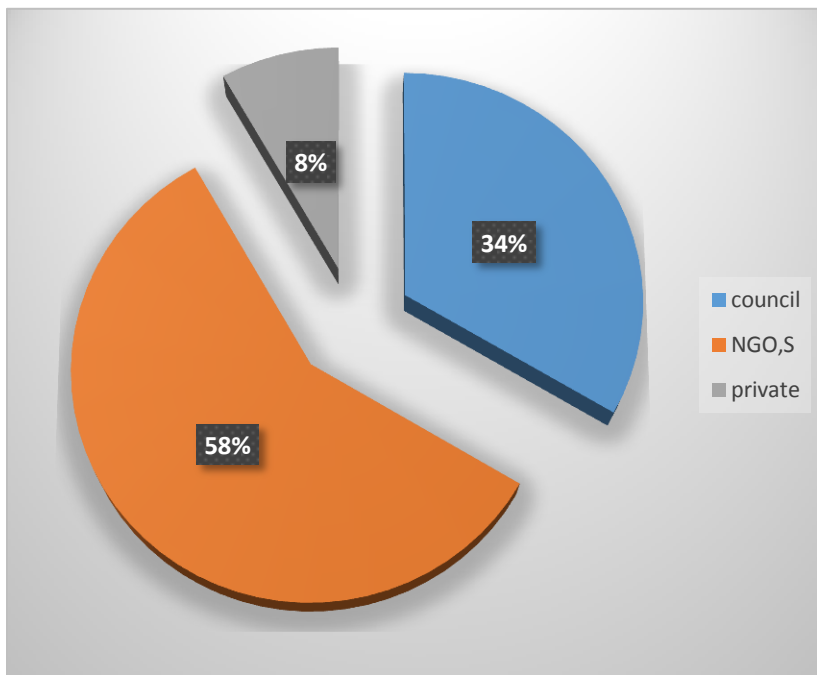
IWRM calls for a participatory approach in the development and management of water resources in which members of the local community are supposed to integrate in decision making especially with regard to the choice of water supply and management. In this vein, the researcher in a bid to find out if residents are involved into water and sanitation issues information given by key informant reveals that residents are involved into water related projects particularly in the implementation stage. This was confirmed by key informant who says that when a borehole is constructed the local authority surrenders ownership to the residents who then form water committees at community level at each and every borehole. The mandate of the water committee being to oversee the use of the borehole whereby residents served by a particular borehole are required to pay a fee for the maintenance of the borehole. However although residents are involved, the study shows that residents are not fully engaged in decision making process as they are only involved in the implementation phrase.

The study revealed that the members of this community survive below poverty datum line and there is scarcity of evidence to support their involvement into the issues of water and sanitation services. In addition to the same the closer mechanism in which community participates in decision making is through the budget formulation processes were upon resident’s air their views in regard to the issues of water and sanitation in the community. Through an interview with key informant from ELB it was established that residents are also involved into development issues through ward development committees (lead by councilor) and it is from these committees that

development plans are forwarded to council for consideration. Asked if there are any community measures taken as the community to address the problem of water 90% of the respond given by the residents painted ignorance of such arrangements at community level. The remaining 10% of the sampled residents demonstrated knowledge of such arrangement at community level but raised concern that the structures were barely in active and this explains why the current water and sanitation have not changed. The respond given by residents demonstrated that although there are ward development committees, in terms of water supply and sanitation at community level there has been no major development process taking place in the area. In this vein , this shows that residence are not being fully involved in decision making with regard to water and sanitation projects given the fact that 90% of the sampled residents were unaware of the existence of such structures

4.11 The role of various players in regard to water and sanitation problems in Epworth

Fig 4.8 shows the distribution of organizations to redress water and sanitation problems in Epworth.



Source field data (2017)

Fig 4.8 shows that about 34% of the respondent's highlight that council has made some interventions with regard to the provision of water and sanitation in Epworth, 58 % of the respondents demonstrate the involvement of various NGO's while 5% highlighted the involvement of private players. The research highlights that, in terms of intervention made by council 34% of residents pointed out that council have been making efforts to address this crisis through sinking of boreholes and installation of communal tapes. The study established that even though the local authority is responsible for the delivery of water and sanitation services its performance with regard to the same is below the required standard. In response to this various coping strategies has been employed by the responsible authority to redress this situation and the following are the major coping mechanisms which were identified during data collection.

4.11.1 Installation of boreholes

As indicated earlier ELB does not have its own water treatment plant, neither do it have water storage facility and as such it rely on water from Harare city council that comes only once per week. This means that the remaining 6 days residents in Epworth are forced to rely on water from other alternate sources. In this vein, an interview with key informant from the local authority reveals that, as a coping strategy council has been engaging and partnering with various stakeholders such as Evangelical Fellowship of Zimbabwe (E F Z), UNICEF, MSF, and Water for life in implementing water projects such as installation of boreholes in and around Epworth. Through the same interview it was established that as a result of these partnerships currently a total of 43 boreholes were installed, with only 37 being functional, while the remaining 6 are nonfunctional.

4.11.2 Testing of water sources

In addition the research establishes that the majority of residents in Epworth rely on ground water sources mainly for domestic use. As indicted earlier the respond given through the distribution of questioners in ward 1, 6 and 7 revealed that indeed 63, 3% rely on wells but the level of safety is questionable considering the fact that these wells are few meters apart from pit latrines. In this vein, Key informant admitted that this poses a great risk to the health of residents as chances of contamination are high given the current situation. In response to this it was established that as a

coping strategy after every three months the local board has been conducting random test at water sources so as to determine the safety of these water sources.

4.11.3 Educational campaigns

The study also reveals that having realised the negative implications of inadequate water and sanitation services the local authority initiated some educational mechanisms that are meant to educate residents on good hygienic practices. In this vein, through partnerships residents are trained on how to use, store water safely and also how to construct at least a safe water source (well). Therefore through these educational mechanisms, it was established that the idea was to mitigate problems that arise due to inadequate water and sanitation.

4.11.4 Capacity building

It is a well-known fact failure to maintain infrastructure results in deteriorating of water infrastructure. In this regard as a coping strategy, it emerged through the study that the local authority has been conducting capacity building programs that are meant to ensure that at least water infrastructure (boreholes) are managed and maintained properly. Through an interview with key informant from council it was revealed that Capacity building starts at community level where upon the local authority took an initiative to train residents especially members that constitute of (water committees) on how to manage, maintain community boreholes in their respective wards. This initiative was meant to ensure sustainability in the projects of council. At organisational level; the same interview established that in an effort to ensure that the boreholes installed by council are functional the local authority engaged DDF in capacity building programme in which council staff in the engineering departments were trained on how to maintain, manage and fix boreholes. Given the foregoing, in ward one the researcher managed to observe one of the boreholes which were constructed by council to alleviate the problem of water in ward one.

Plate: 4:6 typical communal boreholes in ward 1, 6 and 7



Source author (2017)

The same is also noticed in ward 6 where upon, residents rely on boreholes drilled by council. However, the respond given by residents highlights that though council managed to sink boreholes, there are generally few and others currently others are non-functional. In this vein this

explains why at the moment residents in Epworth continue to face long queues at boreholes. This was shared by one respondent, who said, *“You have to wait until noon to fill up one bucket and in most cases wake up around 5 o’clock in the morning.* In ward one jacha (area) residents used to have access to communal tapes but as a result of eviction by the respective authorities there are now forced to rely on deep wells.

58% of the respondent given by the residents highlighted that NGO’S have been playing a pivotal role in to the provision of water and sanitation services in and around Epworth. As aforesaid Key informant from the local board admitted the involvement of various NGO, s chief among them being UNICEF, Practical Action, Plan International to mention just a few. In terms of sanitation programs, information given by Key informant from ELB revealed that the local authority partnered with UNICEF, Practical Action for southern Africa in the implementation of ecological sanitation project. Through this project, it was revealed that ELB was involved through offering both technical and material support for the construction of pilot models. Through documentary analysis this project saw the construction ecosan toilets which are meant to meet the health needs of the residents in Epworth. In any effort to curb the outbreak of diseases such as cholera as a result of poor sanitation, the ecosan project has seen the construction of simple low cost sanitation toilets in some residents in Epworth. Residents noted that they were trained on how to construct and use the toilet.

It emerged through an interview with key informant that participation of residents was done through community based approach to ensure that residents has an improved understanding of health and sanitation issues. It also emerged that health clubs were setup at community level to promote health and hygiene. On being asked if the intervention has managed to address the issue of sanitation, the respond given by residents highlighted that the project had positive impacts as it promoted access to a toilet facility against the bush system which was being practiced prior the project and this was confirmed by one resident who said, *the project has helped us to reduce opportunistic infections such as diarrhea and rashes since we no longer use the bush anymore.* The researcher managed to observe some of the ecosan toilets which were constructed. Below is the typical ecosan toilet facility found in Epworth as a result of the ecological sanitation project.

Plate 4.7: typical ecosan toilet facilities in Epworth



Source author (2017)

In terms of water supply the respond given by the residents highlights that several NGO has been active in the provision of water through intervention such as erection of boreholes, construction of protected wells, provision of tablets to purify water and also the provision containers to store water. It also emerged that through documentary analysis of council records, development interventions with regard to water and sanitation was also done with organisation such as plan international and Oxfam which were involved in the installation of temporary water sources and installation of reticulated water infrastructure in some wards.

The other intervention revealed by the study is the role of Epworth Residents Development Association, which has taken on board measure's to address the problem of water and sanitation. The research establishes that (ERDA) Epworth Residents Development Association has been very keen in making sure that the responsible authority addresses water and sanitation problems within this community. The association has been very influential in dealing with the problem of water and sanitation in Epworth. The study establishes that, the association taking from Kudat etal (1993) who argues that as a coping strategy resident can engage the responsible

authority through the voice strategy such as protests and complains to deal with poor service delivery. In this vein such an approach has been employed by the association who mobilised and engaged the local authority in a meeting which was specifically meant to address water and sanitation issues in Epworth community. Epworth Residents Development Association through the voice strategy has bridged the gap between residents and the local board through creating a platform that enables dialogue on how best the current water and sanitation situation can be redressed. In the same vein Epworth Residents Development Association is also directly involved in water and sanitation issues. An interview with the representative from Epworth Residents Development shows that the organization has been directly involved in issues to do with water and sanitation in Epworth. On being asked of their efforts with regard to the same, the respond given by the interviewed pin pointed that the organization has being very influential in tackling the problem of water and sanitation through partnering with Zimbabwe Association of Doctors for Human Rights (ZADHR) in conducting research , training and advocacy in around Epworth.

4.12 Summary

This chapter presented the findings of the research carried out by the researcher. Data gathered through primary and secondary sources was analyzed and presented in graphs, tables and pictures .The first pages of this chapter show that the total response rate is 89.3%, out of a sample size of 75 respondents only 67 managed to respond. Both men and women participated in this research, 40% women participated while 60% men as shown in fig 4.1. The research findings shows that although SDG goal number 6 calls for the universal and equitable access to safe water and sanitation for all, the local board has been finding it difficult to ensure that this basic right is attained and much of this problems is attributed to continued growth of the population in Epworth against a background of limited development of infrastructure to support the water, sanitation and hygiene needs of the residents. Findings that are presented in this chapter also reflect the underpinning challenges being faced by Epworth local Board in the provision of water and sanitation services and the effects it had on residents. The next chapter dwells on the summary of the research, results and its findings as well as its conclusions and its recommendations

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

The concern of this research was to assess the problems facing Epworth Local Board in the provision of water and sanitation. While at the same time aiming to explore on strategies that can be best implemented in order to improve access to water and sanitation services so as to meet the key targets of SDG goal number six which seeks to ensure the universal and equitable access to safe water and sanitation for all. The present chapter seeks to give a summary of the findings of the preceding chapters and give recommendations and to make concluding remarks on the research.

5.1 Summary

The research looked at water and sanitation problems in urban local authorities in Zimbabwe with reference to Epworth .The first chapter of this research provided the background of the study and the statement of the problem which brought out the problem of the area under study. It also highlighted the following research objectives: to describe the current state of water and sanitation services in Epworth local board, to determine the effects of inadequate water and sanitation services on the livelihood of residents in Epworth local board, to identify the challenges being faced by Epworth local board in providing adequate water and sanitation services and to investigate the coping strategies adopted by the community in relation to inadequate water supply and sanitation services.

The literature review of this research was the base upon which the research was carried out, it looked at both conceptual and theoretical frame work related to the research area. The literature review also looked at the provision of water and sanitation in urban areas, the challenges to it and will also examine the mandate of Urban Local authorities in providing the same. Furthermore, stemming from research objectives the reviewed literature also looked at the effects of inadequate

water and sanitation services on the livelihood of residents, coping strategies, the current global trends in terms of water and sanitation provision and the challenges local authorities are facing in providing adequate water supply and water from the global perspective down to local level. The last part of the chapter provided empirical case study on water and sanitation challenges in Temeke municipality in Tanzania.

Chapter three of the research looked at the research methodology employed by the researcher in which the researcher used both case study and descriptive research designs to tackle the main objective of the study which is water and sanitation problems in urban local authorities in Zimbabwe. As an approach to the study, the research took both the qualitative and quantitative approach in gathering data. The rationality behind taking both approaches was that both qualitative and quantitative data was equally important to the findings of this research. The research had a target population of 167 462 with a sample size of 75 respondents which included sixty (60) residents, the council officials comprises of five (5) members, three (3) councilors, a representative of Epworth Residents development association and development committee members. The researcher used systematic random sampling, purposive sampling, convenience sampling and snowballing sampling techniques to select participants during the research. The study also used data collection techniques/ instruments; such as questioners, observations and interviews to collect data from the respondents. Lastly data collection was done and the researcher managed to collect data from the field. From a sample of seventy five (75) only sixty seven managed (67) to respond. The interview response was 46.7% as 7 out of a sample 15 responded to the interviews and the questionnaire response rate was 100 % as all the 60 residents manage to fill out the questionnaires. The overall respond rate was 89.3%. In terms of data presentation the research findings was presented through graphs, tables, pictures, narratives and charts.

The findings shows that the provision of water and sanitation services in Epworth is very much insufficient a situation that resulted in residents having access to minimum volumes of portable water per week. The findings show that in terms of sanitation the majority on the residents relies on pit latrines and there is an increase like hood of overflowing effluent. The findings show that the failure by the responsible authority to provide sufficient water and sanitation services has a

negative effect on residents as this exposes them to diseases outbreak, unstable live hoods and disruption of economic activities. The findings of the research shows that the major cause of water and sanitation problem in Epworth stems from inadequate WASH infrastructure where upon the continued increase in population in Epworth does not correspond with the development of infrastructure to support water , sanitation needs of the residents. In this vein, the local authority has been encountering some challenges such as resource constrains, water source, and low revenue collection, illegal settlements among others in the provision of water and sanitation services.

5.2 Conclusions

The research findings show that the current state of water and sanitation in Epworth is in direct contrast to the provision of Section 73 of the Constitution of Zimbabwe Amendment (No. 20) that ensures that every citizen for Zimbabwe as a right to live in a clean, safe and healthy environment. This is evidenced by residents in Epworth continued lack of access to sufficient water supply and sanitation services a situation which forces them to rely on both protected and unprotected sources of water. In this vein the majority of sampled residents rely on pit latrines and as such chancing are high that these wells will be polluted by pit toilets and surface overflow.

The researcher discovered that Wash infrastructure in the local authority is in poor state. Therefore there is need for government and other relevant stakeholders to be involved in the provision of water and sanitation services so that residents Epworth has access to sufficient portable water and sanitation services. This will go a long way in meeting the key targets of SDG six which has the objective of ensuring that all people have access to water and sanitation for all.

The researcher found out that the provision of water and sanitation services in Epworth is insufficient and this has negative effects in the lives of residents as this poor state water and sanitation facilities increases the chances of contracting water borne diseases.

As a coping strategy the research findings shows that residents in Epworth has employed various coping strategies to increase water quantity that include digging wells, use of community boreholes and even buying from neighbor's wells. Since the local authority has been failing to provide a functional sewer reticulated system, as a coping strategy the majority of the people has been using both pit latrines and Blair toilets in respond to sanitation problems.

The findings of the research shows that the major cause of water and sanitation problem in Epworth stems from inadequate WASH infrastructure where upon the continued increase in population in Epworth does not tally with the development of infrastructure to support water, sanitation needs of the residents .In this vein lack of resources on the part of the local authority has seen the board doing little to construct both offsite and onsite infrastructure a situation which forced to parcel out unserviced land.

The research finding also shows that a number of NGO, s has been very active in the provision of water and sanitation services in Epworth. Though the NGO,s has played their part to alleviate the situation , the current poor state water and sanitation in Epworth is a clear demonstration that a lot still need to be done to ensure that at least residents have access to sufficient water supply and improved sanitation services .

5.3Recommendations

In light of the findings of the study and the conclusions made above, the researcher made the following recommendations:

The research established that, the current water and sanitation situation in Epworth is attributed to lack of adequate resources which is much needed to develop and service residential areas. Therefore there is need for the responsible authority to secure resources from the private sector through Private Public partnership to fund projects that aid in the provision of improved water and sanitation services

The continued rise of illegal settlements was indicated as the key challenge to the provision of water and sanitation services in Epworth .Therefore as a recommendation there is need for ELB to speedy the regularization of these illegal structures and also ensure the enforcement of development control regulations which are meant to bring in sanity in these unplanned settlements.

The study revealed that the due to resource constrains the local authority has been finding it difficult to service land a scenario which has seen residents developing and occupying houses in areas that are not serviced. Therefore as a recommendation the ELB should work towards ensuring that new houses that are built are planned and conform to set standards. This will be

advantageous when it comes to the implementation of water supply and sanitation strategies in the area.

The research finding also reveals that residents are reluctant to pay for water rates owing this to failure for the local authority to provide portable water. Therefore there is need for council to resume the provision portable water supply in areas that are already connected to reticulated water and this will in turn will results in the willingness of residents to pay their rates to council.

Investment in more temporary water infrastructure must be priority for the responsible authority. The research findings shows that as an intervention the local authority drilled boreholes so as to ease the water crisis but currently few are functional and this has put pressure on residents who are forced to queue at the boreholes or travel to neighbouring areas. Therefore the local authority should drill at least more boreholes, as this will ease the pressure of long queues at boreholes.

The research findings also shows that residents in this community are very poor as most of them survive below poverty datum line and as such it becomes very difficult for them to build proper and improved toilet facilities . In this vein NGO, s should continue to promote low cost sanitary facilities and hygiene education so as to promote hygiene at and beyond the household level.

In terms of waste management it emerged that council is failing to collect refuse a situation which has resulted in the sprouting of illegal dumpsites in most areas and as such the local authority should at least procure receptacles and also set up a revolving fund which will go a long way in ensuring proper management of solid waste at household level.

The study reveals that due to limited revenue base ELB has been struggling to undertake significant water and sanitation projects. Therefore, there is need for the central government to financially support local authority in terms of capital projects.

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Appendices

Questionnaire for Epworth Residents

Good day Sir/ Madam

My name is Try Nyaruwabvu. I am a student at Midlands State University. I am working on my dissertation in partial fulfillment of the programme. **My research study is on Water and Sanitation problems in urban local authorities with reference to Epworth.** Successful completion of this research will therefore be mutually beneficial to Local Authorities, Communities and Policy makers.

I am therefore kindly appealing to you to assist by objectively participating in this data collection exercise. I would like to assure you that your valuable input will be treated with utmost confidentiality and will be used for academic and professional purposes only.

Your co-operation would be highly appreciated.

Please tick where appropriate.

- Answer all the questions in the spaces provided.
- Please do not write any name on this questionnaire.

Ward Number

SECTION A: BIOGRAPHICAL DATA

- ✓ Please indicate your gender. Male [] female []
- ✓ What is your age group? 18-30 [] 31-45 [] 46-60 [] above 60 []
- ✓ Highest Level of Education Attained? Primary [] secondary [] tertiary []
- ✓ Family income per month 0-100 [] 101-200 [] 201-300 [] others (specify)
- ✓ Number of years residing in Epworth 0-5 years [] 6-10 years [] 11-15 years [] 16-20 years 20+ []

SECTION B: STATE OF WATER AND SANITATION SERVICES IN EPWORTH

1. How do you describe water and sanitation services being offered by council?

Excellent [] Good [] Fair [] Poor []

2. a) What is your main water source?

Tap water [] borehole water [] well water [] other

b) If tapes how often do you receive tap water?

Every day [] once per week [] twice per week [] other.....

c) If borehole, well or other. How far is the water source from your house?

Less than 30 minutes [] between one hour [] more than one hour []

3. How do you rate the level of water safety from your water sources?

Safe [] very safe [] unsafe [] very unsafe []

Explain your answer

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

4. How many litres of water do you require in a day?

Less than 20 litres [] between 20 – 60 litres [] above 60 litres []

5. What type of toilet facility do you use?

Flush toilet [] Pit facility [] bucket system [] no facility []

6. Do council collect refuse [Yes or No]

7. If yes, how often does council collect refuse?

Every day [] once per week [] once per fortnight [] never []

8. How do you view the performance of council in relation to the provision of water and sanitation services?

Extremely poor [] poor [] good [] very good []

SECTION C: EFFECTS OF INADEQUATE WATER SUPPLY AND SANITATION SERVICES ON THE LIVELIHOOD

9. Did your household ever experience water shortages? [Yes or No]

10. If yes, for how many days was water not available?

Less than a week [] less than a month [] more than a month []

11. How did shortage of water affect your livelihood?

b) Explain your answer

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

12. Has there been any outbreak of diseases as a result of water shortages [Yes or No]

13. If yes, what type of infection

Cholera [] typhoid [] diarrhea [] other

14. Which age group was the most affected?

0-5 [] 6-10 [] 11-20 [] 21-above []

SECTION C: CHALLENGES FACED IN PROVIDING ADEQUATE WATER AND SANITATION SERVICES

15. Does your household pay rates to council? [Yes or No]

16. If yes, how much per month?

.....

17. How often do you pay your water rates?

.....

18. If no, why are you unwilling to pay water and sanitation rates? Explain your answer

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

19. What do you think is the reason why council is failing to provide adequate services? Explain your answer

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

SECTION: COPING STRATEGIES TO ADDRESS PROBLEMS OF WATER AND SANITATION SERVICES

20. Are you satisfied with water and sanitation services being offered by council?

Satisfied [] Dissatisfied []

21. What house-hold coping strategies have you adopted to improve water quantity?

Boreholes [] digging wells [] rainwater harvesting [] buying water [] rivers & dams []

b) For what purposes do you use water from these sources? Explain your answer

.....
.....

c) Do you treat water before use in order to improve quality? [Yes or No]

If yes, what do you use to treat water? If no why

.....
.....

22. Is there any community measures have you embraced to ensure there is adequate water and sanitation? [Yes or No]

If yes explain your answer if no explain

.....
.....

23. Which institution has made interventions with regard to water and sanitation problems in this community?

Council [] NGO's [] Private [] other

b) Did the interventions managed to address water shortages in this community?

.....
.....

24. What advice do you give Epworth local board with regard to the current state of water and sanitation services delivery?

.....

.....

.....

Thank You

Interview guide for council officials

1. For how long have you been an employee of council?
2. What are your duties and responsibilities in relation to the provision of water and sanitation services?
3. How do you describe the current state of water and sanitation services being offered by council?
4. Are the water and sanitation services offered by council adequate to cater for the needs of residents?
5. What challenges are you facing as a local authority in providing these services?
6. What do you think are the root causes of all these challenges?
7. In what ways do you think erratic water supply has affected the livelihoods of residents?
8. Who do you think is the most affected group?
9. What coping strategies if any, have you put in place to deal with these challenges?
10. What level of success have you made so far in the provision of adequate water and sanitation services?
11. Are residents being involved in issues to do with water and sanitation? And if so, how?
12. What is the level of stakeholder participation and how do you ensure their involvement in the implementation of council projects?
13. Are there any other stakeholders who are involved in the provision of water and sanitary services?
14. What kind of interventions have they made?
15. How effective are these interventions in improving the supply of water and sanitation services?
16. What do you think must be done to improve the water supply and sanitation situation in Epworth?

Thank you for your cooperation

Interview guide for Councilor's

1. For how long have you been a Councilor for Epworth local board?
2. Are there any water and sanitation challenges in your area?
3. For how long have you been experiencing water and sanitation problems in your ward?
4. How do you describe the current state of water and sanitary services?
5. Why is Epworth local board failing to provide adequate, reliable water and sanitation services?
6. As a Councilor how do you encourage residents in your wards to pay their rates?
7. How are water shortages affecting residents in your ward?
8. Were there any incidents of outbreak of diseases as a result of unreliable water and sanitary services?
9. If yes who do you think are the most affected members of the society?
10. What coping strategies or mechanisms have been put in place by different stakeholders to redress the problem of water and sanitation in your area?
11. What do you think is the ultimate solution to the problem of water and sanitation in your area?

Thank you for your cooperation

Interview Guide for Non-Governmental organization

1. For how long have your organization operated in this area?
2. What was the situation of water supply and sanitation services when your organization first comes in this community?
3. What projects have you put in place to ensure adequate water supply and improved service delivery?
4. To what success did these projects managed to redress the situation?
5. What mechanisms did your organization put in place to ensure these projects are sustained?
6. What do you think must be done by Epworth Local Board to improve access to water and sanitation services?

Thank you

Interview Guide for Epworth Residents' Development Association

1. For how long has Epworth Residents' Development Association operated in this community?
2. What is the mandate of Epworth Residents' Development Association?
3. How do you describe the services delivery being offered council?
4. In your own view what is the current state of water and sanitation in Epworth community?
5. What efforts have you made so far as Epworth Residents' Development Association with regard to problems of water and sanitation?
6. How successful were these efforts in redressing water and sanitation problems in this community?
7. What do you think must be done by Epworth Local Board to improve access to water and sanitation services?

Observation Check List

Date..... Time.....

Ward Name.....

Item to be observed	Remarks
Water sources	
Type of toilet facility	
Waste disposal	
drainage systems	
public toilets	

Approval Letter

EPWORTH LOCAL BOARD

1038 Chiremba Road
P. O. BOX EP180
EPWORTH



Telephone :263 4 2936393-6
:263 4 577445/9
Email :elb@africaonline.co.zw

ALL CORRESPONDENCES SHOULD BE ADDRESSED TO THE SECRETARY

OUR REF:

YOUR REF:

4 October 2017.

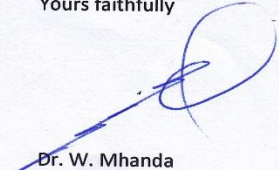
Mrs Nyamwabi
777 Crescent Glenview Area 8
Glenview, Harare.

REQUEST TO CARRY OUT RESEARCH IN EPWORTH

Authority has been/~~not~~ been granted to carry out a research in Epworth in terms of your area of study.

Thank you

Yours faithfully


Dr. W. Mhanda
SECRETARY
EPWORTH LOCAL BOARD

