Understanding conflict and cooperation in local water governance in Zinyengere Ward in Epworth, Harare.

Darlington Tshuma
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Supervisor: Dr. S. Bhatasara.

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Department of Sociology

UNIVERSITY OF ZIMBABWE
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ACRONYMS

ADCs – Area Development Committees
AfDB- African Development Bank
BCC – Bulawayo City Council
BSAC- British South African Company
CEDAW- Convention on the Elimination and Discrimination Against Women
CWAZ – Community Water Alliance of Zimbabwe
DWA- District Water Administrator
ELB- Epworth Local Board
FAO – Food Agricultural Organisation
FBOs – Faith Based Organisations
FGDs – Focus Group Discussions
GEO- Global Environment Outlook
GoZ- Government of Zimbabwe
GWN – Good Water Neighbours
ICESCR- International Convention on Social and Cultural Rights
IES – Institute of Environmental Studies
IPS Africa- Inter Press Service Africa
IPCC- International Panel on Climate Change
IRWR – Internal Renewable Water Resources
IWMI – International Water Management Institute
LWMC- Local Water Management Committee
NAZ- National Archives of Zimbabwe
NGOs – Non-Governmental Organisations
NWA- National Water Authority
INGOs- International Non-Governmental Organisations
MDC- Movement for Democratic Change
ME- Middle East
MENR- Ministry of Environment and Natural Resources
MZWP – Matabeleland Zambezi Water Project
PWSSP – Pungwe Water Supply Pipeline Project
PYD – Platform for Youth Development
RWJF- Robert Wood Johnson Foundation
SADC- Southern African Development Community
SAIIF- South African Institute of International Affairs
SDGs- Sustainable Development Goals
SSA- sub Saharan Africa
UN – United Nations
UNDESA- United Nations Department of Economic and Social Affairs
UNDP- United Nations Development Partner
UNECA – United Nations Economic Commission for Africa
UNEP- United Nations Environment Programme
UNFPA- United Nations Population Fund
UNICEF- United Nations Children’s Emergency Fund
US- United States
WB – World Bank
WBG- West Bank Gaza
WCQ- Water Cooperation Quotient
WHO – World Health Organisation
ZANU – PF – Zimbabwe African National Union – Patriotic Front
ZAPU- Zimbabwe African People’s Union
ZINWA- Zimbabwe National Water Authority
ZRPI- Zimbabwe Republic Police
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ABSTRACT

The study sought to understand conflict and cooperation in local water governance. By situating water across multiple temporal and spatial scales, this research opens up new avenues to investigate conceptual and empirical links between water, conflict and cooperation therefore underscoring the complexity and diversity of ways that water is enrolled in different sites and modes of conflict and cooperation across scales. It draws upon Bourdieu’s theory of capitals, habitus and field. Using Bourdieu, the study draws attention to a variety of different forms of capital serving as resources that actors trade on in negotiations. It also demonstrates the connection between habitus and field, and how agents deploy various capitals to navigate the field. The study employed qualitative research methods. Data was analysed thematically. The study discovered that research participants had divergent opinions on the causes of water scarcity. In adapting to water scarcity, the study discovered that actors organise different forms of capital in novel ways to manage both water and livelihoods. It also established that the impacts of water scarcity are gendered and local water governance is a contested terrain where different players with varying levels of power play out. Finally, the study discovered that culture, values and tradition play a significant role in encouraging water cooperation even during the most severe periods of water scarcity.
CHAPTER ONE
‘We never miss the water until the well runs dry’. (Scottish Proverb)

1.0 Introduction
The purpose of this study is to explore and understand processes that underpin local water governance in Epworth. Water in Zimbabwe is a core development and socio-economic issue. Over the past decade, newspaper headlines, TV and radio programs in Zimbabwe have reflected a wide range of water challenges; from shortages to breakdowns, arbitrary disconnections to falling groundwater levels while concerns about surface and groundwater pollution have reached feverish pitches. A report by International Panel on Climate Change (IPCC) notes that climate change is likely to alter temporal and spatial patterns of water and land availability which will result in problems of resource scarcity in some regions of the world, (IPCC 2014). Ashton and Turton (2007) observe that Africa’s rapidly growing population associated with increased demand for water coupled with changes in the climate could potentially worsen the water situation on the continent. Ide and Scheffran (2014) note that a large body of literature already exists which discusses the probability of water and or land resources in facilitating violent conflict or intergroup cooperation and the circumstances under which this happens. Many accounts of water and conflict focus on the possibility of future inter-state conflicts emerging from changes in the qualities and quantities of freshwater as well as issues around the management and governance of water resources. By adopting a multiscalar approach, this study helps to demonstrate the manifold, complex, reciprocal relations between uses of water and associated political and social connotations.

While water-conflict-cooperation nexus is an important subject for consideration, the focus of this research moves beyond a narrow framing of water and conflict but instead situates water across multiple temporal and spatial scales that allows the research to open up new avenues to investigate conceptual and empirical links between water, conflict and cooperation therefore
underscoring the complexity and diverse ways that water is enrolled in different sites and modes of conflict and cooperation across scales.

Chapter One offers an overall prologue of the research that focuses on understanding conflict and cooperation in local water governance. It presents the nucleus of the study in brief namely background to the study, problem statement, research questions, objectives of the study, justification of the study and general thesis structure.

1.2 Background to the Study
In his address to the opening of the 2nd Session of the 7th Parliament of Zimbabwe in October 2009, the President of the Republic of Zimbabwe, referred to the problem of water in Domboshava compounded by an ever-increasing number of malfunctioning boreholes and siltation of major water sources, (Zimbabwe Parliament, 2009). However, in his speech, he failed to touch and zero in on the most critical areas around the provision of water and its link to the right to life, health, food nor its potential for conflict in the event that these critical areas are not adequately addressed. In recent years, water has increasingly found itself at the centre of national, regional and international research not only because of its indispensability to human life but chiefly because of its potential for conflict at various locales and scales.

Kambudzi (1997) points out that in the aftermath of the ideological conflicts experienced during the Cold War, it was imaginable that the next basis of local, national, regional and international conflicts would be around world resources (fuels, minerals and water) among others. He further states that water, especially agro-water and fresh water would offer the largest incentive for local, intra-state and inter-state conflicts. Stakeholders seem to agree that these conflicts are likely to occur over how water resources should be developed, shaped, used and managed. Meadows (1992, p.54) emphasises the importance of sustainable use of water resources when she cautions that, “in the 1990s going forward, some countries or regions will have to stop their growth or go to war or both, because of water shortages”. Smith (2011)
observes that about 97% of planet earth’s water is salty and unfit for human consumption, thus effectively leaving the world with only 3% of fresh water to sustain human life. Ashton (2002) notes that throughout the world, water is recognised as the most fundamental and indispensable of all natural resources and it is undoubtedly clear that neither social and economic development nor environmental diversity can be sustained without water.

Ashton (2002) notes that about 85% of Africa’s water resources are comprised of large river basins that are shared between several countries. A report by the African Development Bank (AfDB) in 1990 projected that many Southern African countries including South Africa, Namibia, Kenya, Malawi, Mozambique and Zimbabwe might be living beyond their present water potential and the mere fact that rivers anywhere in the world are trans-boundary presents a huge potential for conflict in the absence of strong institutions and legal provisions to guide water cooperation.

1.3 Problem Statement
Literature on water governance has disproportionately focussed on the risk of trans-boundary water conflicts (see Naik, 2016; Tapela, 2013; Okpara, 2015; Coleman, 2012; Hendrix and Salehyan, 2012, Musemwa, 2006; Sivakumar, 2011; Manzungu et al 1999; Morris, 1997) and others. However, this is despite the fact that trans-boundary water conflicts are quite well documented and perhaps even over researched. Cossio et al (2010) acknowledge the fact that globally there has been an increased focus on water as a source of conflict, with particular interest paid to trans-boundary water conflicts and collaboration and more recently also a growing perception that the number and intensity of local water conflicts are increasing (Carius et al, undated; Thomasson, 2005). Such a scenario implies that our understanding of local water governance is limited and usually tends to be based on sporadic accounts of local water conflicts rather than systematic empirical evidence. Related to that, the extent and nature of
local water cooperation is often overlooked and the area remains relatively under researched in particular the role of the urban poor in water governance.

Understanding local water governance through a sociological lens highlights the importance of taking a differentiated approach to understanding the way different actors within communities engage in and relate to conflicts, competition and cooperation over water. Like all social situations, water competition, conflict and cooperation is not static but is dynamic and evolves over time and this must be understood as such.

1.4 Research Questions
This study seeks to answer the following questions in relation to the water governance in Epworth.

i. What are the causes of water shortages in Epworth?
ii. Under what conditions does water conflict or cooperation occur?
iii. What are the impacts of water scarcity?
iv. What factors underpin water governance processes?

1.5 Objectives of the Study
i. Identify the causes of water shortage;
ii. Understand conditions under which water cooperation and conflict occur;
iii. Investigate the impacts of water scarcity; and
iv. Explain the interaction of factors that underpin local water governance.

1.6 Justification of the Study
The study is significant because it highlights the importance of looking at water governance through a sociological lens. Funders et al (2012) note that within literature on water governance, much of the debate so far has addressed the potential for trans-boundary conflicts (Wolf et al 2003; Zeitoun and Allan, 2008; Swatuk and Virkus; 2004) while at a sub national level, there has been particular emphasis on conflicts between communities and external actors
Studies on communities vis-a-vis external actors have traditionally focussed on socio-political dynamics of large dams (Hirsch, 2010) and state imposition on indigenous water rights (Boehens, 2009). To Van Koppen et al (2008) such studies have by nature often focussed on collective resistance and action by communities and on advocating the principles of customary rights and ownership. As noted by Menha (2005), in the entirety of scholarship on this subject, intra-community dynamics of water conflicts and cooperation have featured less prominently.

1.7 Structure of Thesis
The following section gives an overall structure of the research study. Chapter 1 introduced the research topic by giving a general overview of the background to the study. Research questions guided the formulation of objectives while literature review helped formulate the problem statement. The chapter concludes by way of study justification. Chapter 2 focused on reviewing literature under study. Here, the research engaged different theoretical and conceptual debates on water governance. Various secondary sources were consulted ranging from journal articles, newspaper stories, government reports, historical and archival data in the form of letters. The literature review section is important in that it allowed the researcher to identify gaps that exist in literature on water governance in Zimbabwe. Chapter 3 is an outlay of Bourdieu’s theory of capitals, habitus and the field. Key terms and concepts used in this study were further explored.

Chapter 4 is an elucidation of the research’s methodology. Here, the study presents the research design, sampling and selection of research participants, selected data collection tools (life history interviews, observation and focus group discussions). It also introduces data analysis methods, research ethics and study limitations. Chapter 5 presents research findings. This is done thematically with the aid of graphs and tables. Chapter 6 which is the last chapter of the study presents a discussion and analysis of research findings. Here, research findings are
matched against what already exists in literature and major continuities and discontinuities in literature are highlighted. The research concludes by way of conclusion.

1.8 Summary of Chapter
The chapter has introduced in brief the focus of the study by way of an introduction and background to the study. The problem statement identified a knowledge gap that this study seeks to unravel. This is achieved by taking a differentiated approach to looking at local water governance in Harare. Chapter 1 outlined research questions and objectives which guided the study from infancy to maturity. Chapter One concludes by way of study justification and overall thesis structure.
CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction
In the following chapter, the research engages theoretical and conceptual debates that focus on conflict and cooperation in water governance. Water governance here is approached from local, national and international levels. There is general consensus in literature that natural resource scarcity whether water or other resources could potentially exacerbate social and political tensions often times violent or in worst case scenarios induce migration. Water governance here is approached from different angles as demonstrated in the following sections. The last section of the chapter engages hydro-politics in Zimbabwe and expose policy gaps that exist in Zimbabwe’s water policy. These are partly a result of weak institutions, duplicity of responsibilities and legal pluralism in water governance.

2.1 The Importance of Water
Water is a prerequisite natural resource which plays a vital role towards human survival, economic development as well as biological diversity. It is central to Zimbabwe’s economy, people’s livelihoods and their social well-being while its availability and reliability is a function of highly variable climatic conditions (Davis and Hirji, 2014). The government of Zimbabwe recognises the indispensability of water to economic development, enhancing and improving the living standards of all Zimbabweans, (GoZ, 2013). According to King (2004), many countries around the world today are faced with a new challenge prompted by increasing water stress obligated through an amplifying populace in the world and fiscal progress that is interrelated to industrial growth and modernisation in form of expansion and emergence of new cities. The water scarcity phenomenon is now a universal challenge that development planners need to solve in earnest. Water resources are critical for socio-fiscal progress and the maintenance of sustainable ecologies (Day, 1998). The nature of water is ultimate and of paramount importance to virtually all spheres or institutes of society (Allan et al, 2009). Strang
(2004) writes that although water is a societal element that grosses different tangible values, we apprehend it as an incessant and similar substance.

The quality, quantity and distribution of water has several potential consequences for human well-being in a way that its connection with security and conflict has become a subject of growing concern globally, (Okpara et al, 2015). Lowi (1999) adds that with the ‘redefinition’ of security in the early 1980s to encompass non-traditional threats such as cross border environmental degradation and resource depletion, the types and sources of threats are now wide ranging. Gleditsch (1998), Hague and Ellingsen (1998) posit that emerging research is debating whether environmental issues should be considered as a type or source of threat to security. Deudney (1990) argues that security has a militarized framework, therefore, including environmental components will be to miss the point. However, Homer-Dixon (1999) and Le Billian (2001) note that changes to the natural environment constitute a potential security threat largely because security is essentially about the well-being of people which could be influenced by the degradation of resources.

Water attaches spheres of a lifespan creating an interdependent phenomenon whereby water utilised by an individual, directly affects other people. Association of water usage is therefore characterised by echelons of economic and societallogistical intricacy (Anderson and Tabb, 2002). Water is a good example of the values paradox implying that while nobody doubts its use value, water frequently has a low value in contrasts, for example while we all agree on the indispensability of water for human sustenance and ecological integrity, the price of diamonds is high while diamonds’ use value is low for most households (Arntzer et al, 2000).

To Sivakumar (2011) the question of whether or not there is enough freshwater available to meet global demands may itself be controversial and an arduous academic exercise. This is because water availability to meet global demands depends not only on the quantity of available
water but also on numerous other factors that are interwoven in very complex ways. These factors might include spatial and temporal distribution of water, water quality and availability of technology for water treatment, supply, transfer and demand by different actors such as industry, agriculture, energy and recreation (Sivakumar, 2011). Water quality determines which water can be used for what purpose and therefore water traditionally assumed to be ‘available’ may turn out not to be so. For example, most rivers flowing through Zimbabwe’s urban areas might be considered suitable for all uses but contamination from sewage and industrial pollution makes such water unusable for human consumption in its raw state.

2.2 Measuring Water Scarcity or Stress

While several indicators are conventionally in use historically for measuring the degree of water resources vulnerability (Water Strategy Man, 2004; Brown and Matlock, 2011), the commonly used even to date is the Falkenmark Water Stress Indicator developed by Falkenmark and Lindh in 1976. Jaeger et al (2013) argue that the simplicity of this technology makes it the easiest tool to use. It is based on the average per capita water availability per year and proposes 1700m$^3$ of renewable water per person as a threshold water requirement for household, agricultural, industrial, energy and environmental needs (Naik, 2016). Naik (2016) uses the following terms to determine water vulnerability based on average per capita water availability.

I. Water stress - countries whose renewable water supplies fall below the 1700m$^3$ threshold.

II. Water deficit - in periodic scale may occur at levels between 1700 - 1000m$^3$/person/year.

III. Water scarcity - when supplies drop below 1000m$^3$, countries are said to be facing water scarcity.
Fig 1: Shows that Zimbabwe is fast approaching water scarcity with her water availability/capita having drastically declined since 1990.

In Zimbabwe, national per capita water availability even under best case Green House Gases (GHGs) emissions scenario and a low population growth will decline by 38 percent from 2.5MI (Megalitres) per capita per year to 1.52MI per capita per year by 2050, (Davis and Hirji 2014). Under medium or high population growth scenarios, national per capita water availability will continue to decline to 2080 to a point where Zimbabwe would move from the UN’s ‘water stress’ to the ‘absolute water scarcity’ category, (Government of Zimbabwe [GoZ] and World Bank, 2014). Table 1 (page 11) demonstrates current and projected per capita water availability for Zimbabwe under three population scenarios.
Table 1: Current and projected per capita water availability (MI per capita per year) for 2050 and 2080 under three population growth scenarios.

<table>
<thead>
<tr>
<th>Pop growth scenario</th>
<th>2050</th>
<th>2080</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current</td>
<td>Ecologically aware</td>
</tr>
<tr>
<td>Low fertility</td>
<td>2.38</td>
<td>1.52</td>
</tr>
<tr>
<td>Medium fertility</td>
<td>2.38</td>
<td>1.29</td>
</tr>
<tr>
<td>High fertility</td>
<td>2.38</td>
<td>1.11</td>
</tr>
</tbody>
</table>

Source: UNDP 2011

2.3 Water and Development
Water has been viewed as central to any nation’s development and economic growth. Paula Fray, Director of Inter Press Service Africa sums up the centrality of water to development by linking water to societies’ prospects of development and demonstrates how a slight change in the quantity or quality could have devastating consequences for humanity. For example, when a killer fungal disease was discovered in the great Zambezi, a river that provides close to a million people with sustenance, not only were fish stocks decreasing but also millions of people whose livelihoods depended on the river were at stake (IPS Africa, 2000).

Harris (2010) shows how Turkey’s GAP water project, portrayed as central to Turkey’s development potential soon came under scrutiny from lower riparian countries who felt threatened by Turkey’s development projects upstream. The project had been on Turkey’s cards dating back to the 1930s with Ataturk’s idea of diverting the Tigris-Euphrates waters to Turkey’s arid and industrialised west, (GAP-RDA, 1998). Turkey’s vision later transformed from a strictly water resources development program to an integrated regional development program involving a number of complex projects set to transform the social, economic and
physical geography of the South-eastern Anotolia region, (Unver, 1997). Among other things, intended benefits of the project would include reducing reliance on costly energy imports (Kolas and Mitchell, 1991) to massive agricultural projects set to make Turkey a food exporter and consolidate her position as a regional powerhouse.

Davies (2012) states that water shortages and continued droughts in South Africa’s economic and industrial hub the Vaal Triangle might have serious and disastrous economic and political repercussions on the economy including massive job losses and localised water conflicts. In similar fashion, Southern Africa Development Community (SADC) industrialisation drive will require increased amounts of water to drive regional economic growth and lift millions out of poverty. In Zimbabwe, investment in infrastructural projects for hydro power generation is seen as laying a strong and sound base for economic growth.

2.4 A Rights-Based Approach to Water
On July 26, 2010, the United Nations (UN) General Assembly formally recognised a right to water and sanitation by adopting Resolution 64/292, emphasizing that such a right ‘is essential for the full enjoyment of life and all human rights’, (Tignino, 2011). The human right to water entitles everyone to sufficient, safe and acceptable, physically accessible and affordable water for personal and domestic uses. According to De Albuquerque (2010), taking a rights based approach to defining, implementing and ultimately enforcing access to water and sanitation can help produce more equitable short-term results and more sustainable longer term development goals. Tignino (2011) writes that the constitution of South Africa was one of the first national constitutions to guarantee a right to water and adopt a legal framework for ensuring access to water services by communities who had historically faced water discrimination during apartheid through the National Water Act (NWA).

The Committee on Economic Social and Cultural Rights which monitors the implementation of the International Convention on Social and Cultural Rights (ICESCR) to which Zimbabwe
is signatory has previously recognised that water is a human right contained in Article 2 which guarantees among other rights, the right to food, security, clothing and housing, (Community Water Alliance Zimbabwe 2016). This right has also been recognised in other international treaties such as Convention on the Elimination and Discrimination Against Women (CEDAW) which stipulates that state parties shall ensure to women the right to enjoy adequate living conditions particularly in relation to water supply (De Albuquerque, 2010). Right to water contains both freedoms and entitlements. The freedoms include the right to maintain access to existing water supplies necessary for the right to water and the right to be free from interference, for example freedom from arbitrary disconnections or contamination of water supplies. Entitlements include a right to a system of water supply and management that provides equality of opportunity for people to enjoy the right to water (UNDESA, 2007). Elements of the right to water must be adequate for human dignity, life and health and this adequacy should not be interpreted narrowly by mere reference to volumetric quantities and technologies.

2.5 Causes of Water Scarcity/Stress/Deficit
Jackson (2001) notes that water is a highly vulnerable and extremely limited resource in the world particularly in Southern Africa. Recent estimates indicate that about 900 million people in the world are without access to safe drinking water and about 2.6 billion people are without improved sanitation facilities (WHO/UNICEF, 2008; UN, 2010). Its vulnerability stems from both natural and anthropogenic factors including but not limited to climate change, over exploitation of surface and ground water sources, a rapid and chaotic urbanisation process that usually involves erecting structures on wetlands, population growth and modernisation. Sivakumar (2011) writes that population growth is an important driver for water related activities and problems since an increase in population leads to an increase in water demand for domestic, industrial, agricultural, energy or recreation. UN estimates indicate that the world
population may increase from 6.7 billion in 2007 to 7.7 billion by 2020 and 9.2 billion by 2050, (UN 2007). The greatest increase will happen in developing countries whose population is predicted to rise from 5.4 billion in 2007 to 7.9 billion by 2050, (Sivakumar, 2011).

Chenje (2002) writes that climate change predictions for the SADC region shows that temperatures have risen by over 0.05% in the last 100 years with the last decade being the warmest and driest ever. Climate change is likely to be an additional stressor on water sources driven by anticipated increase in mean annual temperatures which will in turn increase evaporation and the expected variation of both the intensity and duration of precipitation resulting in longer drought periods and ‘heat waves’, (Ludwig et al, 2009; Lumsden et al., 2011; Western Cape DEADP, 2011). Over the last century, temperatures have increased by about 5°C in the region and downward trends in rainfall have also occurred, (Kandji et al., 2006; Morton, 2007). Masikati et al., (2015) observe that for the northwest parts of Zimbabwe, projections indicate a 5 – 10 % decrease in rainfall and temperature increases of about 3°C for the period 2040 – 2070. Conway (2000) estimates that about 1.7 billion people already live in countries that are water stressed and by 2025, this figure is expected to rise to 5 billion.

Conway’s projections demonstrate the severity of the problem facing humanity in the near future in terms of meeting global development goals as enunciated in the Sustainable Development Goals (SDGs) agenda particularly goal 6 (provision of clean water and sanitation) and 8 (creating decent work and economic growth for the benefit of the world’s poor). There is an intrinsic link between water and economic development. Water therefore speaks directly to our prospects for development. FAO (2013) projects that by 2030, up to 250 million people in Africa will be living in areas of high water stress and is likely to displace around 700 million people as conditions worsen resulting in ‘climate refugees’ (Myers, 1995).
El-Amis and Smith (2013) write that one of the defining features of the process of modernisation has been the greater per capita use of water, both direct personal use of water and indirect pressure on water resource through manufacturing of consumable and non-consumable goods. They note that as the world’s population shifts from relatively low impact subsistence lifestyles to predominantly industrial and urban lifestyles, the demand for water increases. The UNFPA reports that the year 2008 saw a tipping point as high numbers of people were living in urban than rural or semi-rural environments (UNFPA 2007). To Futehally (2015), the 21st century has seen an unprecedented population growth, industry and technology placing a higher demand on natural resources including water. For example, projections are that by 2050, the world population would have tripled three times from its 1950 size and almost 9 times what it was in 1750. From 1950-2050, more than 5 billion people would have been lifted out of poverty and these developments can only be met by a corresponding demand for water, (Futehally, 2015).

Estimates are that the global supply of fresh water could be depleted from anywhere between 20-40% in some of the countries of the ‘mega arch of hydro-insecurity’. Futehally (2015) writes that the role played by coal and steel in Europe in the 1950s will somewhat be comparable with the role of water and environment in the 21st century particularly for developing countries who still have to harness the natural resource for development and industrialisation. Scholars such as Sivakumar argue that water use competition is likely to lead to water related conflicts. For example, it is estimated that domestic water withdrawal will be the highest followed by agricultural and industrial withdrawals in Europe whereas agricultural withdrawal will far outweigh domestic and industrial withdrawals in Africa and Asia. Future water competitions are predicted between urban population vs rural population, urban domestic vs urban industrial, urban industrial vs urban agricultural, electricity generation (dams) vs environmental requirements, (Sivakumar, 2011).
2.6 Future Rainfall and Temperature Projections for Zimbabwe

The timing and amount of rainfall received in Zimbabwe is increasingly becoming uncertain (UNICEF and IES, 2014). There has been an overall decline of nearly 5 percent across the country since 1901, with the early 1990s probably witnessing the driest period of the last century (UNICEF and IES, 2014). The frequency and length of dry spells during the rainy season have increased while the frequency of rain days has been reduced. Rainfall distribution is erratic in both time and space across all the country’s 10 provinces. The erratic nature of rainfall patterns has serious repercussions on the agricultural sector with even more significant impacts on the livelihoods of marginalised and vulnerable populations. Most climatologists regard the final decade of the 20th century as the warmest in the past millennium and emerging climate research demonstrates that the earth’s energy is out of balance. This means that more energy is captured from the sun and radiated back into space, making global warming inevitable (UNICEF and IES, 2014).

Rainfall in Zimbabwe is unimodal usually falling between mid-November to April (Met Department Harare, 2011). There is a high degree of fluctuation in rainfall and the length of the rainy season is variable (UNICEF and IES, 2014). With a coefficient variation of 29 percent, Zimbabwe’s rainfall has one of the highest degrees of variability in the world, (World Bank, 2014). Climate data in Zimbabwe reveals that the period from 1980 to date has been the warmest since Zimbabwe started recoding her temperatures. Future scenarios predict increases in global mean temperatures of between 1.3 – 4.6 °C by 2100 representing global warming rates of between 0.1 – 0.4 °C per decade (GoZ 2013). Zimbabwe’s continental interior location means that it is predicted to warm more rapidly in the future than the global average (UNICEF and IES, 2014). Model experiments suggest that annual rainfall will decrease across Zimbabwe in the future and the decrease is predicted to occur in all the seasons but is more conclusive for the early to late rains than for the rainy season months of December to February (GoZ 2013).
By 2080, annual rainfall averages are projected to be between 5-18 percent less than the 1961-1990 average (UNICEF and IES, 2014).

Fig 3a: Zimbabwe: Rainfall Analysis Average seasonal rainfall (1901/2 to 2007/8)

Fig 3b: Zimbabwe Annual Mean Temperatures from 1962-2004

(ZSource: Met Department, Harare, 2011)

2.7 Water conflicts: A reality or fiction?
Although claims of scarce resources are commonly viewed in literature as leading to violent conflicts, Tapela (2013) argues that empirical evidence shows that what is conveniently seen as ‘water wars’ are in fact conflicts couched in multiple factors than resource scarcity per se. Witsenberg et al., (2009) and Rosa (2004) challenge the conventional view that competing
claims to scarce resources tend to lead to violent conflict in Africa. Their argument is partly influenced by research conducted in Kenya between nomadic and sedentary pastoralists and crop farmers in Masarbit district. Findings show that groups tend to cooperate even better during drier seasons with risk and vulnerability ranking higher during wetter seasons, (Tapela, 2013). However, such findings contrast sharply with growing evidence from researchers such as Benjaminsen (2008) and Bolding (1996) who maintain that water is and will increasingly become a source of violent conflict in sub national or local contexts.

Barnett (2000) writes that because the resource-conflict thesis informs security policy discourse, especially in the United States (US), it is important that it becomes subject to critical examination. He argues that the resource-conflict thesis is theoretically rather than empirically driven and not surprisingly a project and legitimation of the global North’s security agenda. However, such submissions are being dismissed on the grounds that if the oppressed and exploited in the global South have not resorted to force to free themselves from the underdevelopment imposed on them by the North, it seems unlikely and questionable that they will in the future on the basis of additional resource scarcity, (Barnett, 2000).

Barnett (2000) argues that literature referring to resource scarcity is almost entirely premised on ethnocentric assumptions that people in the South will resort to violence in the face of scarcity. He further argues that rarely if ever are the same arguments applied to people in the industrial North, thus there is a continued tendency to view people from the South as barbaric. To Barnett, the Middle East, a region already rife with religious, ethnic and political tensions, water scarcity will only seek to exacerbate the problem. To Barnett (2000, p.9) ‘water scarcity will be a proverbial spark that starts the metaphorical Middle East fire. He goes on to argue that the most striking difficulty of the water wars thesis is its inability to clearly distinguish among a host of other factors with potential to contribute to warfare. Historical and contemporary evidence demonstrate that very few wars have been solely induced by water
shortages. Schulte (2004) goes on to argue that examples offered as evidence of water wars tend to be about something else.

In fact, emerging research shows that water scarcity is likely to ‘cement peace’ as it is to induce violence. For example, Barnett (2000) notes that the Okavango River is a little studied but exemplary case in which water scarcity can lead to cooperation rather than war. The Okavango River is shared by Angola, Botswana and Namibia, has important health, economic and ecological functions. As a result of impending tensions over scarce water resources, a commission was established by these three states in 1994. Since then, the commission has effectively and peacefully co-managed the river, demonstrating that water can form a common basis for peace. Jagerskog (2009) and Philips et al, (2006) argue that water and environmental cooperation can potentially catalyse and ‘spill over’ into ‘high potential’ spheres of peace-making, effectively leading to peace. Liberal political economists argue that the historical absence of true water wars derives from the fact that water, far from being a non-substitutable, finite and a scarce resource is readily substitutable, importable and recyclable through water treatment and reuse or through importation of ‘virtual water’ in the form of commodities that are produced utilising water elsewhere (Allan,2000).

Others maintain that it is high value resources like diamonds and oil which are most associated and susceptible to conflict (Collier and Hoeffler, 2005; Peluso and Watts, 2001) and not low environmental resources such as water no matter the level of scarcity. In Southern Africa, states have devised a raft of measures to guide the process of cooperation and regional integration over scarce resources. One example is the SADC Protocol on Shared Watercourses adopted in 1995 but came into legislative force in 1998. Zimbabwe is party to a number of trans-boundary and bi-lateral water resources agreements signed mainly to foster peace and regional cooperation in the face of dwindling resources. The government has signed and ratified a number of regional cooperation treaties among them the Limpopo Watercourse Commission.
and the Zambezi Watercourse Commission Agreements. It has ratified the revised SADC Protocol on Shared Water Courses and has established a number of Joint Water Commissions with her neighbours including Mozambique, South Africa, Botswana, Zambia and Namibia, (WB and GoZ, 2014).

That much of literature on water wars focuses on the Middle East is not surprising to Barnett given the problems war could create for Northern interests in the region. Drudney (1990) posits that cooperation and co-management of water resources may be the more likely outcome of water scarcity. Libiszewski concurs with Deudney by noting that water has served as a force for dialogue and confidence building in the Middle East, an important and unpopular counterweight to proponents of water wars. To Ide and Frolich (2015), the Good Water Neighbours (GWN) project, an Israeli-Palestinian water cooperation project is an often-cited example of international water cooperation.

However, denying the severity of the crisis induced by water scarcity in developing countries will be nothing short of hypocrisy and denial. The Egyptian Foreign Minister Boutrous Ghali hinted that ‘the next war in the region will be over the waters of the Nile not politics’. For Starr (2004) water scarcity will soon rank with military security in the war rooms of defence ministers. For Buzan (2001), it is not difficult to imagine the issue of allocations of water along rivers such as the Nile, Mekors and the Indus becoming causes for the use of military force. For Barnett (2000, p.32) the strategic importance of water under circumstances of scarcity becomes a ‘highly symbolic, contagious, aggregated, intense, salient, complicated, zero-sum, power and prestige package highly susceptible to conflict and extremely complex to resolve’.

For example, the loss of over 250 lives during a series of water clashes in Rabdore village in Somalia during the region’s relentless three-year drought between 2002-05 gives weight to the water scarcity- conflict line of argument, (Wax and Thomas, 2006).
Mutopo and Chiweshe (2013) note that water related conflicts are caused by the manner in which water and its uses are governed which inevitably involves conflicting interests. It therefore follows that water is fast becoming not only a scarce resource but also an unevenly distributed resource between regions, states and societies. History demonstrates that every time a scarce resource is unevenly distributed, it leads to conflict. However, studies by Wolf et al (2003) indicate that instances of cooperation over shared scarce resources outnumber incidences of conflict. Despite the ideological differences and theoretical orientations of researchers, they all share and agree on one characteristic, that violence is usually the yardstick against which the presence or absence of a water conflict is measured, (Bachler et al, 1996; Barnett, 2001; Homer- Dixon, 1999).

2.8 Not Enough Water?
Nature (2011) observes that about 80% of the world’s population, an estimated 5.6 billion people as of 2010 lay in areas with threats to water scarcity. Smith (2011) alludes to the fact that although the overwhelming majority of earth is composed of water, only 3% of this water is freshwater that can sustain human life. Sivakumar (2011) concurs with Smith and notes that the world’s total freshwater reserves are estimated at around 35 million km$^3$, representing about 2.5% of the total stock of water on Earth estimated at 1.4 billion km$^3$ while the remaining 97.5% is in the form of salt water in the oceans (96.5%) and saline groundwater (1%). Freshwater is in a wide variety of forms and locations with a large fraction (68.7% or 24 million km$^3$) locked up in glaciers and permanent snow cover in the Antarctic and Arctic regions or deep underground inaccessible to humans, (Sivakumar, 2011).

It suffices to conclude that planet earth has a limited supply of fresh water stored in aquifers, safe water and the atmosphere. Narayan (2002) postulates that Africa as a region experiences a high degree of climate variability which has severe and chronic impacts not only on livelihoods but also on economic development. Cruz in Barkes et al., (1989, p. 219) notes that
the ‘the awareness of the concern for the problems associated with the use of water resources have increased worldwide and two major aspects of these problems involve the alarming rate at which water supplies are being depleted and conflict arising from competition in allocating the scarce supply of water. In addition, a common problem among developing countries is the lack of guidelines for the development of water resources for the distribution of water among competing users.

Walter (2011) writes that South Africa is facing serious water challenges with average rainfall in the country estimated to be 450mm annually combined with comparatively high evaporation rates. Surface and underground water are extremely constrained and unevenly distributed across the country, (Ahjum and Faut, 2015). Al-Amis and Smith (2013) contend that access to freshwater resources is a potential high zone of conflict or cooperation. In 2005, the UN declared an international decade for action with regards to water security issues. Under the theme ‘Water for Life’, it emphasized the need for holistic approaches, skills and methods needed for successful cooperation and collaboration in promoting effective implementation of sound water management practices given water’s susceptibility to conflict.

Odada et al., (2006) observe that the rate of hydrological changes in Lake Chad has been unmatched anywhere on the planet. In 2003 the lake region was classified among the 10 most water impoverished locations around the world (UNEP, 2003). These hydrological changes have had devastating effects on human systems triggering large scale social upheavals and disruptions at various times in history, (Odada et al, 2006). The lake is believed to have shrunk in size from 25 000Km² to 1 380Km² in the last half century, (Futehally, 2015). Chad is not alone in this crisis with Freitas (2013) noting that freshwater has become increasingly scarce in many parts of the world, particularly in Sub Saharan Africa (SSA) where approximately a quarter of the entire population lives in water stressed villages and communities.
The Water Stress prediction map in Fig 2 indicates projected global water scarcity by the year 2025. The map shows that the parts of the Middle East and North Africa will experience the highest level of physical water scarcity while the larger part of Africa will face highest risk of economic water scarcity.

**Fig. 2**: Different forms of Global Water Scarcity by year 2025

![Projected Global Water Scarcity, 2025](image)

**Source: International Water Management Institute 2009**

According to the map, by 2025, south-western parts of Zimbabwe will begin to experience physical water scarcity while other regions of the country will experience an economic scarcity of water.

**2.8.1 Water Conflict and Cooperation: A Way Out?**

Derman et al., (2007) note that conflict over water become a reflection of deeper tensions that might be linked to a complexity of causal factors that might or might not involve water while Mutopo and Chiweshe (2013) note that water related conflicts are caused by the way in which water and its uses are governed which sometimes involves conflicting interests. For example, Banda (2008) writes that in some communal areas of rural Plumtree, villagers are involved in conflicts with communities in neighbouring Botswana over access to water, its management and use.
Pandey (2011) argues that water today occupies an indispensable role because it is fast becoming a scarce resource and has thus increasingly become a source of conflict at both national and international levels. Allan (2009) notes that at the beginning of human evolution, a person needed not more than 5 litres of freshwater per day to survive. This is because early humans did not raise crops and therefore did not need additional domestic water supplies. However, the situation has drastically changed over the years as a result of water intensive development which has undoubtedly put a strain on available freshwater resources.

It is estimated that the present global population of about 6.5 billion people needs about 6.5 billion m³ of water per year with about 86% of this amount being used for production purposes leaving only 14% for drinking and domestic use (Allan, 2009). While Selby (2005) refuses to consider water to be of much importance to developed countries compared to resources such as oil, she nonetheless contends that water could be a focus of violent conflict in developing countries and peripheral regions of the world that are still reliant on agriculture for sustenance.

Futehally (2015) advances a position that historically water is perhaps the least cause for conflict between and within states and argues instead that land has historically been the major cause for conflict or wars ever since the 1st known state was established in Egypt almost 5 000 years ago. In opposition to Futehally, Peters (1984) argues that while early travellers remarked that the most common source of conflict between groups and societies was over grazing pastures (land), when one realises that pastures are in fact defined by the presence of water sources, it becomes almost apparent that conflicts around resources have always been over water and not necessarily land.

Shiva (2002) argues that many conflicts over resources such as water are usually couched or hidden in ethnic and religious conflicts thereby colouring water conflicts in such regions as conflicts among regions, religions and ethnicities. Scholars such as Bernauer and Siegfried,
(2012), Hague and Ellingsen, (1998), Kreamer (2012) argue that given the increasing scarce situation of freshwater coupled with lack of suitable alternatives for most of its uses, a causal relationship exists between water scarcity and conflict. Using case studies from the Middle East, South Asia and South America, Remans (1995) suggests that competition over scarce freshwater leads to severe social and political tensions. In their study, Erikson et al (2003) estimate that between 80-90% of armed conflicts between 1989-2003 had a strong water component.

Ambitious estimates have predicted that Iraq may experience flow reduction on the Euphrates by as much as 80% and Syria by as much as 40%, with higher saline and pollution content of more water from increased agricultural inputs and irrigation uses upstream, (Hillel, 1994). To Harris (2010), such figures are frequently cited as a possible basis for heightened conflict over sharing the Tigris-Euphrates waters given that water projects planned in Turkey, Syria and Iraq greatly exceed actual water availability (Scheumann, 1998; Carkoglu and Elder 1998). Gleick (2008) goes further to note that on 37 occasions in the second half of the 20th century, countries concerned about water (Israel, Jordan and Palestine) fired gunshots, burnt homes, blew up dams and undertook some form of water related military and political actions. Gleick (1998) sees water and conflict situations through four linkages; shared water resources can be a military and political goal, an instrument and tool for war, target of war and lastly a source of political contention and conflict.

A tool called Water Cooperation Quotient (WCQ) designed by the Strategic Foresight Group is used to measure the intensity of ‘active’ water cooperation between neighbouring countries. The tool provides a ranking mechanism whereby the most cooperative countries have a ranking approaching 100 while the most uncooperative score less than 20. Usually countries with a lower ranking are more susceptible and prone to conflicts. Futehally (2015) writes that India, Pakistan have a WCQ of 23.66 and this low ranking can provide answers to the water wars that
have been waged in the region since the signing of the Indus Water Treaty of 1960. He further notes that out of 148 countries that share water resources, 37 do not engage in cooperation for the management of water resources and where they do, cooperation is usually limited to the technical level. These countries, he argues face the greatest risk of war for reasons other than water.

2.8.2 Zimbabwe’s Water Sources
Murwira et al., (unpublished) note that surface water mostly from rivers and dams is the major source of water in the country, accounting for roughly 90% of supply while groundwater provides water to more than 70 percent of Zimbabwe’s population and is the principal source of water for both the communal and commercial sector of water in rural areas and a major source of water for irrigation, mining and tourism, (Davis and Hirji, 2014). However, its planning, development and management has received very little systematic attention since the mid-1980s largely because the country has had a bias towards provision of clean water from surface water sources (Davis and Hirji, 2014). Zimbabwe is a landlocked country located in Southern Africa with a total area of about 390,760Km², (FAO Aquastat, 2016). According to a 2010 MENR report, Zimbabwean soils are predominantly granite, with between 70-80% sandy and light, limiting its cropping potential. However, soils with significant clay content and of excellent agricultural potential are found in all regions of the country. Climatic conditions in the country are largely sub-tropical characterised by a rainy season from November to March, a cool winter season from April to August and the hottest and driest period from September to mid-November, (MENR 2010).

According to government reports, the country is prone to periodic droughts strongly influenced by El Nino events. In the present millennium, the country has experienced 5 devastating droughts in 2001/02, 2002/03, 2004/05, 2006/07, 2011/12 directly impacting on agriculture and water storage, (GoZ 2012). The 2015/16 farming season has been equally bad, prompting
government to declare it a national disaster. According to the South African Institute of International Affairs (SAIIF), the 2015 agricultural season in Southern Africa was considered the driest in 35 years. Five countries in the region namely Swaziland, Zimbabwe, Lesotho, Malawi and Namibia declared national drought disasters while 8 out of 9 provinces in South Africa and the southern and central parts of Mozambique declared partial drought emergencies. Massive crop failures were experienced across the region leading to a cereal crop deficit of over 9.3 million tons. An estimated 643,000 cattle were estimated to have died of the drought across the region while the number of food insecure population increased by 31 percent implying that more than 40 million people needed humanitarian assistance (SAIIF, 2016).

Because of erratic rainfall, the agriculture sector is heavily dependent on irrigation. A World Bank report estimates that while the country’s total volume of water in 2012 was estimated at 3,570 million m$^3$, about 2,930 million m$^3$ (82%) was taken up by agricultural activities (World Bank, 2014).

According to Food Agriculture Organisation Aquastat (2016), Zimbabwe has limited groundwater resources chiefly because the greater part of the country consists of ancient igneous rock formations with a poor groundwater potential. Overall surface water resources in Zimbabwe are projected to significantly reduce by 2080 irrespective of the scenario used, (Murwira, unpublished, Murwira et al., unpublished). According to Environmental Management Agency [EMA] (2007), the country is divided into 7 river catchments namely; Gwayi, Sanyati, Manyame, Mazowe (Mazoe), Savi (Sabi), Runde and uMzingwane with Murwira et al (unpublished) noting that run off will decrease significantly in the uMzingwane, Shashe, Nata and Save catchments over the next decades.

Because of the scarce groundwater stores, the country is heavily dependent on surface water resources with internal renewable surface water resources estimated at 11,260 million m$^3$/year and renewable groundwater resources at around 6000 million m$^3$/year. About 5000 million
m³/year is considered to overlap between surface and groundwater, thus total internal renewable water resources [IRWR] are 12 260 million m³/year, (FAO Aquastat, 2016). However, some hydro experts have expressed concern citing that scientific data on groundwater storage remains unknown. Evidence from a study conducted in Harare suggests that groundwater levels have declined by around 15m over the last 5-10 years (GoZ and WB, 2014).

Fig. 4: Zimbabwe’s Hydrological Map

Zimbabwe’s current water problems have their roots in the colonial legislative system which cramped up ‘native reserves’ leading to serious land degradation and over exploitation of water sources, (News Africa, 2000; Okele, 2000; Nicol et al, 2006). During colonialism, the racist government of Ian Smith instituted a number of racist and discriminatory laws and practices that served the interests of whites at the expense of indigenous blacks. The water sector did not escape Smith’s racist tendencies as it existed in the now defunct 1976 Water Act, itself a revision of the 1927 Water Act. Close to 20 years after obtaining political independence from Britain in 1980, the country undertook profound and radical water reforms to guide water
utilisation, availability and accessibility to all interested stakeholders. The reforms marked a radical departure from the racist policies that had been in existence for close to a century. Latham (2001) notes that the decision to revise the Water Act was underpinned by the increasing concern over water management and its potential for conflict and tensions the world over including global concern pressing for more efficient and sustainable approach to water management. The 1998 Water Act placed sole ownership of all water in the president’s office rather than in private land owners. It also established regional catchment councils and sub catchments councils for undertaking catchment level water planning, issuing of water use permits and monitoring their use, establishing the rights and responsibilities of water users and assigning responsibility for dam safety (GoZ and WB, 2014).

Pazvakavamba (2002) writes that the water legislation that existed prior 1998/9 was inconsistent with present trends. For example, more water users were applying for water rights yet existing water legislation was not sufficient and flexible to accommodate new players particularly in highly committed areas where all water had been allocated. The government of Zimbabwe passed two laws meant to guide water reform namely; Water Act [Chapter 20;24] and the Zimbabwe National Water Authority (ZINWA) [Chapter 20;25]. Manzungu (2001) observes that the main aim of the Water Act was to provide for the development and utilisation of Zimbabwe’s water resources while the ZINWA Act aimed at establishing a national water authority by the same name and to provide for its functions.

Among the reforms that were carried under the new Water Act of 1998/9, were the repeal of the priority date system based on a ‘first come last out’ basis and phasing out of water rights and their replacement with water permits. Manzungu (2001) posits that the priority date system disadvantaged black indigenous people as it implied that applications with earlier claims to water had priority over ‘late comers’. Bolding, Manzungu and Van der Zaag (2006) acknowledge that the priority date system was a calculated strategy to elbow out indigenous
people who had not applied for water rights as they did not operate according to the colonial logic. Matondi (2001) concurs with Bolding by pointing out that customarily, water is a God given resource and therefore indigenous people did not see the logic in applying for a natural resource. On the other hand, issuing out water rights in perpetuity meant that once issued, water rights were not revoked unless under special circumstances.

To Mukurira and Mugumo (undated), despite the 1998 water reforms being commendable, conflicting policies (a chaotic land reform process), weak institutional linkages, insufficient domestic funding and over reliance on donor funding compromised the success of the reforms. Davis and Hirji (2014) note that difficulties lay and continue to lie in implementing this framework with little coordination and cooperation between ministries whose decisions have major implications for water resources water resources planning and management, potential conflict of interest between some institutions and there are no clear mechanisms for protecting water source areas, serious capacity constraints while surface water monitoring networks are not fully maintained and there is almost no monitoring of groundwater levels and quality, (Davis and Hirji, 2014).

2.8.4 ‘Hydro-politics’ and Water Governance Struggles in Colonial and Post-Colonial Zimbabwe
Zimbabwe’s current water problems have their roots in the colonial legislative system (News Africa, 2000; Okele, 2000; Nicol et al, 2006). The colonial government instituted racial discrimination on both land and water which confined indigenous black smallholder farmers to colonial reserves characterized by low rainfall and poor soils. Musemwa (2008) writes that in post independent Zimbabwe, water governance crises are a reflection of Chabal and Daloz’s (1999) ‘political instrumentalisation of disorder’ where urban water was used as a political survival strategy in complete disregard of laws that govern local authorities. Available literature on water governance in Zimbabwe is replete with instances where water has been used as a political weapon for reining in ‘errant’ communities or a means of effecting
‘punishment’. Iliffe (1990, p.13) describes Zimbabwe as the ‘Sahel of the South’, a country characterised by periodic and seasonal droughts and huge regional variations in water resource endowments.

Although political independence in 1980 theoretically ended restrictive and racialized access to water, it did not necessarily bring about increased water security (Musemwa, 2006). Zimbabwe emerged after independence with a highly racial and discriminatory water policy that had roots in the colonial government which had disenfranchised indigenous blacks of their right to water. It was only in the 1997/98 period that the government of Zimbabwe passed two laws meant to guide water reform in the country through the Water Act [chapter 20:24] and the Zimbabwe National Water Authority Act [chapter 20:25]. The situation that obtained during colonisation discriminated against blacks in rural areas who at that time constituted over 70% of the population, (Manzungu, 2001).

Musemwa (2006) notes that while most debates about struggles over water and how the resource has been appropriated and expropriated as a political and social control instrument have tended to focus on global and interstate conflict, water supplies are and continue to be critical sites for political and economic struggles at local level across the world. In September 2015, a local newspaper carried a story that alleged that ZANU PF activists in Epworth were selling residents water drawn from a community borehole constructed through resources mobilised by local faith based organisations (FBOs). The story alleged that households were forced to pay 3.00USD monthly subscription to access water, (Newsday, 2015).

In post-independent Zimbabwe, one of the places where conflict played itself over water supply was the city of Bulawayo. While Musemwa (2006) acknowledges the existence of intense struggles over access to and management of water resources in post-colonial Zimbabwe, he accepts that in Bulawayo, water conflicts were embedded in a larger set of ethnic and regional
tensions which predated the post-colonial period and later intensified during the ZANU- ZAPU political divide that characterised Zimbabwean politics in the aftermath of independence.

Conflicts over water in Bulawayo were between government bureaucrats in Harare, the Bulawayo City Council (BCC) and residents of the city of who rallied behind the local authority. BBC councillors were infuriated by central government’s failure to attend to the city’s water woes which saw Bulawayo become the first leading city in water rationing schemes and other water conservative measures and later proposals to hand over the city’s water infrastructure to a failed state organ. According to Musemwa (2006) what worsened the situation was government’s swift willingness to solve ‘water shortages’ in Mutare, a city in a high rainfall area with no long history of water problems compared to Bulawayo. To Gumbo and Van der Zaag (1998), the Pungwe Water Supply Pipeline Project (PWSPP) for Mutare was a new water supply project of huge proportions was conceived and implemented fairly quickly compared to Bulawayo’s Matabeleland Zambezi Water Project (MZWP).

Younge (2009) argues that the takeover of water supplies by national government post 2000 was used as a weapon to rein in political ‘errants’ in Zimbabwe’s urban areas and weaken the opposition Movement for Democratic Change (MDC). He notes that while the Water Act of 1998 ostensibly aimed to democratise control over water resources, expand access and improve the infrastructure for water delivery through ZINWA, the reality was a complete shock as ZINWA became an ancillary funding source for ZANU PF campaigns. The attendant consequences were decreased water access and a collapsing water and sanitation infrastructure. For example, by 2008, more than 70% of Zimbabweans lacked access to water against 84% who had access to reliable and safe drinking water in 1998, (WHO and UNICEF 2008).

Younge concludes that ZANU used water as a tool to restate its legitimacy by making MDC councillors look incompetent. Cleaver (1995) notes that absence of literature focusing on
control over water sources is remarkable given that a growing population in the rural areas is dependent on man-made and protected water sources in the form of boreholes particularly in the west and south of the country. He argues that analyses on this area are significant because of the possibility for control, rationing and exclusion afforded by hand pump technology for example, hand pumps can be disconnected, fenced and sometimes entry barred. To Cleaver (1990), the use of such ‘protected’ sources is not a purely post independent phenomenon but has its roots in the colonial administration which developed such facilities early into the 20th century.

Auret (1990) notes that the 1960s-70s in Zimbabwe saw the growing politicisation of water as political activity in the reserves intensified in the 1960s, culminating in the war break out in the 1970s. During this period, both explicit and implicit struggles for control over water supplies were a critical factor in people’s lives. For the guerrillas, political activity initially included refusal to use cattle dips which were later destroyed by guerrillas as a form of colonial resistance, (Cleaver 1995). During the same period, colonial administrators disconnected boreholes in areas deemed politically hostile as a form of collective punishment. For example, Noel Allison Hut who at the time was Native Commissioner in Nkayi admitted depriving people access to water as a form of collective punishment, (NAZ AOH/240). Cleaver (1995) argues that while Nkayi is naturally dry, some of the water problems experienced in the region have a historical interpretation. A UNICEF report of 1986 reports that many wells in the area were not dug deep enough because well sinking teams were afraid to stay in the area for long in case they became targets of either dissident operation in the area or government soldiers during the ‘political disturbances’ that engulfed parts of the Matabeleland and Midlands provinces.
2.8.5 Intra – Inter Community Water Conflicts

Bolding (1997) demonstrates a link between water scarcity and conflict in the Nyanyadzi catchment in Chimanimani district. According to Bolding, Nyanyadzi catchment covers about 800Km² and stretches from the east and west and typifies all agro-ecological regions in Zimbabwe. At the bottom of the catchment lies a small-holder irrigation scheme that depends on the upstream for all its water supplies. Decreasing water supplies owing to upstream abstractions, drought conditions and the consequences of increased land use resulted in a water crisis for Nyanyadzi irrigators, (Bolding 1997). While the scheme was developed during the colonial period, the government has remained in control to date. Bolding (1997) describes water conflicts in Nyanyadzi as serious characterised by 5 raids in just 13 years, with all raids occurring during years when the community experienced water shortages.

In September 1984, the irrigation manager of the irrigation scheme together with a gang of his labourers assisted by members of the ZRP destroyed a total of 28 ‘illegal’ furrows upstream. His actions were motivated by lack of water in Nyanyadzi reaching the scheme’s intake as a result of overuse and exploitation by upstream smallholder irrigators (Bolding and Nyagwanda, 1998; Farm Radio International, 2000). The Nyanyadzi case demonstrates Haftendorn’s (2000) ‘Rambo situation’ whereby states, communities or groups that control a river’s upper flow place lower lying riparian communities at a disadvantage by refusing or avoid giving concessions to the lower riparian communities or groups.

Other illustrations of a ‘Rambo situation’ can be found in the Euphrates, Nile and the Ganges river systems characterised by abundance in the upper basin but drastically reduced flows in the lower basin due to extensive water use in the upper basins (Pandey, 2011). This deprivation can take numerous forms for example, through dam construction, reservoirs and extensive irrigation such as the Anotolia dam project in Turkey, Ethiopian highlands dam project and construction of Farakke dam in India (Haftendorn, 2000).
In the south-western parts of Zimbabwe, accumulation of land and water resources through large scale production of jatropha and sugarcane in Chisumbanje and Mwenezi districts have resulted in water competition between communities and water users in these two areas, (Mutopo and Chiweshe 2013). For example, Platform for Youth Development (PYD) accused an ethanol producing company in Chisumbanje of lodging a ‘water war’ by ‘deliberately’ poisoning water resources through emissions which villagers linked to the death of livestock and subsequent destruction of the environment (PYD 2011). The Herald of 30 March 2011 carried a story of ‘water wars’ in Chisumbanje where workers accused the management of the ethanol plant of intentionally withholding adequate water supplies which resulted in a cholera outbreak that claimed the life of one person and affected 70 others (The Herald, 2011). According to B’Tselem (2009) and Fischhendler et al (2011), a case involving the pollution of water sources in Israel-West Bank Gaza constitute a ‘water war’.

In Mali and Zambia emergence of ‘new’ water sources were fraught with poor governance systems which only served to fuel conflict on one hand and on the other deepen cooperation among actors. Funder et al (undated) write that research on water scarcity in the south has often focussed on the impacts of limited water resources for the poor, in most cases prompted by climate change debates currently on the agendas of international meetings. They further note that less attention has been drawn to the social and institutional processes surrounding the emergence of new collective water resources and how this affects authority, access rights and social exclusion in local water governance. In Mali and Zambia, the development and emergence of new collective water resources resembled an ‘elite capture’ where the poor and disadvantaged groups remained marginalised both in practice and theory in relation to access rights. The example of Mali and Zambia demonstrate not only water competition among users but also water use competition, for example domestic water use vis-a-vis water for gardening.
or animals. Such situations create an environment fertile for either conflict or cooperation depending on the severity of the scarcity of a given resource.

In Mali, climate change has periodically led to the sporadic formation or development of new natural ponds and lakes in some areas, (Moungui et al, 2009). Emergence of a new water resource is as much a social event as it is a technical and a biophysical one and the rules and practices around new water resources are partly determined by what already exists in terms of both the explicit institutional landscape and power relations, Funder et al (undated). Cleaver (2003) writes that power relations in water governance will frequently be subject to the peculiarities of time, space and social agency in a given location. In such cases, usually the powerful have ability to influence and demolish state policy and legislation while the poor have to invest in social relations to attain and maintain access to valued resources. For example, Lake Agofou in Mali is situated in the intersection between two neighbouring rural municipalities namely Hombori and Gossi in north east Mali. The water conflicts surrounding the lake are a result of institutional changes during Mali’s 1990s decentralisation exercise, Funder et al (undated).

The lake used to be a temporary pond but after a year of heavy rain in 1991 it became a permanent water source. The lake is situated in a dry, sandy and arid environment where water is scarce particularly in the dry season during which water is only available at scattered and widely dispersed wells in the area. During the dry season, pastoralists move to groundwater points (wells and boreholes) by which time access is negotiated and payment in cash or kind is often required, (Funders et al., undated). Contest over Agofou started when municipalities emerged as new institutions of public authority and created an opportunity for influential actors to compete for power and influence in local politics.
With the creation of municipalities, the lake suddenly became a source of territorial conflict between the two neighbouring municipalities and presence of a permanent water resource in an area characterised by water scarcities exacerbated the struggle for ownership as the lake had other developmental prospects for example fishery and gardening, (Funder et al undated). Different groups have different interests in the lake with varying water demands for example the Fulbe herders who are migratory and Songhay farmers living a more sedentary lifestyle who use the lake to grow crops and water animals. Even the Kel Tamashek, who were once pastoralists but have since lived in more or less permanent settlements heavily depend on the water, (Funder et al., unpublished). Competing livelihood strategies employed are a constant source of conflict and tensions among users chiefly because livelihoods require different and varying amounts of water and land. The lake even to date remains a heavily disputed territory open to different interpretations of ownership with some groups or users seeking to exploit the conflict between the two municipalities to enhance their own access to and control over the lake, (Funders et al undated). Sikor and Lund (2009) argue that the case of Agoufou demonstrates that struggles over control and access of water resources do not take place in isolation but are deeply imbedded in the struggle over the scope and constitution of authority.

In another related case, Muchula a rural district in Zambia lies in the south-western part of Namwala district in the southern part of the country. Muchula traditionally consisted of Ila pastoralists but the last decades have seen a substantial immigration of Tonga farmers practicing a more sedentary lifestyle, (Funder et al unpublished). However, wealthy pastoralists who include the chief have a high influence in local politics and the cattle economy remains a priority and ambition for many households. This is despite the Zambian constitution being clear that primary uses of water have a priority where conflict over water use and allocation arise. Water infrastructure development is poor with a few water sources sparsely spaced. Wealthy
individuals own private hand dug ‘deep wells’ on their lands while the poor rely on communally accessible water points, (Funder et al., undated).

The construction of new boreholes in Muchula through the District Water Authority (DWA) funded mainly by various international aid agencies and NGOs created a deep seated complex conflict situation based on gender, class and ethnicity, (Funder et al undated). For example, a borehole sunk in Kumalasha in 2003 to serve 5 sub villages, had a committee of 12 members, 8 of which were men and only 4 women demonstrating a gender bias in the selection of committee members. The committee was also largely dominated by wealthy cattle owners representing ‘elite capture’ (Labonne and Chase 2009). While the boreholes in reference were intended for use by community members, they are managed by community borehole committees ‘elected’ by villagers. Water conflicts in Muchila manifest themselves in different ways including conflicts over location and representation on committees. Funder et al (undated) writes that these water conflicts must also be seen within a context of local institutional competition over authority and influence in water resource development.

The borehole committee set up rules and guidelines for the use and maintenance of the facility which included an annual affiliation fee with the exception of poor households who would contribute labour for cleaning around the borehole, (Funder et al undated). Conflicts between men (who wanted to water cattle) and women (who wanted to collect water for domestic purposes) soon erupted in Muchula. Men felt cattle had a priority of access since they had a symbolic and cultural value and requested that women go elsewhere. For women, this restriction was in fact an onslaught on their livelihoods since it meant that they could not grow vegetables meant to supplement their families’ diet and a source of much needed cash supplement through sale of surplus produce. However, because some women were themselves cattle owners with a middle-class taste, they were against the idea of men completely
withdrawing their animals but wanted equitable access to a valued yet scarce resource, (Funder et al undated).

In ensuring equitable access to water, some women exploited their social networks to get the chief to intervene. The chief’s intervention resulted in the drawing of a water timetable for both men and women. However, this intervention was short-lived and collapsed after a year, (Funders et al unpublished). The second time, women turned their attention to the Councillor and Chairman of the Area Development (both men) who suggested dissolving the current committee and replacing it with a committee with a fair representation in terms of gender and social standing, (Funders et al unpublished). What is more striking in this case was or is the reaction of the poor whose reaction to elite capture was in three forms namely; ‘fence sitting’, complete withdrawal and discrete lobbying usually in cohorts with influential and powerful persons in the community sympathetic to their cause. However, the reaction by the poor must not be interpreted in simple cause and effect terms but is a reflection of a more complex system hinged on the poor’s dependence on wealthy families for sustenance.

2.9 Summary of Chapter
By reviewing available literature on conflict and cooperation in water governance, this chapter sought to demonstrate the complexities involved in water governance at local, national and international levels. The chapter highlighted instances where water has been used as an instrument of control and coercion at varying levels and scales usually producing a complex set of relationships around the use and management of water resources. In reviewing literature, this study has shown that much has been said and written on water scarcity and its susceptibility as an incentive to trans-boundary water conflicts. However, research on intra-community dynamics of water governance, conflict and cooperation has featured less prominently in literature, a gap this study intends to bridge and potentially contribute and build on existing knowledge on local water governance processes.
3.0 Introduction
This study draws on the works of Pierre Bourdieu, in particular the sub components of Bourdieusian sociology: capitals, habitus and the field. Because Bourdieu’s theory is marked by the dialectics of structure and agency, by negotiations over access to resources, it draws attention to a variety of different forms of capital serving as resources that actors trade on in such negotiations. Bourdieu identifies four forms of capital namely, economic, social, cultural and symbolic capitals. Social capital is generated through social processes between the family and wider society and is made up of social networks. Economic capital is wealth either inherited or generated from interactions between the individual and the economy, while symbolic capital is manifested in individual prestige and personal qualities, such as authority and charisma (Bourdieu, 1985). In addition to the interconnection of the types of capital, Bourdieu envisages a process in which one form of capital can be transformed into another (Bourdieu, 1986). For example, economic capital can be converted into cultural capital, while cultural capital can be translated into social capital. These, however, are complex processes which are not straightforwardly achieved.

3.1 Bourdieu and Capitals
According to Bourdieu, capital should be understood as a kind of power or simply the ‘energy of social physics’ and he makes a sharp delimitation to the notion of capital understood in purely economic language, (Bourdieu, 1996, p.122). Bourdieu’s concept of capitals is used to understand the dynamics of how ‘local resources’ are converted into different forms of capitals in water governance. Capital in Bourdieusian theory is therefore defined as accumulated labour in its materialised or embodied not only in economic but also cultural, social and symbolic forms, Bourdieu (1986). When appropriated on a private for example in an exclusive basis by
agents or groups of agents, it enables them to appropriate social energy in the form of reified or living labour, (Bourdieu in Richardson 1996).

According to Bourdieu and Wacquant (1996) economic capital is understood as the accumulation of different forms of material wealth while cultural capital could be the capital of information and includes intellectual and artistic qualifications. Bourdieu further notes that cultural capital can exist in three forms, firstly in an embodied state (long lasting dispositions of the mind and body), objectified state (cultural goods such as pictures, books, dictionaries or machines) and lastly in an institutionalised state (educational qualifications). To Bourdieu (1990), a capital be it economic, cultural or social becomes symbolic capital implying that it carries a specific symbolic efficacy.

Social capital to Bourdieu (1986) therefore becomes an aggregate of the actual or potential resources which are linked to possession of durable networks of more or less institutionalised relationships of mutual acquaintance and recognition. Put in another way, social capital refers to membership in a group that provides each of its members with the backing of the collectively owned capital, a credential which entitles them to credit in the various senses of the word, (Bourdieu, 1986, p. 249-250). Glover and Parry (2005) add weight by noting that social capital is thus a collective asset that grants members social credits that can be used as capital to facilitate purposive actions. From Bourdieu’s point of view, social capital therefore becomes a resource that is available via and is dependent on one’s social networks. These networks then determine the extent to which individuals can extract such resources in the service of certain goals, (Lee, Dunlop and Edwards 2014).

Bourdieu (1982) further notes that capital is dependent on the field in which it functions and the costs of expansive transformations which are a precondition for capital’s efficacy. Capital is therefore convertible and can be institutionalised, for example social capital or connections
can be converted under certain circumstances into economical capital or institutionalised in the
form of a title of nobility, (Bourdieu 1982). Social capital is the aggregate of the actual or
potential resources which are linked to possession of a durable network of more or less
institutionalised relationships of mutual acquaintance and recognition, (Bourdieu, 1986). The
volume of the social capital possessed by a given agent or individual thus becomes dependent
on the size of the network of connections one can effectively mobilise and the volume of
capital, be it economic, cultural or symbolic possessed by each of those to whom one is
connected. Bourdieu warns that the existence of network of connections is not a natural given
or a social given, constituted once and for all by an initial act of institution but is a product of
endless effort and a result of social investment, (Bourdieu 1980). This is paramount in
understanding the different types and forms of relationships that shape and characterize local
water governance in Epworth.

3.2 Habitus and Field
Another major approach to the structure-agency linkage is Bourdieu’s theory of habitus and
field. Here, Bourdieu sought to bridge subjectivism (the individual) and objectivism (society)
with a perspective known as constructivist structuralism. Habitus is the mental structure
through which people deal with the social world (Bourdieu, 1989). Habitus, on the other hand
can be thought of as a set of internalised schemes through which the world is perceived,
understood, appreciated and evaluated (Calhoun et al, 2012). A habitus is acquired as a result
of the long-term occupation of a position in the social world. Depending on the position
occupied, people will have a different habitus and changing of position sometimes renders
habitus inappropriate, a condition Bourdieu calls hysteresis. Bourdieu advances the argument
that the habitus both produces and is produced by the social world, thus people internalise
external structures and in turn externalise things they have internalised through practices
(Calhoun et al, 2012).
To Bourdieu, the concept of the field is the objective complement to the idea of habitus. As such, a field is a network of social relations among the objective positions within it. It is not a set of interacting or inter-subjective ties among individuals, (Bourdieu, 1982). The social world has a great variety of semi-autonomous fields such as art, education and religion. To Bourdieu, the field is a type of competitive marketplace in which economic, social, cultural and symbolic power are used. The preeminent field of politics serve to structure all other fields (Calhoun et al, 2012). To analyse a field, one must first understand its relationship to the political field and the next step will be to analyse the objective positions within a field and lastly the nature of the habitus of agents who occupy particular positions. Bourdieu argues that agents act strategically depending on their habitus in order to enhance their capital (Bourdieu 1984). Bourdieu is particularly interested with how powerful individuals within a field can perpetrate symbolic violence on less powerful actors (Calhoun et al, 2012).

3.3 Operationalising Bourdieu
Bourdieu's approach encompasses three fundamental forms of capital; economic, social and cultural. All of these capitals can be sources of social advantage and social class differentiation. Debates have often arisen over which one of the three plays a more important or causal role in the processes of inequality, advantage and disadvantage or in what sorts of combination, (Silva and Edwards 2003). Bourdieu (1997) himself appears to place economic capital at the root of other capitals, although he acknowledges that each capital possesses its own dynamic as well as varied possibilities of ‘packaging’ different levels and types of capitals. Goldthorpe (1996) agrees that participation depends on the economic position rather than on taste and judgement, a framework that views economic capital as more significant than other forms of capital in allowing individuals to mobilise resources. Key theorists of social capital see it as highly consequential for social inequalities and mitigating the effects of economic disadvantage, (Coleman 1990). He further states that social capital produces human capital, for example,
education which fall within Bourdieu’s concept of cultural capital. Among other things, social capital creates a dense social structure of norms, extensive trust and obligations that ensures community cohesion or cooperation. Putman (2000) makes similar claims by noting that social capital could be a key driver of social inequalities, cohesion and democratic involvement.

In contrast to both Coleman and Putman, Bourdieu sees a more interdependent relationship between forms of capital. To him, social capital as a resource or asset derived from social networks can be cashed in for social mobility. Bourdieu (1984) further argues that possession of different sorts and of different levels of a particular capital place people differently in the social hierarchy. Crucial to Bourdieu’ thinking about capitals is the idea that people live simultaneously in multiple synchronic fields. This implies that forms of capital interact in different ways, diversely affecting social positions. Instructive to our understanding of Bourdieu is that these processes work in different directions and are constantly transferred and transformed. Unlike Coleman and Putman, such a situation makes it difficult to single out form of capital as more important than the other because of their interdependent nature. Important to note with regards to Bourdieu’s theory of capitals is the different workings of capitals. For example, while human beings accumulate and invest in all forms of capital, the effects of accumulation and investment are not the same throughout. Related to that, capitals should not be interpreted in very simplistic terms of accumulation and investment because power and control are conferred and legitimised through possession of particular capitals. An understanding of this aspect of Bourdieu is paramount in this study.

3.4 Limitations of Bourdieu’s Sociology
Bourdieu never refers explicitly to emotional capital in his works although he does highlight the key role of women in affective relationships (Reay, 2004). Such a situation makes Bourdieu’s work gendered and largely occupied with public sphere, neglecting the private sphere where majority of women are confined. Upon this realisation, Nowotny (1981)
developed the concept of emotional capital which she perceived as a variant of social capital, although characteristic of the private than public sphere. Unlike other forms of capitals, Nowotny recognises emotional capital as a resource women have in greater abundance compared to men and is developed in response to barriers than possibilities. She further argues that, emotional capital accrued in the private sector lacks direct convertibility to other capitals making Bourdieu’s work predisposed towards theorising a particular gender and less interested in women’s issues.

3.5 Chapter Summary
This chapter has engaged Bourdieu’s theory of capital, habitus and the social field. Bourdieu’s importance for this work stems from the fact that his theory seeks to unravel human relations, for example how human beings relate to one another and in what ways. Because Bourdieu’s theory is marked by the dialectics of structure and agency, by negotiations over access to resources, it draws attention to a variety of different forms of capital serving as resources that actors trade on in such negotiations. However, Bourdieu fails to incorporate gender in his theorising, largely focusing on relationships that accrue in the public and ignoring ‘resources’ that are accrued privately. Nowotony (1981) exposes this gap and adds emotional capital to Bourdieu’s four types of capitals. She notes that emotional capital is accumulated privately and therefore is more abundant in women than men.
CHAPTER FOUR: RESEARCH METHODOLOGY

4.0 Introduction
Rajasekar et al., (2013) write that research methodology is a science of studying how research is to be carried out. It outlines the research design that will be adopted by the study. It further describes the population studied, sampling approach and justification of the study site. Furthermore, it provides an indication of data gathering methods and techniques (tools), data analysis methods and highlights ethical considerations and overall study handicaps and or limitations.

4.1 Research Design
Because of the strong requirement in the study to understand the needs, challenges, interests and perceptions of respondents, the study was purely qualitative. Chew-Grahan et al (2001, p.285) underscore that, ‘the principle claim of qualitative resources is that such techniques offer a means of understanding the authentic perceptions, sentiments and understanding of subjects in such studies’. Muzvidziwa (2000) notes that the major advantage of qualitative research method is that it is rooted in the voices and social experiences of the research participants.

The methodological advantages of a qualitative paradigm aided in answering research questions. Because research’s objectives are exploratory, a qualitative methodology was best suited for his purpose. The qualitative methodology is also called “interpretive or inductive research” by (Peshkin, 1993). In addition, qualitative research allowed the investigator to openly explore the phenomenon under study through capturing what people have to say about the research topic, which undoubtedly aided in gathering accurate information.

4.2 Study Site: Zinyengere Ward in Epworth
Epworth provides a particularly rich insight into the issues the investigator wished to explore.

More importantly is the fact that Epworth Zinyengere Ward is characterised by low levels of water infrastructure development with majority of households heavily dependent on shallow
hand dug wells alongside largely dispersed and few community boreholes either sunk by local NGOs, churches and or INGOs. Many of the hand dug wells dry up during the dry season further compounding water scarcity. Zinyengere Ward was purposively selected based on researcher’s motivation to acquire a deeper understanding of the water problem.

**Fig 5:** Study Site

![Source: Google Maps 2016](image)

Epworth is located about 12 Kms from the city of Harare and lies between 1 500 and 1 600m in altitude and the relief of the area consists of gently undulating ground interrupted by granite outcrops and picture square balancing rocks (Chirisa 2012). Epworth was founded in 1892 when the British South African Company (BSAC) in trust for the blacks granted Reverend Isaac Shimn of the Wesleyan Missions in Mashonaland 1, 064 hectares Epworth farm (Nyamvura and Brown 1999). In subsequent years, the Mission purchased Glenwood farm which measured 981 hectares and Adelaide farm (1, 564 hectares). By 1950, the settlement had about 500 families who subscribed to the Mission’s values and legitimately owned 4 000m² of land each allocated by the Mission for residential and cropping purposes (Butcher, 1983).

However, others also took the opportunity to settle themselves illegally, a development that would conflict with the Mission’s hopes and aspirations. Between 1970-80, the population of
Epworth was to grow dramatically to about 35,000, a phenomenon Chirisa (2012) describes as ‘organic growth’. Nyamvura and Brown (1999) credit this exponential growth to the liberation struggle in Zimbabwe which intensified in the mid-1970s, forcing families in rural areas to flee and finding a peaceful haven in Epworth which lacked regulatory mechanisms to control migration. To Butcher (1983), Epworth’s proximity to Harare made it ideal to those seeking economic and social opportunities in Harare.

1986 saw the inception of Epworth Local Board (ELB) tasked by central government with administering housing delivery and environmental sanitation including laying foundational plans for future development (Chirisa 2012). Epworth 4 Area Development Committees (ADCs) were elected to ensure effective grassroots participation in water and sanitation supply upgrading processes. These committees were for Muguta, Makomo, Zinyengere and Chinamano and their extensions (Chirisa 2012). Prior to government takeover in 1986, the areas did not have public utilities such as water, sewer, electricity and waste collection (Epworth 1987; 2007; Butcher 1993). Epworth was hard hit by the government’s insensitive Operation Restore Order or Murambatsvina in 2005 which is estimated to have indirectly affected over 1.5 million people’s livelihoods (Potts 2006). The exact population of Epworth is unknown.

4.3 Selection of Study Participants
Because a qualitative researcher is not concerned about the sample being representative and rightly so, the researcher chose purposive for recruiting respondents. A purposive sampling strategy ensured that the FGD sample is representative in terms of gender, age, ethnicity and social class. Eight life history interviews were conducted with three men and five women. Life histories were used to obtain information on the backgrounds of the respondents and their experiences with water. This technique enabled the researcher to achieve retrospective reports from individuals. Purposive sampling is a form of non-probability sampling in which decisions
concerning the individuals in the sample are taken by the researcher based on a variety of criteria which may include specialist knowledge of the research issue or capacity and willingness to participate in the research. Researcher purposively identified two key informants, representatives of INGOs working in the area. Patton (1999) writes that purposive sampling seeks information rich cases that manifest the phenomena intensely and can be studied in-depth.

4.4.1 Data Collection Methods
The study used three data collection methods namely interviews, focus group discussions (FGDs) and observation.

4.4.2 Life Histories
They are qualitative research methods for gathering information on the subjective essence of one’s entire life that is transferable across disciplines. Life histories are interdisciplinary approaches in understanding single lives in detail and how an individual plays various roles in society, (Cahler, 1993; Gergen and Gergen 1993). Sociologists therefore use life histories to understand and explain relationships and groups interactions, (Bertaux, 1981; Linde, 1993). Because life histories take a narrative approach, their use was important for this research as they allowed research participants to talk about their lived experiences freely without a rigid interview guide. Atkinson in Gubrium and Holstein (2002) writes that because our lives consist of a series of events and circumstances that are drawn from a well of archetypical experiences common to all human beings, life histories become important in producing a wealth of rich data chiefly because it allows for exploration of complex interrelationships, in this case between people and natural resources.

Bird (undated) notes that life histories as a research method generate fascinating and often unexpected insights. Because the phenomena under study in this research is poorly understood and relatively under researched, life histories were useful in unravelling long term changes in
how people relate to, conflict or cooperate over a resource in short supply. Like most qualitative research methods, life histories place people at the heart of research, a critical aspect for any qualitative research which seeks to understand, explore and explain human behaviour and interaction. Jackson (1998) notes that voices of the researched should guide the research and as such, life histories provided an indispensable data as it shed light on the acquired dispositions, social capital and knowledge.

4.4.3 Focus Group Discussions (FGDs)

To Freitas et al (1998, p.2) FGD is a type of in-depth interview accomplished in a group, whose meetings present characteristics defined with respect to the proposed size, composition, and interview procedures. The focus or object of analysis is the interaction inside the group. The participants influence each other through their answers to the ideas and contributions during the discussion. The general characteristics of the FGDs are people's involvement, a series of meetings, the homogeneity of participants with respect to research interests, the generation of qualitative data, and discussion focused on a topic, which is determined by the purpose of the research. FGDs can serve numerous purposes. Freitas et al (1998) highlight some of the functions of FGDs for example they can be used as a method advisable for generating ideas for investigation or action in a new field, generating hypotheses based on the perceptions of participants, evaluate different research situations or study populations, develop drafts of interviews and questionnaires, supply interpretations of participants result from initial studies and for generating additional information for a study on a wide scale. To Morgan (1988) a test to verify the adequacy of FGDs consists of asking how active and easily participants discuss the topic of study.

Using FGDs in this study permitted the researcher to collect an appropriate amount of data in a short period of time since it would be near impossible to interview every resident of Zinyengere Ward. It also allowed the researcher to obtain different opinions on the subject in
a fairly short time. FGDs are fairly rich and permit flexibility in the collection of data that is not usually obtained with other methods of data collection and at the same time permits spontaneity of interaction among participants. According to Krueger (1994) and Morgan (1988) FGDs have a high ‘face validity’ which the researcher maximised on during interactions. FGDs enabled the researcher to observe actions of participants (signifiers) such as physical actions, speech actions and ‘non- actions’ (deliberate withdrawal).

4.4.4 Observation
The Robert Wood Johnson Foundation (2008) describes observation as a systematic data collection approach which requires that researchers use all their senses to examine people in natural settings or in naturally occurring situations. Observation in the field usually involved prolonged engagement in a setting or social situation, clearly expressed and self-conscious notations of how observing is done. To Fatterman (1998) observation combines participation in the lives of people being studied with an emphasis on the need to maintain a professional distance that allows adequate observation and recording of data. Schumacher and Macmillan (1993) note that observation is a research technique used to collect information in a natural context. The researcher observed subtle signifiers during interactions with water users as well as any behaviour the researcher found interesting. The strength of observation in this study is that it provided a direct means to watch the actions and listen to conversations of participants.

4.5 Methods of Data Analysis
4.5.1 Thematic Analysis
Data analysis is a process of inspecting, cleaning, transforming, and modelling data with the goal of discovering useful information, suggesting conclusions, and supporting decision-making. This stage is of critical importance in any investigation or research. It helps in bringing order, structure and meaning to the mass of collected data (De Vos, 2005). Braun and Clarke (2006) write that the purpose of thematic analysis is to identify patterns of meaning across a dataset that provide answers to research questions being addressed. For this reason, the
investigator used thematic analysis which is a descriptive presentation of data which is widely used in qualitative research. Patterns are identified through a rigorous process of data familiarisation, data coding, theme development and revision. By using themes, the investigator came up with various themes from the data gathered on the topic under investigation. Attride-Stirling (2001) writes that thematic analysis allows a more exploratory perspective encouraging one to consider and code all data, allowing for new impressions to shape one’s interpretation in different and unexpected directions. The major advantage of using thematic analysis for this research is that it is theoretically flexible and can be used within different frameworks to answer quite different research questions, (Braun and Clarke 2006).

4.6 Ethical Considerations

Informed consent

Informed consent is often called for to ensure that participants voluntarily enlist in studies on the bases of full disclosure of uses to which the information gathered will be put. Informed consent should help researchers build rapport with research participants as the latter willingly cooperate with the research undertaking. It is assumed that they can make decisions about the value of the study. In this study, the researcher was confronted with hierarchical relations involving gate keepers from the ELB (Epworth Local Board) and the Zimbabwe Republic Police. Once gatekeepers had given permission, the researcher had to seek permission to conduct fieldwork from another group of gate keepers, ‘community leaders’ for safety reasons since the community is a ‘a political hot potato’. Although consent was given, sometimes in lengthy bureaucratised processes the extent to which this represents the genuine wish of respondents to participate in the research is open to doubt.

It is possible to think of participation as compelled by expectations of rewards financially, materially or otherwise given local perception by the community that anyone conducting ‘research’ has money despite the fact that this position was clearly stated on the consent forms
which all participants voluntarily signed. In qualitative research, informed consent is not only nuanced, continuously negotiated in interaction, it can also reproduce power relations even when the research seeks to question the status quo (Burgess, 2007). This reproduction of power relations became apparent in that focus group discussions tended to be dominated by certain individuals with nuanced ‘privileges’. While the researcher strived to create a homely and politically neutral environment during discussions, deviations from the norm usually found expression through smiles, giggles and exchanged looks which suggested some shared knowledge which could not be disclosed to the researcher in those spaces (Wellings et al., 2000).

‘Surveillance’ and challenged privacy

Focus Group Discussions were conducted at a nearby church building and the fact that our meeting venue was borrowed meant that confidentiality as stated in the consent form was somehow compromised. Confidentiality was further worsened by the fact that the owners of the building could pop in and linger around for a while during discussions. This startled participants as they felt they were being spied on given that one of the water facilities under discussion (a borehole) is housed on church premises. As a researcher, I was too uncomfortable with intrusion but could not do much to prevent that given that I was a visitor and bound by norms of hospitality and had to reciprocate the gesture by not questioning or telling my hosts off.

Confidentiality and protection of Respondents

The research abode by high standards of professionalism as provided for by ethics of research. The researcher did everything within his means to protect respondents from any form of harm physical or otherwise during the period that I conducted fieldwork. Through-out the research, pseudo names are used to protect the identity, dignity and privacy of respondents while places with names that are likely to ‘expose’ participants are hidden or simply given new ones.
4.7 Summary of Chapter
Under the methodology chapter, the paper highlights the study approach including methodological issues and justifies why a qualitative approach will be adopted for this study. It also describes the study area, highlighting continuities and discontinuities in local governance politics with regards to land allocations and showing how historical factors continue to shape development in Epworth even to date. Under this chapter, sampling techniques are also discussed, explaining and justifying their selection for this project. Data collection methods that include FGDs, Life histories, key informant interviews are discussed in depth as well as a section on proposed data analysis methods. The chapter concludes by outlining ethics that will guide this project from infancy to maturity.
CHAPTER 5: DATA PRESENTATION

5.0 Introduction
This section presents the findings gathered during fieldwork in Zinyengere Ward through life history interviews, key informant interviews and focus group discussions. The fundamental goal is to understand the nuanced perspective and experiences of individuals and how they make sense of their dilemma and create their own spaces to survive within a hostile environment characterised by lack of social services, a poor, dilapidated and non-existent social infrastructure amidst a national political and economic crisis. Fieldwork commenced in the month of November to mid-December 2016. A total of 4 focus group discussions were conducted in order to have diverse views on a similar subject. Observation was a key data collection method and the researcher interacted informally with water users. Eight life history interviews were conducted following conclusion of FGDs. Three men and five women participated.

Related findings are grouped under like themes which the researcher constructed in line with the research questions. The data is presented thematically where themes are constructed by the researcher guided by research objectives. As stated by De Vos (2005), using themes for analysis helps to bring order, structure and meaning to the mass of data collected. Graphs and tables are also used for presentation.
5. 1 Nature of Water Scarcity: Distance and Time
Participants in all the discussions alluded to the fact that the nature of water scarcity in their community had different faces. Some spoke of the unavailability of water for drinking on one hand and the availability of water for other purposes for example bathing and or washing on the other. However, in all discussions, the most recurrent issues had to do with distance and time. Respondents noted that average distance travelled to the nearest water point for was 2.5
Km. During drought years, even those with wells next to their homes dried, leaving them to walk long distances. She noted the following,

“Munharaunda yedu, dambudziko huru ndere kushaya zbhorani zvakakwana, vanhu varikuwanda. Mu ward munomunezbhororare zviri, asi isusu tiri vangani (Zviuru)? Vamwe vanobva kure sekumagada vachifamba makilomita 2.5 -3 pazuva kuti vawane mvura. Dzimwe nguva mvura inobuda irishoma asi iriri pane chimwe chibhorane chiri padhuze nechikoro". (In this community, our biggest problem is that we do not have adequate and sufficient boreholes to support a growing population. Imagine that that this entire ward only has two community boreholes and how many are we (thousands)? Some people come from as far as Magada (pointing a finger in the direction) and walk an average of between 2.5 – 3 Kms daily to fetch water. Sometimes the pumping pressure at the borehole is low though it is relatively quicker than the other borehole next to the primary school)


The amount of time spent in water queues meant that families had little time left to engage in productive, livelihood enhancing activities. Respondents noted that they spend an average of 5 hours every day in the queues and this ate into the time one would naturally spend raising money for school fees and other school related costs. He had the following to say,

“Vanhu vanomukira kuma 2 kuti vabate muraini emvura. Zvinhu zvakaoma kuno. Hameno kuti tairarama sei dai vesondo vasina kuvaka chibhorani ichi. Tinomira muraini wemvura kwema awa mana kana mashanu pazuva. Nguva iyoyo tingadai tichishandisa kutsvaga mari yema school fees kana chikafu. Iko zvinho hatikwanisi. Mamiriro ezvinhu haanakumira mushe. Dai mvura ikanaya manje manje!”. (People wake up as early as 2am to queue for water. Things are so bad here. I wonder what would be the situation if the church had not sunk this borehole. We lose an average of between 4 – 5 hours every day in water queues. We could utilise the time we spend in water queues productively to raise money for school fees and food. But we can’t. We are stuck in this horrible situation. I hope the rains will come soon!). - Ba Victor aged 41, 16 November 2016.

5. 2 Causes of Water Scarcity in Epworth
In all FGDs, participants associated readily available and accessible water with a ‘good life’. Periods of shortage and or scarcity were associated with a horrible, a struggle for survival and generally a ‘bad life’. Participants indicated that water supply was an immediate problem that needed urgent action. A wide range of factors were cited as possible causes of water shortage and scarcity. Using a response ranking scale, climate change emerged as the dominant cause of water scarcity while factors such as lack of funds, loss of experienced water engineers and a chaotic urbanisation processes further compounded the situation.
5.2.1 Climate Change
Climatic change was cited by participants as leading to water scarcity and distressing water availability and accessibility. A female participant in FGD1 noted that climate change had resulted in erratic rainfall hindering agricultural production, availability of water for domestic and industrial purposes. The researcher probed participants on what they perceived to be signifiers of climate change. Reduction in rainfall and rising temperatures were the most cited indicators of climate change. She noted the following,

“Haaaa, imvura kunoku yakaita shoma. Inini ndinofungira kuti kushomeka kwemvura kunokonzerswa nekupisa kwakanyanya”. (Here, [Epworth] water shortages are primarily a result of increased temperatures which have risen so high in past years).- Mai Tinashe 38 years, 13 November 2016.

A male participant, noted that over the years, precipitation had drastically declined resulting in inadequate rainfall. He further stated that these changes were a punishment from God. He said,

“midzimu yatifuratira ndiko kusaka tisisawane mvura inotikwanira”. (The gods have turned their backs on us that’s why we are no longer receiving the right quantities of water).- Ba Brandon 48 years, 13 November 2016.

A woman noted that long back, heavy down pours naturally typified the peak of the rainy season and expressed shock at how ‘things’ have changed so much in no time. She said,

“Murikuona here kuti zvinhu zvachinja? Kare kunaya kwemvura kwareva kunaka kwezvinhu asi zvino vanhu vakutoita nzara kunyangwe iringuva yezhizha. Hatichakwanisa kurima kuminda kana magarden sakare. Izvi zvirikutonyanya kuomesera varikumaruzevha”. (Can you see how fast things have changed for the worst? Long back we knew that the start of the rainy season was a sign of relief, but now people are going hungry even during the rainy season. We can no longer grow our gardens as we used to. However, our friends in the rural areas are the most affected)- Mai Kuda aged 54, 15 November 2016.

5.2.2 Urban Sprawl and Unplanned Construction on Wetlands
Unplanned construction and a chaotic urbanisation process were cited as leading to water scarcity in peri-urban areas. Participants put the blame on Epworth Local Board for presiding over destruction of ecologically fragile zones by being complacent to abuse by politicians and accepting bribes from desperate home seekers who end up erecting structures on wetlands. Construction on wet lands results in ecological disturbances. On the other hand, wetlands offer a natural buffer against possible flooding and are an important groundwater recharge source. He noted the following,
“Local board nevatungamiri ndivo varikukonzeresa situation iyoyo. Vane huori, varikubvumira vanhu kuvaka dzimba patsimbo dzakanyorovera. Izvi zvinokonzeresa matambudziko kwenguva refu nekuti watertable yaderera uyezve ecological balance yakanganiswa. Kuchera kwemigodhi zvisi pamutemo zviri kukonzeresa zvakare tambudziko remvura. Asi tingadii isu tisina mvura yacho mudzimba?(The local board and the political leadership is the lead cause of this water situation. Our leaders are corrupt and they accept bribes from people who want to build on wetlands causing ecological disturbances and subsequently lowering of the water table. Unsystematic digging of boreholes and hand dug wells is also a contributing factor. But what can we do when we don’t have piped water at our homes?). - Mr Dungeni aged 59, Interview 15 November 2016.

Fig 8: Unplanned structure build on a wetland. These are a common feature in Epworth.

Source: Fieldwork

5.2.3 Limited Resources: Financial and Human
Failure by government to fund water infrastructure projects and loss of highly skilled water engineers following economic collapse post 2000 was noted as further compounding water shortages. Two representatives of INGOs working in Epworth noted that government’s failure to provide adequate resources (fuel for field technicians to reach remote areas, purification chemicals), loss of skilled water experts and aging equipment (water machines) were worsening water woes in Epworth. They highlighted that there was need for urgent action to rehabilitate the water system to prevent a repeat of the 2008 cholera outbreak which claimed scores of lives.

5.3 The Impacts of Water Scarcity
Both men and women unanimously agreed that water scarcity had negatively impacted their livelihoods. It had limited their ability to grow crops (vegetables) for either sale or home consumption (an important livelihood and income generating activity) for most household
units. With family units only allowed to draw a maximum of 100 litres of water per day, water shortages had a direct impact on participants’ livelihoods. Participants agreed that 100 litres fell far below acceptable per capita water requirements to meet their daily needs. Women in the study were most vocal, indicating that such restrictions seriously handicapped their livelihoods and their association with domestic chores meant that they were disproportionately affected by water scarcity, leaving them to improvise their livelihoods. A female participant noted the following,

“Ndiudzewo kuti munhu ane mhuri yevanhu vatanhatu wanokwana sei mabuckets mashanu envura? Mvura yacho haikwani kubika nekugeza ndiro. Pamusoro pazvo, vana vanoda kugeza vasati vaenda kuchikoro nekuwacha mauuniforms. Zvinhu hazvina kumira mushe. Handichagoni kurima minda yangu sezvandaita kare”. (Tell me how someone with 6 family members can survive on just 5 buckets of water a day? The water is not enough for cooking and washing dishes. In addition, children will need to bath to go to school and have their school uniforms washed. The situation is just unbearable. I can’t afford to cultivate my garden like I used to long back). - Mbuya vaHector 56 years, 15 November 2016.

**Fig 9:** Backyard farming that takes place in Epworth during wet seasons

![Backyard farming](image)

**Source: Fieldwork**

Children are also not spared from water scarcity challenges facing the community. Parents noted that during periods of severe water shortages, they send their school going children *(usually girls)* with containers to fill up at school on their way home. Participants noted that some children end up missing classes because they spend long hours queuing for water. It also emerged during discussions that parents and guardians were twice more likely to send girls than boys to fetch water. Girls were viewed by many as water carriers.
5.4 Coping with Water Scarcity

A male participant noted how (they) have adapted and adjusted to what seem to be long term changes in weather patterns by engaging in less water intensive activities such as welding, carpentry, chicken farming and vending. He said the following,

“Patakavika muno muEpworth, vanhu wanga wasingaite mabasa avanoita mazuva ano kuti vararame. Vanhu waigutsikana nekurima murimo muminda kuti vatengese kana kudya, nekuti mvura yangaiganetsi uye vanga vaine minda yakati kurei. Iye zvino vanhu varikurarama nekutengesa zvinhu uyezve zvekudya. Inini ndirikufunga kuti mabasa aya haadzi mvura yakawanda sezvinoita kurima. Munhu anoita basa rekupisa simbi haashandisi mvura yakawanda, saka basa rake hari kana kushaika kwemvura. Takamanikidzwa kuchinja mabasa edu”.(Twenty years ago when I first arrived here (Epworth), few people were engaged the kind of livelihood activities we see today. Most were content with growing vegetables (gardening) in their back yards for home consumption and sale because we had enough water and large pieces of land to cultivate. However, things have changed so much in the last decade or so. More people are now eking a living from vending and manning food stalls. This is because such activities require less quantities of water compared to gardening. Consider a welder for example; their work is not interrupted by the availability of unavailability of water. His job still continues. Change has been forced down our throats)- Sekuru Gamu 62 years, interview 18 November 2016.
As shown in the livelihoods pie chart above (*Fig 8*), women in this study were most visible in the vending and food-stall sectors while men dominated the other which economic livelihood activities such as carpentry, welding though some were involved in petty vending and sale of computer and phone accessories. Participants, residing close to rivers, alluded to the fact that gardening remaining a vibrant economic livelihood although they expressed concerns about the level of water pollution in the river largely attributable to fertiliser making companies in Msasa industrial park.

### 5.5 Local Water Governance

Public water sources are governed by both implicit and explicit rules with a committee set up to oversee administrative issues around the management and use of water facilities. Governance of private water sources is at owner’s discretion. The local water management committee (LWMC) comprising of three men and three women is mandated with handling all issues water related, encourage water conservation, equity and equality in access. Members on the water committee are elected by water users and possession of certain attributes makes one electable and a preferred candidate. These personal attributes include ability to amicably resolve conflicts, good communication and negotiation skills, fair judgement. Candidates with prior experience in a leadership positions make a strong candidate.
Elections are held every year, though most people in the community shy from holding public positions while young aspirants lack the much-needed experience. As a result, the current committee has been in existence for over two years. A woman who sits on the Local Water Management Committee (LWMC) noted the following,

“Munoona kiti vanhu vawimbe newe, pane zvavanotarisira pauri. Chekutanga, munhu anofanira kugona kutaura nevanhu nekugona kiti vanhu vawirirane chero vachipesana. Mutungamiri anotarisirwa kuti asaite huori uye ari munhu wevanhu. Position yacho inoda munhu akimbo tungamira vanhu sezve nyaya dzemvura dzichikwanisa kukonzera nyongayonga”. (You see for you to be trusted by people, there are certain qualities that you must possess. First you should be a good and effective communicator, good negotiation skills, in case you’re required to bring into the negotiating table, two warring parties. One has to be fair as a leader, shun corruption and be a ‘people’s person’. Prior experience in a similar position is crucial since water here is a very emotive issue) .- Mbuya vaSenzo aged 58, 24 November 2016.

A member of the LWMC indicated that while the committee is mandated with overseeing all matters water related, there are some issues that they do not solve as a committee and require the intervention of a ‘higher office’ (in reference to the police). For example, cases involving vandalism of property or physical fights that often result in blood spill. Such cases are reported to the police who are constitutionally mandated to handle such cases. She narrated a case that they had to report to the police of a fierce fight involving two young men on church premises. Cases of delinquency and deviation were reported and handled by LWMC to take appropriate action. Corrective measures included temporarily restricting access to the borehole to fining deviants. Collection of monthly contributions remained one of the core duties of the committee.

Subscriptions were used to repair the boreholes in the event of a mechanical fault and to keep the surroundings highly hygienic. She said the following,

Dzimwe nyaya diki dzakaita sekupindira mitsetse yekuchera mvura (kana dzisina kukonzeresa kuti vanhu varwe) or kuudzana mashoko asina kunaka , tinodzigadzirisa tega senhengo dzinoona nemafambisiro ezvepakereke. Tinotsvaga murawo kana kuti nzira yekugadzirisa ava vanenge vakanganisa. Dzimwe nguva tinoambidza kutora mvura apa kwezuva rimwe chete kana mazuva maviri nekuti tinoziva zvakashata zvinozitika kana vanhu vashaya mvura. Asi murawo unoshkwenguva anda chaizvo ndewekuvara gedi kwenguva shomanana pazuva. Izvi zvinoino kuti munhu weze azive kuti zvakaita zvinokanganisa vamwe vese vese nevasina nhoswa. (Other petty or small cases such as jumping queues (provided it does not culminate in a fight) or exchange and harsh exchange of words, we resolve ourselves as a committee. We choose what sort of punishment or corrective measure to instil on offenders. Sometimes we ban them from collecting water from the borehole, say for a day or two because we are also aware of the consequences of denying someone access to water. But collective punishment (locking the gate for a few hours) is the most effective because it cultivates a culture of oneness and unity among everyone. In a sense, you become responsible for your neighbour’s actions). - Mai Nomsa aged 37, 25 November 2016.
Members of the LWMC underscored the fact that fairness and equality remained at the centre of their roles as water managers. However, they cited interference from powerful and well connected individuals as a major problem as they sought to influence decision making and governance processes. They stressed that the LWMC had to be inclusive and holistic in discharging its mandate and should be apolitical to serve the common interests of water users. Because the committee subscribed to a no discrimination rule, water users who could not pay their monthly subscriptions were allowed to contribute labour while payments were staggered to cater for those who could not pay the full subscription. A female respondent noted that,

Isu seLWMC, tinoita zvesetinogona kuti kurudzive kushandira pamwe nekusasarura vanhunekuti vakasiyana. Takukumbira vanhu vanoshandisa mvura kuti vabvise dora rimwe chete pamwedzi ratinozoshandisa kana chibhorane chisingashandhi zvakanaka. Imwe mari toishandisa kuchengeta dzimbo yedo yakachenha. Ava vasingagoni kubhadhara mari iyi vanobhadhara mbichana mbichana kusvika yakwana. Kuzoti avo vasingagoni zvachose vanouya kuzotishandira kuti vabhadhare mari iya. Nzira iyi inoita kuti zvireneke kumunhu wese. (Our approach as the LWMC is inclusive and therefore we strive to promote and encourage cooperation while also ensuring that we do not stigmatise those that are not on the same level with everyone. We asked water users to contribute a dollar each month which we use in the event that there is a malfunction and to keep our facility here clean and hygienic. So, those that cannot afford to pay the full subscription can do so in instalments while those that are completely incapable can contribute their labour instead. That way, we are fair and just). - Mai Trish aged 42, 28 November 2016.

She added,

Murikuona mugodhi uyo wakacherwa nevanhu vakatinzwira tsitis. Hatina kubhadhara chinhu. Vakatumnwa naMwari. Saka isu sevashandidisi vemvura iyi, tinofanira kuti tibhadhare mari kuti tigone kugadzira mugodhi uyu kana usingashande zvakanaka. Hatingadzokeri kwavaroro tinovaidza kuti mugodhi wafa. Tinofanira kuratidza kuti tirivanhu vakuru vanechido nekuchengedza mugodhi wedu zvakanaka. Nenzira iyi togona kuti chipo chedu ichi chigare kwenguva refu kwazo. (You see this borehole here was sunk by well-wishers, we did not pay them anything. They were God sent. So, we have a responsibility as water users to have funds readily available to repair this borehole if it malfunctions. We cannot run back to them and tell them the borehole has broken down. We should demonstrate maturity and mobilise resources ourselves. Only this way will this generous gift last for decades) - Mai Trish aged 42, 28 November 2016.

Conspicuous by their absence in the LWMC are young people. Young people indicated that the criteria for selection deliberately included a ploy to exclude them and as such they remained marginalised, stereotyped and discriminated. Stereotypes ranged from classification of youths as lazy, unpatriotic, and lacking maturity to be trusted with community development initiatives. One of the youths who participated in the FGDs, later revealed that they it is not true that they remained disengaged from community development initiatives but instead lacked platforms to
meaningfully contribute to their communities. In other words, the desire to be involved was there but lacked the requisite skills and resources to effect participation. He noted the following,

Vakuru vanotiphomera mhosva yehusimbe kuzvigeza pakusatiisa munyaya dzinechekuita nebudiriro yenyika. Hazvishamise kuti vechidiki ava havachisina shingu nezvekuita nekubudirira kwenyika nenharuwa dzavo nenyaya yeizvi. Ungaite sei nhengo yakazara nemhunu asingakuone sewakakodzera? Izvi hazvikwanisike! Vanoshandisa nzira dzakawanda kutivarira panze sevechidiki. Semuendzaniso wechidiki anofanirwa kuita hunyanzvi pakutungamira kuti awane nzwimbo pa LWMC. Tingawane kupi hunyanzvi uyu vakawanda vedu takaguma chikoro tichiri vadiki tisati takamboshanda panzvimbo dzkadaro?(They (elders) accuse us of being lazy to justify why they constantly negate and exclude us. It’s not surprising that young people are disinterested in these community development initiatives. How can you be an equal partner with someone who despise you? Almost impossible! They employ salient but skilful strategies to keep us away. Consider for example that one needs to have prior experience in a leadership position to be part of LWMC. Where do we get the experience since most of us are primary school drop outs and have never worked in a formal job before?) - Usher aged 23, 28 November 2016.

While young people remain outside the legitimate structures of water governance, they possess the skilful art of negotiation, lying and in some instances bribery as a means to an end. Unemployed young men have turned themselves into water barons, selling water at inflated prices usually flaunting proper governance structures. Water is sold to young ladies who shy away from congested places and full time employees who necessarily do not get time to queue for water. One of the youths noted the following,

Hatina mabasa. Kushaikwa kwemabasa kwitoi tambudziko huru kwazo zisineikuti wakadzidza sei. Kuti urarame, wakutogara wakavura maziso uchiterera kwese kungaitike basa. Aya, ndiwo mararamiro edu. Pazuva rakanaka, tingogona kuita madora matatu. Dambudziko huru rinoitika kana mvura ichinaya. Tinoshaya kana chekubata, asi panguvaino, tirikushanda zvakanaka. (We’re unemployed. Unemployment is now a perennial problem regardless of your level of education. To keep afloat, you should keep an eye and ear at any opportunity to enterprise. This is how we survive. On a good day, we can make up to 3USD. At least you can afford to buy mealie-meal or something to take home. Our biggest challenge is that when the rains start, we’re immediately out of business. But in the meantime, business is okay). - Munashe aged 22, Interview 02 December, 2016.

The church plays a significant role in encouraging water cooperation. The two community boreholes that residents depend on for water were sunk by local Faith Based Organisations (FBOs). The church remains integral in peace building efforts in the community through various youth, men and women’s groups. A decision to have the borehole sunk in the open near local shops was reversed by community leaders in favour of the church premises. Respondents still feel the church is an ideal site. The church has a built wall which restricts unsolicited access
and secondly, church premises have spiritual signifiers which participants believe are important in encouraging community cooperation. Respondents indicated that the decision to have the borehole sunk on church grounds would provide church leaders an opportunity to unite people and encourage resource (water) conservation.

5.6 Chapter Summary
The chapter has presented findings of the study. The findings were based on 8 life history interviews eleven, 4 focus group discussions, 2 key informant interviews and observation. As suggested in chapter 4, all names used in this chapter are pseudonyms. This is to protect the identity and dignity of the research respondents. The findings of the study are organised into 4 broad thematic sections informed by the research objectives—causes of water scarcity, nature of water scarcity, water governance and lastly the impacts of water scarcity.
CHAPTER 6: DISCUSSION AND CONCLUSION

6.0 Introduction
This chapter discusses the findings of the study. It focuses on themes derived from research findings and is largely informed by theoretical underpinnings outlined in Chapter 3 and literature review section in Chapter 2. The discussion is arranged into 5 sections as informed by study objectives. In this chapter, the study employs three concepts offered by Bourdieu’s theory of capitals, social field and habitus. By incorporating the issues outlined above, the researcher demonstrates how this study contributes and improves on existing sociological knowledge on water governance in Zimbabwe.

6.1 Water is for Everyone!
In Bourdieu’s theory, the social world is organised into different fields that are sites of social struggle and strategy for various actors (Painter, 2000, p.244). By extension, Bourdieu (1987, 1997) describes habitus as a set of internalised beliefs and attitudes that are developed by living and socializing in a specific environment. Habitus is manifest in everyday practices that shape one’s thinking and thought processes. In light of this, one can argue that water governance in Zinyengere Ward is underpinned by a recognition that water forms part of a broader ‘right to life’ (Derman et al., 2007). This recognition forms a broader culturally and socially acceptable way of life internalised by actors through socialisation. In their studies, Nemarundwe (2003) and Matondi (2001) discovered a close association between water and life. In their studies, participants reiterated the importance of water through expressions such as ‘water is life’. Derman et al., (2007) note that cultural interpretations of a water have endured despite efforts by colonial and post-colonial governments to redefine people’s relationship to water.

Cultural interpretations that attach water to life and vice versa are based on socially acceptable ways of behaviour characterised by sharing as demonstrated by willingness by study participants to share a precious resource even in periods of scarcity. For example, one widowed
participant recalled how her private well (which she had personally invested capital in) soon became a community water source. She hinted that not only was it morally correct for her to do so but socially rewarding and an ‘investment’. Bourdieu’s concept of capitals demonstrates how actors trade resources at their disposal and how these are extracted in the service of certain goals, for example, social recognition, influence and power. While social capital in the form of belonging to a particular community legitimises one’s access to water, like Bourdieu (1985) observes, access to resources is not a straight forward and a once off arrangement, but a product of endless effort and a result of social investment which makes the ‘poor and powerless’ invest in social relationships to gain or maintain access to valued resources while the powerful exert and influence decision making processes.

6.2 Multiple drivers of water scarcity
There are different levels of awareness and knowledge of the causes of water scarcity, dependent on one’s cultural capital. For Bourdieu (2005), cultural capital has three different forms; material (possessing the right objects) or immaterial (the right type of education, upbringing, knowledge, values and taste). Institutional capital reinforces the value of material and immaterial capital. Cultural capital in the form of age and level of education influenced the nature of responses regarding the possible causes of water scarcity. Older participants in the study indicated that decreased rainfall and surging temperatures had a negative effect on water availability. While indicators are scientific, the reasons are superstitious. For example, they insisted the changes were evidence of God’s anger because people continue to distance themselves from cultural practices such as beliefs in ancestral spirits and disregard for local culture and abuse of cultural shrines with spiritual signifiers. Musemwa (2014) notes that water is a community good with a spiritual significance and therefore respondents’ association of God’s anger, evidenced by lack of adequate rain demonstrates the link between metaphysical methods of inducing rain (environment) on one hand and spiritual forces on the other.
However, the younger, better educated who constituted the bulk of respondents, (See Fig 4) spoke of introduction of alien objects into the atmosphere, inadequate human and financial resources to invest in infrastructural projects. To them, water scarcity challenges were a natural problem exacerbated by human beings.

Ecological imbalance caused by destruction of wetlands due to anthropogenic activities such as wetland farming, construction on ecologically fragile zones further depletes ability of groundwater to replenish itself. Construction on wetlands compounded by unregulated and unsystematic tapping of groundwater contributed significantly to water unavailability and stress in Epworth. A 2010 government report notes that following disruption of services of water supply systems post 2000, there was a sudden increase in groundwater use for domestic purposes as more and more people resorted to self-provisioning of water making them less dependent on municipal supply (GoZ, 2012). Using Bourdieu as an analytical frame, cultural capital plays an important role in understanding environmental issues. Better educated participants in possession of the right type of education and knowledge offered scientific backed causes of water scarcity while the older generation gave scientific indicators couched in superstition. Older respondents in this study, like those in Tshuma and Mathathu (2014) linked droughts and water shortages to spiritual forces.

6.3 Water Scarcity as gendered

While Bourdieu never explicitly factored gender in his work, Nawonty (1981) extends Bourdieu’s theory of capitals by adding emotional capital which she argues is more abundant in women than men. She further states that because emotional capital is gained in the private sector, it lacks convertibility into other forms of capital. Nawonty argues that the main consequence of emotional capital’s lack of value in the public sector is that it is largely used for further family investment in children and husbands (1981). Nawonty argument augers well with Masika (2002) who writes that women are responsible for taking care of children and the
aged. In addition, they have the task of feeding the family, providing clean water and energy at home and at the same time expected to generate income from environment related activities. A study in Andra Pradesh, India found that men were more likely to report that environmental changes have impacted negatively on farm production while women reported that changes in the physical environment had affected their health and food security, (FAO undated). Women in the study indicated that they were most vulnerable to water shortages because their economic and social activities largely depend on availability of water. These findings confirm Odinjo’s observation that poorest members of society who are largely dependent on agriculture and or farming for sustenance are worst affected by water shortages and scarcity (Odinjo, 1990).

Water shortages therefore become an additional economic and social strain which constrain women’s ability to generate income from climate dependent economic activities. Their categorization and framing as women in society usually invokes a close association with water which makes women highly vulnerable to water shortages than men. Fig 10 in Chapter 5 demonstrates how gender plays out at both community and household level. In the photograph, school girls are seen carrying water on their way from school. In patriarchal societies, women and girls are often relied on as water carriers. A report by UNICEF and IES (2014) reveals that girls’ poor performance at school relative to boys can be explained in terms of gender roles and the baggage such categorizations or classification often carry.

6.4 Navigating the Dry Terrain: What Are the Coping Strategies?
Residents of Zinyengere Ward organise different forms of capital in novel ways to manage both water and livelihoods. Bourdieu distinguishes between five forms of capital. Social capital comprises all assets that spring from membership of a group and range from the advantage of mutual recognition and understanding to powerful networks and legal provisions. Bourdieu’s theory of capitals draws attention to a variety of different forms of capital serving as resources that actors trade on in negotiations and every day interactions. For example, unemployed
youths use their powerful networks and social connections to flaunt existing regulations. For example, some young reported indicated that they do not stick to withdrawal limits because to them, water is a lucrative business especially when there is a scarcity of it. In adapting to the obtaining water situation, actors with greater social and economic capital indicated that they found the transition seamless while those with little capital (social networks and wealth) indicated that they found the transition difficult and emotionally burdensome. As a result, users with little to trade-off remained stuck in activities that are high risk and unsustainable.

More women than men indicated that they struggled to make a transition because men publicly acquired capitals which they could convert into other forms while women privately accrued emotional capital which did not aid their transition. Bourdieu’s argument is that while habitus strongly influences the motivations of an individual actor, his/her actions are facilitated by the use and application of capital explains why women remain confined in high risk and sometimes unprofitable economic activities as a result of low conversion potential of privately accrued capital. Women and men in this study indicated that while they were all vulnerable to water shortages, the most vulnerable in terms of their ability to acquire requisite assets were more vulnerable to environmental hazards because of their dependent nature on others for provision. Vulnerability is multi-dimensional and is shaped by physical, social, economic and emotional changes that take place over the course of one’s life. Stringent restrictions on withdrawal are employed as a conservation strategy to ensure continued supply of water until the onset of the next rain season. This conservationist strategy ensures that users do not run of water for primary purposes.

6.5 Water Governance: A Messy and A Contested Terrain?
Bourdieu notes that political capital allows individuals to take advantage of public goods and services and enables individuals to use the power of politics to their own advantage. Bourdieu regards political capital as the ‘primary principle of distinction and social disparities in so
called class-less societies’, (Bourdieu, 1998, p.28). According to Bourdieu, the political field determines the conversion modes and rates of capitals in other fields. As population figures rose in Epworth, estimated at 200 000 (ZIMSTAT, 2012), the demand for land also rose resulting in a ‘gold rush’. Using economic and political clout, powerful politicians, business people and unscrupulous housing cooperatives moved in to settle people and allocate pieces of land on ecologically fragile zones. Because of their power and influence, politicians and influential business people become ‘untouchable’ and ungovernable. This happens in complete violation of environmental regulations and council by laws. Such actions have had serious repercussions on the environment particularly wetlands which offer a natural buffer against flooding, water pollution and also acts as a valuable groundwater recharge source. Groundwater provides around 70 percent of Zimbabwe’s rural and peri urban populations with water, (WB, 2012).

Cleaver (2003) notes that power relations in water governance will frequently be subject to the peculiarities of time, space and social agency in a given location. In this study, the powerful had the ability to influence and even demolish state policy and legislation while the poor had to invest in social relations to attain and maintain access to valued resources. Because capital is dependent on the field in which it functions, water governance in Zinyengere Ward represents a situation in which different types of capitals are deployed by agents in an effort to influence water governance processes.

**6.5.1 Cooperating Over Scarce Resources?**

Focusing on the study area, water governance operates on the basis of solidarity, reciprocity and need. This form of governance is ‘needs-driven’ and corresponds to a wide spectrum of arrangements by which residents gain access to water with little or no support from the state, its policies or resources. Because social capital involves social networks based on reciprocity and trustworthiness, water sharing cuts across kinship and boundaries and such practices have
continued to exist despite accelerating economic and political crises. Such arrangements have tended to cement cooperation than induce conflict. Those who defy normative ways of behaviour risk imposition of sanctions which may take a variety of forms from isolation to accusations of witchcraft. For example, an owner of a private well who restricted people’s access to water from later discovered what she suspected to be human bones.

The above case demonstrates the severity of sanctions imposed on those who deviate from culturally accepted and normative behaviour. While communities agree on and attach a significant value to water and its relationship to life, during periods of scarcity, stringent water conservation methods are employed. During periods of scarcity or shortage, primary uses of water take precedence. In similar fashion, Nemarundwe (2003, p.108) notes that because locals in Chivi believe that ‘water is life’ (hupenyu/impilo), there has been no case of denying others access to water although rules of use are enforced more stringently during drought periods. Primary uses of water in this community are defined as uses of water that include water for drinking and cooking. Bourdieu posits that actors employ social rules appropriate to their culture, ones that they have learned through socialisation and experience. These rules, together with the resources at their disposal are used in social interactions. Rules and resources employed in this manner are not deterministic but are applied reflexively by knowledgeable actors, albeit that actors’ awareness maybe limited to the specifics of their cultures at any given time (Bourdieu, 1987, 1997).

Indications from this study demonstrate a higher level of cooperation as evidenced by the existence of LWMC and the church to encourage water cooperation particularly during periods of scarcity. Indications from this study complement those of Witsenberg et al (2009) and Rosa (2004) who found that nomadic and sedentary pastoralists and crop farmers in Masarbit district, Kenya, tended to cooperate even better during drier seasons when there are water challenges. Similar to studies by Wolf et al., (2003), indications in this study are that instances of
cooperation over shared scarce resources outnumber incidents of conflict. Derman et al., (2007) have maintained that what is usually presumed to be conflicts ensuing from water scarcity is a reflection of deeper tensions that might be linked to a complexity of causal factors that might not involve water. For example, the case of a fight that broke out at a borehole involving two men was a result of a long-standing grudge the two picked at a beer hall though it had been given a ‘water taste’.

6.6 CONCLUSION
By adopting a multi-scalar approach to water, this study has demonstrated the manifold, complex and reciprocal relations between uses and users of water. Situating water across multiple temporal and spatial scales, opened new avenues to investigate conceptual and empirical links between water, conflict and cooperation, underscoring the complexity and diversity of ways water is enrolled in social relations. Using Bourdieu as a theoretical guide, this study investigated the numerous ways in which people relate to water using various capitals or resources at their disposal and how habitus and the field are connected in multiple ways that enables agents to deploy various capitals in navigating the field.

The study established that capital is appropriated and expropriated by agents in skilful ways to manage both water and livelihoods. While constitutional provisions and international instruments frame water as a human right that should be guaranteed to all people, in recent years with the influence of neo liberal agenda, the redefinition of right has been subjected to substantial changes prompted by introduction of water tariffs and the infamous user pays principle. However, in Epworth and particularly so in Zinyengere, these changes have failed to change people’s relationship to water and the importance they attach to it. As Derman et al., (2007) rightly observe, attempts by both colonial and post-colonial governments to change people’s relationship to water by framing it as an economic good and not a public good have been unsuccessful. In Bourdieusian sociology, habitus is a product of history and therefore
socialisation has played an important role in ensuring perpetuity of such beliefs. Sound management of water has kept conflict at minimal. While some participants were not aware of the existence of international instruments such as the UN Resolution 64/292, which guarantee people’s access to safe and clean water, it is encouraging that residents of Zinyengere Ward are already working within this framework. This calls for greater collaboration between international instruments and local/indigenous people’s beliefs about certain issues for greater and meaningful collaboration between international instruments and indigenous knowledge systems or norms.
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