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FACULTY OF SOCIAL SCIENCES

DEPARTMENT OF LOCAL GOVERNANCE STUDIES

INNOVATIVE WAYS OF ENGAGING STAKEHOLDERS IN MANAGING DROUGHTS: THE CASE OF MUTOKO DISTRICT

BY

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RELEASE FORM

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APPROVAL FORM

The undersigned certify that they have read and recommend to Midlands State University for acceptance, a research project entitled: ***"Innovative ways of engaging stakeholders in managing droughts : The case of Mutoko district,"*** submitted by Munyaradzi Kadiki in partial fulfillment of the requirements of the Bachelor of Science Honours Degree in Local Governance Studies.

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DECLARATION

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

Signed ……

Date ……..

DEDICATION

To the Almighty God, my mother, father, sisters and brother, you all have contributed to my attainment of this level of excellence.

ABSTRACT

The main focus of the research was on innovative ways of engaging stakeholders in managing droughts. The research focused on Mutoko district's wards fourteen, fifteen and eighteen which are naturally drought prone areas in the district. The research was aimed at establishing an effective way of managing droughts in the district, identifying and assessing the impacts of droughts in the district, assessing the capacity of institutions responsible for managing droughts in the district and assessing the coping strategies that are used to manage droughts by the indigenous people themselves as well as those provided by institutions. The research also sought to provide recommendations to stakeholder engagement and other problems that are faced in managing droughts in the district. The word drought was contextualised and conceptualised in this research – that is the provision of the meaning of the word drought, classification of droughts as meteorological, hydrological, agricultural and socio-economical; an outline of the causes of droughts which are natural and human factors and effects of droughts. The drought management processes and approaches – which included a discussion on the proactive and reactive drought management approach, the ten step drought management planning process and management of droughts in Zimbabwe, were also discussed. The stakeholders' engagement process as a vital tool in drought management and empirical case studies on successful drought management in which stakeholder engagement was a key factor – that is the case study of the State of Nebraska in the United States of America and case study of Rajasthan in India were also given. As such the research subscribed to a descriptive approach of doing a research. Stratified random, simple random and purposive sampling techniques were employed to come up with a total of seventy two respondents. Stratified sampling was used to come up with five strata of respondents, the householders, traditional leaders, agritex officers, councilors, and key district informants. Simple random sampling was then used to pick householders, agritex officers and traditional leaders (village heads) whereas purposive sampling was used to pick up councilors, traditional leaders (chiefs) and key district informants. A participatory appraisal modus operandi – Focus Group Discussion – was used to elicit data from householders, questionnaires with both closed and open ended questions were used for key district informants and agritex officers and an interview guide was used to get data from traditional leaders, councilors and one of key district informants. A total of sixty two respondents have provided data, for this research, which has been analyzed and presented in tabulations and narratives. The results of the research reflected that there are various impacts of droughts which affect Mutoko district. The results also revealed that the capacity of the drought relief committee is very weak, so as the institutional drought coping strategies. The district drought relief committee lacks resources and proper skill to proactively manage droughts and has weak stakeholder engagement mechanisms which exacerbate the inefficiency and ineffectiveness of the institution. There are no effective ways of engaging stakeholders to ensure that a tight fit is maintained between the District Drought Relief Committee and various stakeholders. The committee does not have subcommittee and prerequisite structures at village and ward level to complement district drought relief committee's efforts and initiate drought management at the lowest level where droughts affect people. To this matter the drought management approach in place has been found as reactive which is very weak and causes the district to respond to droughts than prepare for them thus making people to suffer from droughts which can be avoided. A proactive drought management approach was thus established as the most effective way that can be used to manage droughts. The household coping strategies have however been found effective. Innovative ways of engaging stakeholders that were identified include the use of working groups, websites, publications, newsletters, surveys and web 2.0 tools and among others. Recommendations that have been given include that the district drought relief committee must always be active at any given time of the year, create sub – committees and village and ward drought committees, strengthen the stakeholder engagement process and use a variety of engagement methods so as to identify new and keep in touch with knowledgeable and resourceful stakeholders and among others.

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Let me extend my humble gratitude to my family and friends for making this success story of academic endurance. Due to financial constraints and other big problems which I have faced when I did this project, I am positively sure I would not have finished this level of education without your support.

God bless you all for making this project a mission accomplished.

ABBREVIATIONS AND ACRONYMS

CPO	Civil Protection Organization
DCM	Drought Cycle Management
DDRC	District Drought Relief Committee
ENSO	El Nino and Southern Oscillation
EWI	Early Warning Information
EWS	Early Warning System
HCS	Household Coping Strategy
ICS	Institutional Coping Strategy
ISAL	Internal Saving and Lending
ITCZ	Inter-Tropical Convergence Zone
KDI	Key District Informant
MRDC	Mutoko Rural District Council
NDRC	National Drought Relief Committee
PDRC	Provincial Drought Relief Committee
TEWS	Traditional Early Warning System
VDRC	Village Drought Relief Committee
WDRC	Ward Development Committee
WR	Weather Report
EDPC	Essential Drought Plan Component

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CHAPTER I

INTRODUCTION

1.0 Introduction

The frequency and intensity of droughts in the world and mostly in Southern Africa has increased. Zimbabwe has also witnessed this change. Many districts in Zimbabwe including Mutoko are struggling and failing to manage droughts due to various reasons. These failures usually results in the environment, the economy and a lot of people, suffering from drought risks and effects.

This chapter will touch on the background of the study which locates the problem within its proper context, the statement of the problem which establishes the research problem, the significance of the study which justifies the importance of the research to Mutoko district, the student, Midlands State University, other districts and many other stakeholders. This chapter is also going to outline the research objectives, research questions and delimitation of the study which is the area of coverage of the research. Research limitations are also given and key words are defined before a chapter summary closes the chapter.

1.1 Background to the study

Over the past years the occurrence of droughts has been inevitable all over the world. Most of the countries like Ethiopia, Eritrea, Somalia, Sudan, Uganda, Afghanistan, China, India, Iran, Morocco, and Pakistan and among others have been and are still experiencing droughts. In Southern Africa most of the countries are prone to droughts and these include Botswana, Lesotho, Mozambique, Namibia, South Africa, Zambia and Zimbabwe. Droughts affect mostly the rural areas of these countries and in some cases affect all the countries as a region except Democratic Republic of Congo which is in the equatorial rainforest. For instance the 1991/1992 drought disaster distressed nearly all countries in Southern Africa.

Droughts need to be carefully managed because they affect more people than any other disaster. For example in 1960, about 18.5 million people were affected by drought worldwide and by the 1970s, this figure rose to 24.4 million (Swedish Red Cross Statistics, 1984 as cited in Masendeke and Shoko, 2013). The Food and Agriculture Organisation (FAO), 2000) noted that in 1984 drought affected 8.7 million people, and about 1 million died in Ethiopia and in Sudan 8.5 million people were affected and about 1 million people also died and FAO (2000) also noted that the 1998 to 2000 drought affected about 16 million people in Ethiopia, Eritrea, Sudan and Somalia (the Horn of Africa). According to Wilhite et al (2000) as cited in Ndlovu (2011), the 1991/1992 drought in Southern Africa distressed approximately twenty million people. Mutasa (2010) also suggest that the same drought is believed to have affected approximately 5.6 million people in Zimbabwe.

All these figures show an enormous number of the affected and this clearly confirms that droughts affect more people as compared to other natural disasters which have lower figures of affected people. In Zimbabwe alone droughts also affect more people than any other disasters as shown in table 1.1, which shows the figures of individuals who have been affected by different natural disasters between 1980 and 2010 in Zimbabwe. Ndlovu (2011) also noted that droughts do not differ from any other disasters from this context alone, but they also differ from other disasters in that they build gradually for an extended phase of time, their effects may stay for long time in the post disaster periods and their inception and ending is not easy to find out. Ndlovu (2011) also found out that despite the devastating impacts of droughts, an accurate and standardized definition for the word is yet to be found thus adding mystifications as to whether droughts are a real phenomena or they are only a mirage.

Despite these confusions it is very vital to accept the fact that droughts do really exist and they need commitment of various players to successfully manage them. Droughts also need financial, material and knowledgeable/skilled human resources to be successfully prevented. Specifically

droughts need to be managed and prepared for before they occur so that they cannot affect more people – as they do – by the time they occur.

TABLE 1.1: TYPES OF DISASTERS AND NUMBER OF PEOPLE AFFECTED, 1980 – 2010 IN ZIMBABWE

Disaster	Number of affected people
Drought	2,589,166.67
Earthquake	…
Epidemic	31,081.90
Extreme temp	…
Flood	47,402.86
Insect infestation	…
Mass mov. Dry	…
Mass mov. Wet	…
Volcano	…
Storm	…
Wildfire	…

Source: information adapted from OFDA/CRED International Disaster Database (2008)

A common observation from a layman's point of view shows that droughts with an increased frequency and intensity are now experienced in various parts of Zimbabwe. Masendeke and Shoko (2013) supports this with an argument that, drought as a natural hazard has been ranked as number one in terms of increased frequency and intensity as compared to other hazards like floods and earthquakes. In this respect the OFDA/CRED International Disaster Database (2008) suggests that in Zimbabwe the average drought disaster per year is now 0, 19% up from 0.09%. This increase can be attributed to global climatic changes. Over the past few decades the world has been experiencing continuous changes in climate as can be witnessed by changing world temperatures, atmospheric pressures, rainfall patterns and among others.

This can be supported by the Intergovernmental Panel on Climate Change's (IPCC) 2001, 2007, and 2012, as cited in Brown et al (2012), reports which suggests that, Africa will witness intensified water problems, diminished crop produces from rain depended farming, exacerbated food shortages and increased nutritional diseases and land aridity. All these started manifesting

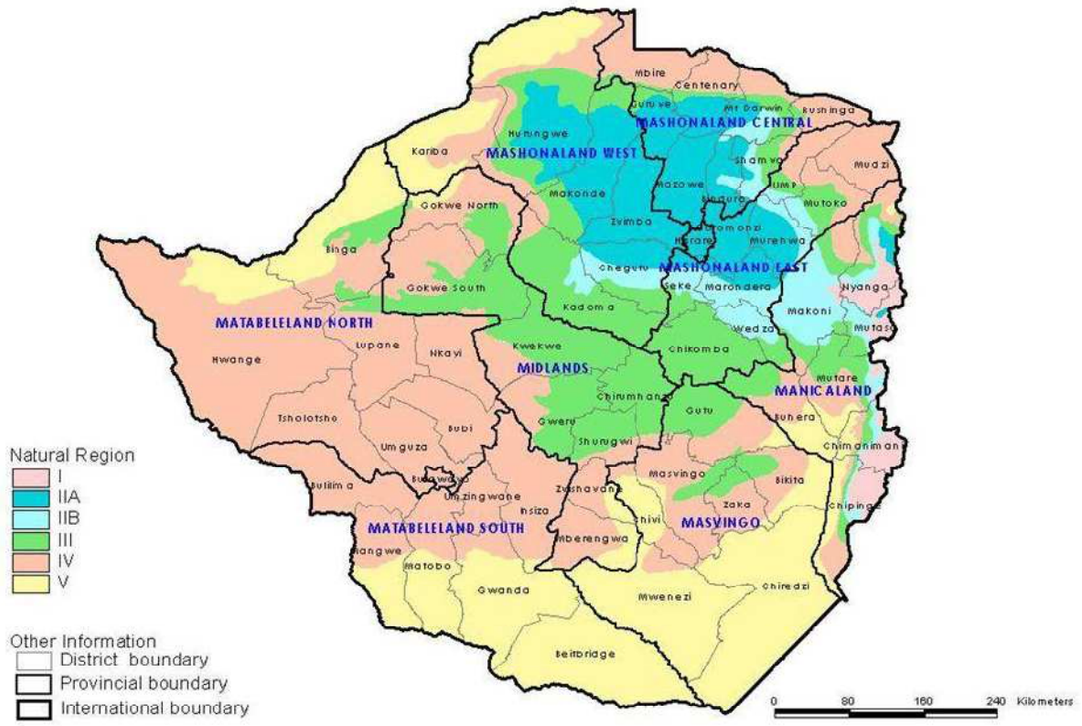
some years back because of the global climatic changes which are occurring at a faster rate despite the normal climatic cycles which could also result in a drought event once in every ten years. To this effect the IPCC (2012) report suggests that droughts in Southern Africa will intensify. This has already started occurring years back even before this prediction.

For example in Zimbabwe trends show that droughts have been occurring at least once a decade. Specifically trends show that droughts have occurred in 1981/1982, 1991/1992, 2001/2002 seasons. However from 2002 up to date, because of global climatic changes, the frequency of droughts has changed, they are now occurring in almost every year. This is all because climatic changes have reduced the amount of rainfall received per annum (rains received these days are mostly insufficient to sustain crop production), temperatures according to the Zimbabwe Meteorological Services have risen (Brown et al, 2012) and dry spells during the raining seasons have increased. To add on the increased frequency of these droughts, their intensity has also increased. To this effect, droughts in Zimbabwe have become more common in recent years despite the fact that they also occurred in pre – colonial era and pre – independence periods.

In Zimbabwe droughts have been mostly affecting and occurring in districts and areas like, Beitbridge, Buhera, Bulilima and Mangwe, Chiredzi, Chivi, Chikomba, Gokwe, Gwanda, Lupane, Mwenezi, Mudzi, Mutasa, Nkayi, Zaka and Zimuto and among others (all these districts characteristically lie in Zimbabwe's agro – ecological regions IV and V of the five agro – ecological regions as shown in map 1.1 below). The areas also receive an average of 450mm annual rainfall, are subject to mid season droughts and experience hot and extreme temperatures to such an extent that droughts are a common phenomena in these places. This shows that droughts in Zimbabwe occur in almost all districts. According to Mutasa (2010) the severities of the drought impacts vary according to season and district, and in relation to individual households, it does not affect everyone equally. As such Chiredzi was marked as the area which experiences the most severe droughts in Zimbabwe according to empirical evidence produced by various

researchers such as Unganai (undated). However, with the climatic changes affecting Zimbabwe, the pattern (frequency, occurrence, or prevalence) and severity (intensity) of droughts are becoming some sort of standardized. This can be supported by Jenkins' (2011) researches which analyses and model the future drought trends and impacts showing that drought prone areas are going to significantly increase, extreme droughts are going to occur and drought impacts are going to drastically escalate. To Jenkins (2011) it is therefore extremely important to design appropriate mitigation and adaptation policies in advance so as a have a good advantage over droughts.

MAP 1.1: ZIMBABWE AGRO – ECOLOGICAL REGIONS



Source: adapted from FAO and WFP (2009)

To this effect the responsibility to manage disasters particularly droughts has increased world over including in Zimbabwe. As mentioned earlier on, droughts are disasters which affect more people than any other disasters, and this is a reality in almost all Zimbabwean districts. In Zimbabwe, the management of droughts is and has been a prerogative duty that falls under the jurisdiction of

District Drought Relief Committees (DDRC) at district levels. According to Ndlovu (2011) a DDRC is made up of district actors such as the District Administrator's office (DA), Agriculture Technical and Extension services (Agritex), Livestock Production Department (LPD), Veterinary Services Department (VSD), Department of Social Services (DSS), the Grain Marketing Board (GMB), the Local Authority, Non Governmental Organisations (NGOs) and other key and important stakeholders that maybe included in the drought management team. District Civil Protection Committees (whose members also include all DDRC members) also take the responsibility of managing droughts if droughts are declared national disasters.

Despite the existence of such committees in Zimbabwe, the management of droughts has been poor in most Zimbabwean districts. Instead of the effects of droughts being reduced or avoided at all costs, the effects are becoming more severe and the number of people affected is increasing. The rationale behind improper and ineffective management of droughts can be attributed to weak capacity of the DDRC for example failure to attract and engage innovative, resourceful and knowledgeable stakeholders, lack of material and financial resources and among other factors. However with the increasing prevalence, occurrence or frequency and intensity of droughts, incorporation of strategic stakeholders is needed, new ideas, relevant and vast resources are needed. Innovative ways of incorporating or engaging key and strategic stakeholders are needed.

1.2 Statement of the problem

Over the past few years the amount of rainfall received in Mutoko has sharply declined and has not been reliable, temperatures and water stress have drastically increased. Soil moisture and water levels are insufficient for food production and crops wilting and dying before they are mature enough to give food to the people. Decreased yields for farmers who depend on rain – fed crops have been witnessed year in year out. Droughts were reducing food production in the district resulting in people being exposed or vulnerable to – severe hunger, starvation, malnutrition and deaths – drought products. Malnutrition, Kwashiorkor, hunger, starvation and untold sufferings

have all resulted from drought and usually torment people in the district during the times of drought. At the time of the research the District Drought Relief Committee which is responsible for managing droughts lacked resources to effectively manage droughts and this would make people to severely suffer from droughts. Droughts were therefore managed reactively in Mutoko district and people could usually suffer from droughts due to the reactiveness of the DDRC.

However these were not the main problems. At the time of the research the main problem was that the stakeholder engagement process was very weak. Mutoko has been partnering with various stakeholders in drought management, but has been facing challenges like shortages of resources and poor drought management. Specifically the methods of engaging stakeholders in the process of managing droughts were very poor to the extent that information pertaining drought management was not effectively distributed to all stakeholders thus resourceful and drought skilled and knowledgeable stakeholders remain isolated from the drought management process. This was the main gap that this research sought to cover. If nothing is done to this problem droughts will continue haunting the people of Mutoko district. If effective ways of engaging resourceful and knowledgeable stakeholders are established to effectively engage strategic stakeholders, droughts in Mutoko District would be managed proactively and people would not suffer from the effects of droughts as contingency measures would be always in place.

1.3 Research Objectives

- To establish an effective way of managing droughts in Mutoko district.
- To identify impacts of droughts.
- To assess the capacity of the institutions responsible for managing droughts in the district.
- To assess the strength of the drought response mechanisms and coping strategies that are used in the district.
- To suggest recommendations to problems faced in managing droughts.

1.4 Research Questions

- What are the effective ways of managing droughts in Mutoko district?
- What are the impacts of droughts?
- What is the capacity of the institutions involved in the management of the droughts?
- How successful were the drought response mechanisms and coping strategies that have been previously used?
- What are the solutions to problems faced in drought management?

1.5 Assumptions of the study

The research was based on the assumptions that, people would, be cooperative and contribute useful information to the research, people and relevant stakeholders have noticed that the rate of recurrence and severity of drought has significantly risen in the past few years, have different perceptions on the meaning of droughts, knew the effects of drought to them, the environment and animals and were willing to develop response/coping mechanism to effectively manage droughts.

1.6 Significance of the study

The researcher assumed that the outcomes of the research would help Mutoko district to identify and co – opt new strategic stakeholders as well as effectively engage stakeholders in institutions managing droughts in Mutoko district, develop effective drought response and coping mechanisms, and to improve the capacity of the District Drought Relief Committee. All this will help the district to effectively and efficiently manage droughts. The research outcomes were also expected to help the district to be proactive in terms of drought management and this would reduce the risks or effects associated with droughts. Most districts in Zimbabwe reacted to droughts (that is crisis management) which would usually see a lot of people suffering from droughts because there were no preventive measures put in place to mitigate the droughts, risks and effects. In this case the research outcome would help the district to proactively mitigate drought risks and effects.

The crisis management portion entails reactivity to disasters. Therefore the research recommendations attached in this research will help Mutoko district to be proactive if adopted.

The National Drought Relief Committee (NDRC), Provincial Drought Relief committees (PDRC) and other DDRC in Zimbabwe are expected to benefit from this research outcomes through adopting an innovative and proactive drought management system that have been suggested by the researcher. The researcher also expects the research to go an extra mile in helping Southern African countries to effectively manage droughts through adopting recommendations, provided in 5.3, that may suit their environments. The research has also equipped the researcher with applied knowledge in disaster management and helped to fulfil the academic requirements of academic excellence. New information generated by this research is going to advance the scholarly discourse and equip Midland State University with a new body of knowledge on drought management which will be used for future researching by other researchers.

1.7 Delimitation of the study

Mutoko district falls in Mashonaland East province of Zimbabwe. Geographically Mutoko district is one hundred and forty-five kilometres from Harare, the capital city of Zimbabwe, and it borders five other administrative districts – Mudzi district which stretches from the North to the North East of Mutoko, Nyanga district stretching from east to south east, Makoni district to the south, Murewa district to the south west and Uzumba-Maramba-Pfungwe (UMP) covers the west and north western parts of Mutoko district. Mutoko district has 29 resettlement and communal wards and this research was focused at three administrative wards that is ward 14, 15 and 18 which were amongst the most affected wards in Mutoko district.

The concerns of this research were solely centred at the innovative ways or methods of engaging stakeholders in managing drought disasters. The research was not primarily concerned with the causes of droughts, impacts of droughts although these issues were discussed to provide a base which anchored the validity of this research. This research also looked at the assessment of

alternative ways of managing droughts, assessment of the capacity of the institutional structures available to manage droughts (for example the DDRC) and mechanisms available to fight droughts in Mutoko district though they were not the primary concerns of the study. The research was not concerned with other natural disasters which occur in the district other than droughts. The research included key stakeholders like DDRC members (which include Mutoko Rural District Council staff [MRDC], NGOs, the DA's office and among other government department staff), traditional leaders, farmers, parastatals and the community at large which were interacted with various methods.

1.8 Limitations of the study

- The research required information on events that could have happened in the past. Some of this information was acquired through oral evidence by people and some of respondents seemed to have forgotten the information with time and this could result in inaccurate data being given. To counter this problem the researcher compared and contrasted information gathered from various respondents and adopted similarities. Thus triangulation. The researcher also used secondary data sources as a measure to this problem.
- People seemed to exaggerate events/situations with an assumption that the researcher was doing the research for the purpose of food hand – outing in future. This would give a fake picture or shape of the research and its outcomes. To overcome this, the researcher thoroughly explained the purpose and significance of the research to people to provide objective data. Key District Informants were also used to give truthful information.
- The research as expected was costly in terms of time and financial and material resources. To save time the researcher created an effective time management chart which allowed the researcher to timely perform all activities that were required by this research in a short space of time. The researcher was also efficient, effective and economic in the use of the limited financial and material resources – and this has helped the researcher to come up with best results out of the limited financial and material resources.

- The research seemed as if it could be inapplicable to other districts which have different set up and stakeholders like Mutoko. The researcher has put forward some ideas and recommendations which are expected to apply to all places and districts in Zimbabwe.

1.9 Definitions of terms

Drought – a protracted period of deficient precipitation resulting in extensive damage to crops, further resulting in loss of yield, (Monacelli, 2005).

Stakeholder – individuals , businesses, organisations or groups in the public, private and not – for – profit sector that have an interest in the strategising and implementing decisions (Swinburn et al, 2006).

Coping Strategy – is a quick-fix reaction to instantaneous and uneven denial admittance to the right to food and water, (FAO, (1997) as cited in Masendeke and Shoko, 2013). Therefore coping strategies are mechanisms in which people use resources available to deal with an adversary situation like a drought.

1.10 Summary

In this chapter of the research the researcher introduced the area of research which is centred on the engagement of stakeholders in the management of droughts in Mutoko district. The chapter highlighted problems associated with droughts which necessitated the research to be done. The objectives of the research and research questions that guided the research have been addressed. The chapter shows that the research was limited to Mutoko district as highlighted in the delimitation of the study. The importance and necessity of this research have also been justified and challenges that the researcher faced as well as their solutions used have been highlighted.

The next chapter will exclusively focus on literature review surrounding the research area. Theoretical and methodological aspects of droughts were investigated to identify research gaps. Empirical and well – substantiated literature was critical for this research thus its review was quite essential to easy the understanding of the research and the study.

CHAPTER II

LITERATURE REVIEW

2.0 Introduction

In this chapter scholarly articles, journals, books, electronic resources and other sources such as dissertations that, provides relevant descriptions, summarises and critical arguments on droughts are going to be brought forward for analysis and understanding of the subject under review. This chapter will be based on offering an overview of significant literature published or unpublished on drought management. This chapter will help to understand the meaning, the causes and the impacts of droughts and among other essential drought issues. The stakeholder engagement process is also discussed and empirical case studies will be given in this chapter.

2.1 Literature review

Robson (2007:54) understands Literature Review as a part of a research report which "provides an account of previous researches that has been carried out, together with attempts that have been made to provide frameworks within which the research can be placed and understood" and is build through the investigation of published and unpublished documents on the topic. It is therefore an analysis of published/unpublished information, facts, records and substantiations in relation to the researchers' area of study. LR serves many purposes which include, demonstrating the ability of the researcher to identify relevant information to the study, identifying and filling the gap that the research is trying to address and to justify the study (Ferfolja and Burnett, 2002). The LR of this research is going to serve these purposes as well as allowing the researcher to learn and understand previous theories and practices on engagement of stakeholders to manage droughts. The development of this chapter's literature review followed four aspects prescribed by Lunga (2011):

- Problem formation – the subject matter/topic under scrutiny and its related parts.
- Literature exploration – discovery of significant resources vital to the topic area.

- Data assessment – establishing the literature which assists comprehension of the topic.
- Analysis and interpretation – examining the results and conclusions of relevant literature.

2.2 Disaster Management

The management of droughts is a discipline which falls under the auspices of disaster management. This is because droughts are regarded as – disasters – are defined by the United Nations International Strategy for Disaster Reduction (UNISDR, 2009:4) as "serious disruptions of the functioning of a community or a society causing widespread human, material, economic or environmental impacts and which exceed the ability of the affected community or society to cope using its own resources". As such it is very crucial to understand what disaster management is.

According to the UNISDR (2009:4) disaster risk management is the "systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster". In the same line the Disaster Management Act No. 57 of 2002 section 1 (b) of South Africa defines disaster management as a continuous and integrated multi – sectoral, multi – disciplinary process of planning and implementation of measures aimed at, preventing or reducing the risk of disasters, mitigating the severity or consequences of disasters, emergency preparedness, a rapid and effective response to disasters and post – disaster and rehabilitation.

2.2.1 Elements of Disaster Management

According to Zyl (2006) disaster management is made up of the following elements:

- Risk assessment;
- preventing or reducing the risk of disasters;
- mitigating the severity or consequences of disasters;
- emergency preparedness;
- a rapid and effective response to disasters;

- Post – disaster and rehabilitation and,
- Vulnerability assessment.

Therefore, the relationship between drought management and disaster management exists in such a way that a drought is a disaster which is managed in respect of disaster management elements. In Zimbabwe disaster management is a process which is administered, through Civil Protection Act Chapter 10:06, by the Ministry of Local Government Public Works and National Housing. The management of droughts has been however a problematic area because there have been a lot of misconceptions as to what is really a drought. As such to gain clarity on this, an exploration of the word drought is required.

2.3 Contextualizing and conceptualizing the word drought

Despite the devastating impacts of droughts the world lacks an exact and standardized drought definition (Ndlovu, 2011). Mutasa (2010) concurs with this as he argues that there is lack of a single, universal and acceptable definition for the word drought. This absence of a universal definition of drought often causes confusion as to whether droughts are real and their harshness (UNISDR, 2005). Despite the fact that confusing definitions of drought are many, it is still important to define what a drought is because it helps disaster managers to create response mechanisms which are relative to their understanding of droughts. As such various definitions have been put forward to bring clarity.

The National Weather Service (NWS), 2006) defines a drought as a deficiency in precipitation over an extended period, usually a season or more, resulting in a water shortage causing adverse impacts on vegetation, animals, and/or people and is a normal, recurring feature of climate that occurs in virtually all climate zones, from very wet to very dry. On the other hand Zyl (2006:27) conceptualises a drought as a, "condition of climatic dryness that is severe enough to reduce soil moisture and water levels below the minimum necessary for sustaining plant, animal and economic systems". In Monacelli's (2005:8) understanding, a "drought is a protracted period of deficient precipitation resulting in extensive damage to crops, further resulting in loss of yield". A

drought can also be defined as a deficiency of precipitation over an extended period of time, usually a season or more, which results in a water shortage for some activity, group or environmental sector (UNISDR, 2009)

A thorough analysis of the given definitions can allow identification of common features. In this respect there can be varying definitions of a drought but a number of features are commonly found. Almost all drought definitions recognise that:

- Droughts occur when there is a deficiency in precipitation;
- Droughts occur over a certain period of time which maybe short or long;
- A condition of dryness is witnessed during droughts;
- Droughts cut across all – wet or dry – climatic regions;
- Droughts have impacts on the animals, people, economy, vegetation and environment and;
- A drought is a climatic condition.

According to Nguyen (2006) there are two types of drought definitions, namely a conceptual definition and an operational definition. To Nguyen (2006) a conceptual definition, held in general terms, makes it easier to understand the drought concept and is essential to establish drought policies. The definitions that have been given under this section are hugely conceptual definitions. On the other hand Nguyen (2006:2) noted that operational definitions, "…helps people understanding more details of the drought itself, such as duration, frequency, and severity of droughts in various time scales". For example these definitions define droughts in respect of a specific area outlining the severity and frequency of the drought in that particular area.

Droughts can also be defined in accordance to specialised fields of study for example meteorological, agricultural, hydrological, sociological and economic field of study. From these fields of study droughts have been classified into four literary genres or perspectives.

2.4 Classification of Droughts

According to the National Disaster Management Centre (NDMC), 2006) droughts are classified into four perspectives. These perspectives are meteorological, hydrological, agricultural and socio – economic, (Ndlovu, 2011, and NDMC, 2006). The NDMC (2006) further view meteorological, agricultural and hydrological drought as a physical phenomenon and a socio – economic drought is viewed as non – physical but covers issues of supply and demand resulting as a consequence of the first three classes.

2.4.1 Meteorological drought

Meteorological drought is defined based on the, "degree of dryness (in comparison to some "normal" or average) and the duration of the dry period" (NWS, 2006:1). In this respect Nguyen (2006) argues that a meteorological drought occurs when there is insufficiency of rainwater over an elongated period of time in a certain area. Therefore a met – drought is related to the average precipitation of a certain region (Zyl, 2006). This means that a meteorological drought is witnessed whenever the amount of rainfall received in an area declines with a quite significant percentage from an average rainfall which is normally expected in that particular region or area. Meteorological droughts are therefore region specific (NDMC, 2006). The UNISDR (2007) views a meteorological drought as a natural event that result from climatic causes, which differ from region to region. Marko (2012) laments that meteorological drought is the type of drought which drives or stir up other types of droughts to occur. From this information it is therefore evident that Zimbabwe experiences meteorological droughts since there are a number of seasons in which erratic rainfalls which are far below average precipitation expected are received.

2.4.2 Hydrological drought

This refers to a period of below normal stream flow depleted reservoir shortage during which stream flow is insufficient to supply well-known uses in a specific scheme (Marko, 2012). This goes in line with Mutasa's (2010) argument that hydrological drought refers to the reduction in

precipitation on surface and sub – surface water resources which affects water reliant activities like irrigation, hydro – electricity generation, fishing and recreational activities such as water rafting. Hydrological drought is therefore the inadequacy of surface and sub – surface water supplies for established water uses – which crop up long periods after a deficit in rainfall. In other words hydrological droughts occur in cases where there is a hydrological imbalance whereby surface water (water naturally replenished into tributaries, streams, rivers, lacks, dams and wetlands through precipitation [Waugh, 2009]) and sub – surface water (water which seepage from surface water into the soil and ground probably the perched water table [Waugh, 2009]) is insufficient to meet domestic and industrial uses.

In Zimbabwe these droughts are common and make true revelation as evidenced by intermittent rivers (seasonal rivers which only holds water during the rainy season), ephemeral rivers (which only hold water after a heavy downpour) and few perennial rivers (those which hold water throughout the year). Surface water sources in Zimbabwe are therefore few and inadequate to support industrial and domestic uses and to supply sub – surface water sources. Therefore hydrological droughts are highly probable.

2.4.3 Agricultural drought

This is a "reduction in water availability below the optimal level required by a crop during each different growth stage, resulting in impaired growth and reduced yields" (FAO, 2004). Mutasa (2010) argues that agricultural drought is the shortage of adequate water accessible for a crop at any given stage of its development resulting in stunted plant growth, wilting and ultimately dwindled crop yield. Agricultural drought therefore, occurs when soil moisture is insufficient to sustain crop production at any particular point in time. According to Waugh (2009) soil water/moisture is categorised into three namely: hygroscopic water, capillary water and gravitational water. It is the capillary water which is necessary to sustain plant growth. Plants in other words extract water from the capillary water which is held by cohesive forces between the

films of hygroscopic water (Waugh, 2009). If the temperatures become hot and the atmospheric air becomes dry capillary water will be lost from the soil and plants will wilt and die – agricultural drought is therefore set. The NWS (2006:1) therefore notes that "agricultural drought links various characteristics of meteorological (or hydrological) drought to agricultural impacts, focusing on precipitation shortages, soil water deficits, reduced ground water or reservoir levels needed for irrigation…" and among other demands. Agricultural drought has been a case in Zimbabwe since many regions suffer stunted plant growth and plant wilting insufficient water/moisture in soils for example during the mid rain season dry spells.

2.4.4 Socio – economic drought

This is sometimes referred to as famine drought and it "occurs when the demand for economic goods exceeds supply as a result of weather – related shortfall in water supply" (Zyl, 2006). In Nguyen's (2006) perception a socio – economic drought is an imbalance between supply and demand in terms of economic goods which arise when the demand for economic goods exceed supply as a result of shortages in water supply due to the natural variability of climate or population growth. Socio – economic droughts therefore occurs as an aftermath of met – hydro – agric droughts. In Zimbabwe these are usually noticed since the demand of goods like food, water for domestic and industrial use and other economic goods by the growing population is usually high while these goods are in short supply due to reduced precipitable water supplies.

2.5 Causes of droughts

2.5.1 Physical factors

According to Wilhite (2001) as cited in Nguyen (2006) a drought is considered as a natural hazard, which is a consequence of water availability deficit during a certain period of time. The shortage of water as a result of deficit precipitation is attributed as the cause of drought but the actual cause of droughts is what causes deficits in precipitation. Nguyen (2006) therefore found out that droughts can come as a result of global weather patterns and regional characteristics such as

deforestation as noted from the National Hydro – Meteorological Institute. Droughts occur as a result of atmospheric processes which involves aspects discussed by Zyl (2006) such as an interaction between the atmosphere and the ocean, sea surface temperature anomalies (SSTAs), descending air and anti cyclonic weather. All these aspects are associated with El Nino as noted in Nguyen (2006).

2.5.1.1 El Nino and Southern Oscillation (ENSO)

Mutasa (2010) argued that droughts in Southern Africa are linked with El Nino phenomenon. Zyl (2006) concurs with this arguing that El Nino and Southern Oscillation (ENSO) events are well documented as the brewers of droughts. The Southern Oscillation (SO) is the atmospheric counterpart of El Nino and El Nino is the oceanic counterpart of Southern Oscillation (Nguyen, 2006). Since El Nino and South Oscillation are related, the two terms are combined into a single phrase, the El Nino – Southern Oscillation (ENSO), (Philander, [1990] as cited in Nguyen, [2006]). To UNISDR (2009:5) "ENSO is a complex interaction of the tropical Pacific Ocean and the global atmosphere that results in irregularly occurring episodes of changed ocean and weather patterns in many parts of the world, often with significant impacts over many months, such as altered marine habitats, rainfall changes, floods, droughts, and changes in storm patterns".

Therefore El Nino cause drought in such a way that during their occurrence, the oceanic currents becomes warm and persistent causing reversal of normal weather conditions. In the same thought the shift of SO is linked with prevalent reduction of sea surface temperatures which leads to the displacement of the Inter – Tropical Convergence Zone (ITCZ), (Zyl, 2006). This means that areas which depend on ITCZ rainfalls will experience drought if the ITCZ is displaced. Most Zimbabwean droughts have been linked to El Nino and El Lana is regarded as the opposite of El Nino which restores the adversarial conditions.

2.5.2 Human factors

Drought is mainly caused by the global weather changes which depend on many factors and among them are human activities (Adger [1993] as cited in Nguyen [2006]). As such Ndlovu (1993) as cited in Mutasa (2010) argues that a drought is an act of God but similar to any other natural disasters is worsened by human activities which are harmful to the environment. This means human activities give a hand in causing droughts. In recent years droughts are caused by global climatic changes a process attributed to global warming which comes as a consequence of human activities which include emission of ozone depleting gases like the chlorofluorocarbons (CFCs). Sharma (2010) therefore, argues that both global and regional warming are multifaceted experiences that are, indeed, taking place, and their origination are directly related to human activities. Masendeke and Shoko (2013) noted overgrazing and deforestation (which leads to desertification which in turn cause droughts) as other human activities causing drought.

2.6 Impacts of droughts

The impacts of droughts may be put into three categories, namely environmental, economical and social impacts. Monacelli (2006) found out that environmental impacts of drought is the result of damages to plant and animal species, wildlife habitat, air and water quality. Economical impacts occur in agriculture and related sectors for example fisheries, forestry and other economic factors like industries and hydro – electrical power which depend on surface and ground water supplies (Monacelli, 2006). Social impacts of droughts on the other hand touches on issues related to a society for example crop failure which may result in food insecurity or insufficiency which causes mal – nutritional diseases like kwashiorkor and deaths of people as people would subscribe to unhealthy and dangerous foods like plant tubers. In this light Jenkins (2011) argues that drought has the potential to cause severe direct and indirect impacts.

For example Jenkins (2011) in a diagram adapted from Hochrainer et al. (2007) found out that societal (social), economic and environmental direct impacts may be loss of life, crop damage and

damage of habitat respectively. Diseases/poverty, business interruption and loss of biodiversity were also noted as indirect impacts to the society, economy and environment respectively. Secondary microeconomic impacts comprise indirect losses and impacts encountered by the government in reconstruction and relief aid (Hochrainer et al., 2007 as in Jenkins, 2011). Zimbabwe recorded an economic cost of US$ 2, 500, 000 x 1, 000 in the 1982 drought (OFDA/CRED International Disaster Database (2008). Therefore droughts have severe indirect and direct impacts which cut across social, economic and environmental sectors. An effective management of droughts is therefore a need. The direct (primary) and indirect (secondary) impacts of droughts on social – economic – environmental sectors are summarised in table 2.1 as according to FAO (2004) as adapted from (Vogel, Laing and Monnick (1999)

TABLE 2.1: IMPACTS OF DROUGHTS IN SOUTHERN AFRICA

Primary impacts		**Secondary impacts**
	SOCIAL	
Disrupted distribution of water resources		Migration, resettlement, conflicts between water users
Increased quest for water		Increased conflicts between water users
Marginal lands become unsustainable		Poverty, unemployment
Reduced grazing quality and crop yields		Overstocking; reduced quality of living
Employment lay-offs		Reduced or no income
Increased food insecurity		Malnutrition and famine; civil strife and conflict
Increased pollutant concentrations		Public health risks
Inequitable drought relief		Social unrest, distrust
Increased forest and range fires		Increased threat to human and animal life
Increased urbanization		Social pressure, reduced safety
	ENVIRONMENTAL	
Increased damage to natural habitats		Loss of biodiversity
Reduced forest, crop, and range land productivity		Reduced income and food shortages
Reduced water levels		Lower accessibility to water
Reduced cloud cover		Plant scorching
Increased daytime temperature		Increased fire hazard
Increased evapotranspiration		Crop withering and dying
More dust and sandstorms		Increased soil erosion; increased air pollution
Decreased soil productivity		Desertification and soil degradation (topsoil erosion)
Decreased water resources		Lack of water for feeding and drinking
Reduced water quality		More waterborne diseases
	ECONOMIC	
Reduced business with retailers		Increased prices for farming commodities

Food and energy shortages		Drastic price increases; expensive imports/substitutes
Loss of crops for food and income		Increased expense of buying food, loss of income
Reduction of livestock quality		Sale of livestock at reduced market price
Water scarcity		Increased transport costs
Loss of jobs, income and property		Deepening poverty; increased unemployment
Less income from tourism and recreation		Increased capital shortfall
Forced financial loans		Increased debt; increased credit risk for financial institutions

Source: FAO (2004) as adapted from (Vogel, Laing and Monnick (1999)

2.7 Drought Impact assessment and vulnerability assessment

Drought impact assessment is the process of measuring drought related impacts so as to determine future drought impacts and understanding changing vulnerabilities (UNISDR, 2007). Drought impact assessment is very essential for management of droughts as it provides the bases of understanding the level of vulnerability to droughts. This can be supported by UNISDR (2007) view that impacts are symptoms of underlying vulnerabilities. *Vulnerability* to UNISDR (2009:12) refers to "the characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard". To Zyl (2006) it is the extent to which a person, a family, a society or a locale might be negatively affected by a catastrophic event. Zyl (2006) further on argued that vulnerability – like risk and hazard – is an unlikely forthcoming situation which entails danger, which no one will be difficult to control. *Vulnerability assessment* is therefore the process of determining the degree of exposure of an individual, household, community or an area to the impacts of a drought.

2.8 Drought management approaches

2.8.1 Reactive drought management approach

Reactive drought management can be understood in terms of the words put forward by Muhonda (2011:13), "an approach of just responding to emergences when a drought event occurs that is instigating search and rescue and meeting survival needs after an event…" This process or approach of managing droughts can also be known as crisis management. Wilhite et al (2005)

argues crisis management philosophy is not effective and difficult to coordinate. The reactive, crisis management approach focuses on aspects like impact assessment, response, recovery and reconstruction which only help to recover from the impacts of a drought. This means the society, economy and environment would suffer from the impact and drought risk before any measure is done to protect them from the drought.

In the same thought FAO (2004) relates that crisis management results in a situation whereby a society would move from one drought event to the other without curbing the dangers of the first one. This means therefore that, reactive crisis management to droughts will do a little to reduce, mitigate or prevent the impacts of a drought. In other words the reactive approach can even exacerbate the degree of suffering of the economy, society and the environment. Reactive, crisis management is usually preferred or is unavoidable by national, provincial and local governments and other institutions which lack the capacity in terms of material resources, financial and human resources, knowledge, commitment and lack of proper legislation and policies to manage droughts among other aspects.

2.8.2 Proactive drought management approach

Proactive means taking action before change happens and not only reactive to change when it happens (Cambridge School Dictionary, 2008). Proactive drought risk management can therefore be understood in Muhonda's (2011:13) words, "… a comprehensive process that involves: mitigation, preparedness, response and recovery", to drought risks and impacts. Mitigation, preparedness, response and recovery protect the society, economy and the environment from drought risks and impacts. Muhonda (2011) therefore argues that proactive drought risk management is therefore a new approach which represents a paradigm shift from the traditional approach (reactive approach) of managing droughts.

The proactive, drought risk management approach is therefore more effective than the reactive approach. This can be a reality through Wilhite's et al (2005:94) statement that the ineptness of the

reactive, crisis management philosophy has necessitated the, "…adoption of a more proactive risk – based management approach". Since disaster management is a process (as mentioned earlier on) proactive, drought risk management is therefore a continuous process which allows effective management of droughts which helps to reduce the impacts and risks of a drought. This approach therefore allows drought policies, plans, legislations, resource base, knowledge and institutions to be strengthened before the occurrence of a drought. Proactive drought risk management can be done through the use of the drought cycle management (DCM) illustrated in figure 2.1 – adapted by Schilderinck (2009) from Catholic Organisation for Development and Emergency Aid (CORDAID, 2004).

2.8.2.1 Drought Cycle Management (DCM) model

This is a cyclical process that acknowledges drought as a cyclic event and defines what actions to be taken in different stages of a drought (Marko, 2012). Pantuliano and Wekesa (2008) as in Marko (2012) found out that the concept of DCM was developed in Kenya (a drought prone country in the Horn of Africa) by Jeremy Swift in the mid – 1980s under the EU funded Furkana Rehabilitation Project. The drought cycle management has four key elements which allow an integrated drought management approach (use of reactive and proactive approaches at the same time) which are mitigation, preparedness, relief assistance and reconstruction. The main thrust behind the development of this cycle was to find the best and most suitable way of managing droughts in pastoral lands of Kenya. Fortunately, the cycle is universally applicable in all four cardinal points of the world's drought prone areas. The advantage of putting a drought cycle as a central reference point is that – Oxfam (undated) suggests – it ensures appropriate interventions to be implemented before, during and after the drought. DCM in other words can allow the taking place of proactive, drought risk management or contingency planning (a systematic process of integrating drought risk management from well designed, coordinated and funded drought contingency plans [Marko, 2012]). The drought cycle management is therefore a proactive way of dealing with a drought.

FIGURE 2.1: DROUGHT CYCLE MANAGEMENT MODEL

Source: adapted from Schilderinck (2009:29)

The **normal stage** is an era in which enough precipitation is received. At this phase drought prevention is done, through aspect such as community development, emergency preparation, capacity building and construction of infrastructure. (Schilderinck, 2009). The second stage is the **alert and alarm stage** (Schilderinck, 2009). Schilderinck (2009) argues that this is a phase at which the first signs of an imminent drought are noticeable. People will start preparing for the droughts at this phase. Activities that can be done at this phase include stocking food for animals and people, preservation and storage of water, putting in place health systems that will sustain human and animal life. At the **relief stage** the drought arrives at its acme resulting in food plus water scarcity which may leads to severe hunger and probably loss of human and livestock (Schilderinck, 2009). Relief food is distributed in order to save lives. Finally, after the emergency, there is **the recovery stage** which is primarily concerned with recovery from the drought through

revitalisation of water sources and other relevant drought management infrastructure and restocking of animals (Schilderinck, 2009). This model was tried in Kenya, the country in which it was developed, but was not successful as it was expected to be because actors in drought management lacked requisite capacities. It is thus clear that knowledgeable and resourceful stakeholders should be engaged to capacitate actors involved in drought management.

2.8.3 Drought Coping Mechanisms/strategies

The word 'coping' is derived from the word 'cope' – which is defined in the Cambridge School dictionary (2008:16) as to, "deal quite successfully with a difficult situation…" UNEP (2003) as cited in Mutasa (2010) defined coping as the ability to withstand risks at a particular point of time which includes defence mechanisms and active ways to solve the problems. Coping strategies are people's activities whose main purpose is to meet their needs under conditions of extreme food scarcity and include contingencies for the future (Masendeke and Shoko, 2013). Coping strategies for drought, therefore, refer to tactics that are used by people, households, villages, organizations or the government and societies to withstand/deal successfully with inimical impacts of droughts (Dercon, 2002 as cited in Ndlovu, 2011). Drought coping strategies as they are referred to as drought risk management strategies by Unganai (undated) can be used before, during and after the drought event. It is interesting to note that coping strategies used by developed countries significantly differ from those used by developing countries. For example coping strategies in developed countries are largely scientific and provided by institutions whereas developing countries largely depend on household own coping strategies. Scientific methods like Drought Focusing and Early Warning Systems (EWS) are essential components as people will know, in advance, coping strategies they will use when a drought occur.

2.8.3.1 Household coping strategies

Household is a family or group who live together in a house (Cambridge School Dictionary, 2008). Household coping strategies are own family strategies that a family devise to survive.

Unganai (undated) noted that people at family level subscribe to a number of strategies to counteract the risks and effects of a drought at family level. These strategies include saving available food, growing drought tolerant crops like sorghum, exchange casual labour for food, remittances, dependence on social networks and distress sale of assets. According to Mutasa (2010) other strategies include migration, sale of livestock, grain trade, informal trade, casual labour, hunting, wild fruits gathering, and brick moulding for selling and selling of firewood. A study by Schilderinck (2009) and Dube and Sekhwela (2007) show that, the Kenyan and Botswana people also subscribe to these coping strategies as well respectively. On the other hand the economic power of developed countries like United States of America enables people import adequate food if there is a drought. Household coping strategies are therefore most effective as each house can look for an own strategy which guarantees continued survival.

2.8.3.2 Coping strategies provided by other institutions

Unganai (undated) pointed out that programs like sinking of boreholes and food for work are coping strategies that can be provided through local government in Zimbabwe. Unganai (undated) also noted NGOs coping strategies can range from sinking boreholes, providing food relief (humanitarian aid), and providing seed for recovery phase, nutritional gardens, livestock support and small scale irrigation. Private sector coping strategies include provision of off – farm employment, grain sale and among others (Unganai, undated). Coping strategies of the central government include seed provision, food assistance, rehabilitation and development of irrigation facilities and offering credit facilities. Various researches show that developed countries in particular United States of America depends on water harvesting, irrigation and water rationing during droughts to cope with droughts. Likewise Mediterranean developed countries like Cyprus, Greece, Italy, Portugal and Spain put more emphasis on water harvesting and irrigation. This is the same case with South Africa and India where this is done through the help of NGOs. However these strategies cannot be relied on since institutions involved can sometimes offer short term

assistant or can fail because of resource scarcity whereas the private sector can look to capitalise on the situation by hiking food prices.

2.9 Drought Preparedness Planning (DPP)

2.9.1 The 10 step process

Knutson (2013) argues that drought planning is defined as actions taken by individual citizens, industry, government, and others before drought occurs to reduce or mitigate impacts and conflicts arising from drought and it can take two forms: Response and Mitigation planning. The ten staged planning process is a mechanism which was initially developed by Wilhite in 1991 to assist an effective and efficient management of drought through a well substantiated planning process (Wilhite et al, 2005). Wilhite et al (2005) suggest that this planning procedure puts more emphasis on risk assessment and mitigation. This means that this planning method is proactive in nature.

The 10 steps according to Wilhite et al (2005) and Knutson (2013) are as follows:

1. Appoint a drought task force.
2. State the purpose and objectives of the drought preparedness plan.
3. Seek stakeholder participation and resolve conflict.
4. Inventory resources and identify groups at risk.
5. Prepare or write the drought preparedness plan.
6. Identify research needs and fill institutional gaps
7. Integrate science and policy
8. Publicize the drought preparedness plan and build public awareness.
9. Develop education programs.
10. Evaluate and revise drought preparedness plan.

The steps are going to be explained below.

2.9.1.1 Step 1: Appoint a drought task force

According to Wilhite et al (2005) a key political leader – a president/prime minister or any highest authority in a province (governor), district or city (mayor) – sets off the drought preparedness planning process by appointing a drought task force team. The purpose of the task force shall be to supervise and coordinate development of the plan and coordinating actions, implements, mitigate and response programs and make policy recommendations to the appropriate political leaders (Wilhite et al, 2005). The task force should also be a multi – disciplinary team which cuts across all traditional boundaries of droughts and its impacts.

2.9.1.2 Step 2: State the purpose and objectives of the drought plan

The drought task force team should establish the purpose and objectives of the plan. As such Wilhite et al (2005) narrate that the first official thing that the team has to do is to establish and put in place a broad – spectrum statement of the drought plan. A general statement of purpose for a plan should be to curb the impacts of droughts by identifying key activities, individuals, groups or areas at risk and devising alleviation strategies and programmes which counteract vulnerability suggests Wilhite et al (2005). After this the task force is supposed to create detailed and strategic objectives that would help to achieve the demands of the purpose of the plan.

2.9.1.3 Step 3: Seek Stakeholder participation and resolve conflict

At this juncture the task force should identify and list down all general public groups that will affect/be affected by the drought plan and familiarise with their concerns Wilhite et al (2005). In the society there are obvious various stakeholders who affect and are affected by the drought plan and they have their interests which can contribute to or confuse the plan. At this stage it is vital to identify and incorporate accurate stakeholders as Jeffery (2009:36) argues that is important to achieve, “accurate representation of all your stakeholders and stakeholder types…” because it allows eliciting views – representing diverse stakeholders – that can help effective drought management to benefit all sectors that is the society, economy and environment. Wilhite et al

(2005) therefore argue that the incorporation of various stakeholders is done to avoid social, economic and environmental value clash due to competition of scarce resources. Participation of stakeholder can also raise the citizens' commitment towards fighting droughts. This stage is very essential as it helps to thwart conflict.

2.9.1.4 Step 4: Inventory resources and identify groups at risk

At this stage Wilhite et al (2005) argue that an inventory of natural (for example water), biological (for example grasslands, rangelands, wildlife) and human resources (labour), including the detection of the limiting factors that may hinder the planning process should be done by the task force. Identification of the resources such as water and grasslands is very essential as the plan would outline how they are going to be protected whereas identification of human resources would help to allocate roles and responsibilities in fighting droughts. Identifying barriers that impedes the planning process will help to filter them and come up with an effective drought plan.

2.9.1.5 Step 5: Establish and write drought plan

At this level the establishment of pre – requisite committees that develops and write down the plan should be done and the drought plan should be comprised of 3 main components: [1] monitoring, early warning and prediction; [2] risk and impact assessment ((Knutson, 2013) and [3] mitigation and response (Wilhite et al, 2005). Knutson (2013) refer these to as the Essential Drought Plan Components (EDPCs) and to him they assess, communicate, and trigger action and is foundation of a drought mitigation plan; assess vulnerability that is who and what is at risk and why; and actions/programs that reduce risks and impacts and enhance recovery respectively. Wilhite et al (2005) recommends that separate committees should be established to take care of the first two components, for example the monitoring, early warning and prediction committee and risk and impact assessment committee for component (1) and (2) respectively. The last component of mitigation and response should be taken care of by the drought task force (Wilhite et al, 2005).

2.9.1.6 Step 6: Identify research needs and fill institutional gaps

Whenever people come together to develop something or to accomplish specific endeavours a set of strengths, weaknesses, opportunity and threats (SWOT) analysis would allow them to identify gaps and issues that need to be looked for to fill the gaps. Likewise institutions involved in managing droughts can have such gaps which must be filled. As such Wilhite et al (2005) argues that the drought taskforce must list down all those deficits and suggest solutions that will be used to make proper adjustments/corrections by the right people/institutions at the right time. Filling the gaps would strengthen the institutional capacities to deliver the best in the fight against droughts.

2.9.1.7 Step 7: Integrate science and policy

Wilhite et al (2005) suggest that the most crucial facet of the planning process is to combine the science and policy aspects of drought management. In other words this means that scientist knowledge and existing policies on managing droughts should be incorporated in the drought plan and the planning process. Wilhite et al (2005) however annotated that lack of understanding between the scientist and policy makers may emerge since policy architectures may fail comprehend technical drought matters; likewise scientists may not understand policy issues on droughts. Precisely drought, as a natural hazard, must receive greater, "…attention by policy makers and scientists due to the wide range of impacts and the associated cost of mitigation and recovery" (De Stefano et al, 2013:1). As such coordination, good communication and mutual understanding between the scientists and policy makers is essential for effective integration.

2.9.1.8 Publicise the drought plan – build public awareness and consensus.

The task force must ensure that the public is always updated with the information concerning the plan throughout the planning process. The plan should therefore be publicised (Wilhite et al, 2005), so that people will have an increased awareness on droughts and the plan itself. For example Wilhite et al (2005) articulated that it is necessary to inform people on the extent to which the plan is anticipated to alleviate drought impacts over a certain periods of time. Such

issues according to Wilhite et al (2005) can be done through theme news bulletins throughout the planning process, thus the taskforce ought to collaborate with public relations experts so that the public is kept informed on the current positions and possibly suggest solutions. It is also vital to post essential information on the drought task force websites so that people will be kept informed.

2.9.1.9 Step 9: Develop Education programs

According to Wilhite et al (2005:131) a broad based education programme to "raise awareness of short and long term water supply issues will help ensure that people know how to respond to drought when it occurs and that drought planning does not lose ground during non – drought years". The task force and participants may also consider developing presentations and education material that would be presented or delivered on events such as theme related trade shows, symposiums and other platforms such as trade fairs.

2.9.1.10 Step 10 Evaluate and revise drought plans

The last action of the planning process is to establish a comprehensive set of mechanisms to guarantee effective appraisal of the plan (Wilhite et al, 2005). Evaluation is an organised and purposive examination of a progressing or finished task, program, or plan, from its invention stage to its performance and results (OECD (2002) as in Kusek and Rist (2004). On – going evaluations can be done and they help to keep the plan in line with its purpose and set objectives. To Wilhite et al (2005) post drought planning evaluation is very essential since it can be used to measure the compatibility or incompatibility of the plan to a drought situation, that is was it usable during the drought or it was not and has it contributed to successful management of drought or it has not.

In short Wilhite et al (2005:97) provides that, "steps 1–4 focus on making sure the right people are brought together, have a clear understanding of the process, know what the drought plan must accomplish, and are supplied with adequate data to make fair and equitable decisions when formulating and writing the actual drought plan. Step 5 describes the process of developing an organizational structure for completion of the tasks necessary to prepare the plan. The plan should

be viewed as a process, rather than a discrete event that produces a static document. A risk assessment is undertaken in conjunction with this step in order to construct a vulnerability profile for key economic sectors, population groups, regions, and communities. Steps and 7 detail the need for ongoing research and coordination between scientists and policy makers. Steps 8 and 9 stress the importance of promoting and testing the plan before drought occurs. Finally, Step 10 emphasizes revising the plan to keep it current and evaluating its effectiveness in the post drought period".

2.9.1.11 Applied practice – the 10 step planning process – State of Nebraska in United States of America

The ten steps in the planning process are nonspecific to an extent that drought management authorities may select phases and components that are most appropriate to their circumstances (Wilhite et al., 2005). As such a presentation by Svoboda (2012) shows that this was the case with the Nebraska State which is located in the mid west of the United States of America. According to Svoboda (2012) the first step was kick-started by the state governor who mandated the National Drought Mitigation Centre to play a key role in the planning process. Svoboda (2012) named this step 'creating a political momentum and authority whereas to Wilhite et al (2005) its 'appointment of the taskforce team'. Stating the plan purpose and objectives is the second step to Wilhite et al. (2005) and in Nebraska the purpose of the plan and objectives were determined. As noted in Svoboda (2012) the main committee – the Climate Assessment Response Committee (CARC) which performs the mitigation and response function – and the sub committees – the Water Availability and Outlook Committee (WAOC) and the Risk Assessment Committee (RAC) which performs monitoring and impacts assessment functions respectively – were formed. Svoboda named this step strategic planning and coordination.

The third step is to seek stakeholder participation and resolve conflict (Wilhite et al., 2005), and in Nebraska any interested persons/agencies were welcomed into the working group and thirty two

participants from the private and public entities were involved argues Svoboda (2012). To him this step can be named fostering involvement and understanding. Step four to Wilhite et al. (2005) is termed inventory resources and identification of groups at risk whereas Svoboda (2012) refers it to as 'investigating drought monitoring, risk and management options', and he noted that in Nebraska researches and assessments were done though to a little extent. According to Svoboda (2012) the fifth step of the planning process which is writing the plan was done in Nebraska. In other words the plan was written. According to Svoboda (2012) the last thing which was done is implementation of the plan although little action was done at this step. Therefore the 10 step planning process in practice can drop or merge some steps regarding the situation of the government concerned, time and resources available. This process has also proved to be effective in preparing for droughts.

2.10 Drought management in Zimbabwe

2.10.1 Legislative environment for managing droughts in Zimbabwe

2.10.1.1 The Constitution of Zimbabwe

The supreme law of the Zimbabwean land – the Constitution of Zimbabwe Amendment (No. 20) – has some sections enshrined in it which are by and large related to management of natural disasters like droughts. Section 113(1) of the Constitution states that, "The president may by proclamation in the *Gazette* declare that a state of public emergency exists in the whole or any part of Zimbabwe". It is also clear in section 113(4) of the Zimbabwe Constitution Amendment (No. 20) No.1 of 2013 that if such a declaration is approved by Senate and National Assembly it remains for three months and in case of section 113(7)(b) any extension of the declaration maybe done with the consideration of the Constitutional Court. This means that emergencies like drought disasters maybe declared public emergencies by the president of Zimbabwe. Once a disaster is declared a state emergency it means that the state will commit financial, human and material resources towards the management of that particular disaster. For example section 213(2)(c) of the Constitution states that, "with the authority of the President, the Defence Forces may be deployed

in Zimbabwe – in support of the Police service and other civilian authorities in the event of an emergency or disaster," like a drought.

2.10.1.2 Other Acts of Parliament

According to Muhonda (2010:39) the Civil Protection Act No. 5 of 1989, Chapter 10:06 is the main piece of legislation that regulates disaster management including the management of, "…droughts in Zimbabwe". The Civil Protection Act (CPA) does not work on its own but it is complimented by other relevant sector legislations/Acts of parliament to manage disaster like a drought (Muhonda, 2011). These Acts according to Shamano (2010) are:

- The Environmental Management Act (20:27)
- The Health Public Act (17:09)
- The Regional Town and Country Planning Act (29:12)
- The Rural District Councils Act (29:13)
- The Urban Councils Act (29:15)
- The Defence Act (11:02)
- The Police Act (11:10)

The CPA is also supported by the National Policy for Civil Protection which emphasises that each and every Zimbabwean resident is mandated to help to prevent or restrain the impacts of the emergencies (Department of Civil Protection, 2006). The responsibility to administer the CPA lies in the hands of the Ministry of Local Government, Public Works and National Housing (MLGPW&NH) *(ibid)*. In this light the National Contingency Plan (2012 – 2013) states that the Government of Zimbabwe (GoZ) is mandated with a duty to harmonize the administration of all catastrophes and emergences as well as mobilise all appropriate stakeholders through the Ministry of Local Government Rural and Urban Development's (now called MLGPW&NH) Department of Civil Protection.

2.10.1.2.1 Major provisions of the Civil Protection Act

Section 3(1) of the Civil Protection Act 10:06 provides for the establishment of the Director of Civil Protection – "there shall be a Director of Civil Protection…" This office of the Director of Civil Protection is found in the Department of Civil Protection in the MLGPW&NH and the main functions of the director are given in section 3(2)(a) – (h) of the act. Of which one of the main functions is, "…directing the establishment of civil protection organisation in civil protection provinces and civil protection areas…" [CPA 10:06, section 3(2) (a)]. Civil Protection Plans are provided for in section 11 of the Act and establishment of the National Civil Protection Fund is provided for in section 29 of the Act and relevant sections to it are section 30, 31 and 32. The Civil Protection fund will provide funds to protect people against disaster like droughts.

2.10.2 Civil Protection Organisation (CPO)

According to Muhonda (2011) the CPO is established in terms of the Civil Protection Act 10:06. The MLGPW&RUD (2006) as cited in Ndlovu (2011) argues that there should be an administrative arrangement of civil protection in Zimbabwe from lower levels to central government level to facilitate the implementation of the CPA 10:06 that is creation of the National, Provincial and District Civil Protection Committees and their sub committees. The membership of these committees consists of the permanent members chosen from government ministries, parastatals and Non Governmental Organisations. To Ndlovu (2011) the sub – committees of these committees covers sectors such as, public awareness, manpower and training, supplies, telecommunications, transportation, health and welfare and emergency management. These committees sub – committees crucial for management of disasters like a droughts.

2.10.3 Institutional arrangement specific to drought management

According to Muhonda (2011) drought management in Zimbabwe comes under the jurisdiction of the National Drought Relief Committee (NDRC), which is presided by the Ministry of Public Service, Labour and Social Welfare (MPSLSW). If a drought is severe enough to be declared a

national disaster its management is placed under the CPO argued Muhonda (2011). At the provincial level and district level there is the Provincial Drought Relief Committee (PDRC) and the District Drought Relief Committee presided by the Provincial Administrator and District Administrator respectively – thus according to Muhonda (2011). Drought Relief Committees are comprised of government ministries/department, parastatals and NGOs just like the Civil Protection Committees. Ndlovu (2011) specifically highlights that at district level the DDRC is comprised of district stakeholders like District Administrator's office (DA), Agricultural Extension and Technical Services (AGRITEX), Livestock Production Committee (LPD), Veterinary Services Department (VSD), Department of Social Services (DSS), the Grain Marketing Board (GMB), the Rural District Council (RDC), NGOs and other relevant stakeholders that maybe co-opted in the committee.

The Zimbabwe National Contingency Plan (ZNCP), 2012) argues that Zimbabwe has a strong institutional and technical capacity to manage droughts which is attributed to the ability of the PDRC and DDRC's ability to ensure wider stakeholder participation. For example the Meteorological Office, National Early Warning Unit (NEWU), Famine Early Warning systems Network (FEWSNET), World food Programme (WFP), Drought Monitoring Centre (DMC) and the Food and Nutrition Council in collaboration with ZIMVAC assess and monitor drought hazards and maintain early warning systems – thus according to the ZNCP (2012 – 2013). The ZNCP (2012) also noted that AGRITEX cooperates with different partners, mostly United Nations Food and Agricultural Organisation (UN-FAO) to perform a number of function that help to counteract droughts for example irrigation schemes and grazing schemes.

Despite the involvement of these institutions drought management systems are still weak in Zimbabwe, for example Drought Early Warning system which should be helped by the Meteorological Office is weak most probably because the department lack adequate and up to date resources. In addition to this there are a lot of problems relating to incorporation and engagement

of these and other stakeholders who can assist to manage droughts. Firstly Ndlovu (2011) cited that the private sector (which has the ability to assist with resources) is rarely visible in drought management, secondly NGOs involved usually offer short term assistance that satisfy immediate needs and thirdly traditional institutions are not actively involved. Engaged stakeholders are therefore poorly coordinated. Against this background the drought relief committees have the power to co – opt and coordinate other relevant stakeholders who can assist in managing droughts effectively. As such it is very important to explore ways of engaging helpful and resourceful stakeholders in drought management structures at the national, provincial and district levels.

2.10.4 Zimbabwe Agenda for Sustainable Socio – Economic Transformation (Zim Asset)

The government of Zimbabwe has crafted Zim – Asset, a five year economic blueprint. According to The Sunday Mail (2013) Zim – Asset categorises all government ministries and departments into four distinct clusters – Food Security and Nutrition, Social Services and Poverty Reduction, Infrastructure and Utilities and Value Addition and Beneficiation – which have been assigned specific tasks on economic growth and poverty alleviation (accessed on 21/01/14 at www.sundaymail.com.zw). Of the four clusters, the food security and nutrition cluster will immensely help to fight against droughts. The Government of Zimbabwe (GoZ), 2013:20) Zim – Asset policy document acknowledges that Zimbabwe has suffered from, "…prolonged periods of droughts caused by climatic change".

Due to the devastating impacts of these droughts, the GoZ has decided to turn the tables with the Food Security and Nutrition cluster which will make sure that the government, "…recapitalize and capacitate…" the main agricultural supporting institutions like the AgriBank, GMB, Agricultural Marketing Authority (AMA) and the Agricultural Rural Development Authority (ARDA) so as to improve agricultural infrastructure to mitigate against drought through rehabilitation and expansion of irrigation projects and increased construction of dams – thus according to the GoZ (2013) Zim – Asset policy document. Since resources are critical to effective management of

drought the Zim – Asset policy seems to point to the fact that resources will be unleashed towards mitigation of drought.

2.11 Stakeholder engagement in drought management

The Ministerial Council on Mineral and Petroleum Resources (MCMPR), 2005) conceptualises stakeholders as, those who have an interest in a particular decision, either as individuals or representatives of a group including those people who influence a decision, or can influence it, as well as those affected by it. Therefore stakeholders can be best described as, "… individuals, businesses, organisations or groups in the public, private and not – for – profit sector that have an interest in the strategising and implementing…" of drought management programmes (Swinburn et al, 2006:13). Stakeholder engagement is therefore a systematic process by which an institution managing drought (which is usually made up of different stakeholders) involves different stakeholders in a process of managing droughts so as to improve the way in which droughts are managed – thus helping to reduce the risk and impacts of the droughts.

2.11.1 Benefits of engaging stakeholders

In Sinclair's (undated: 3) understanding the, "…benefits of effective engagement…" of stakeholders in managing droughts are "…well known and well documented…" To Swinburn et al (2006) and the Department of Education and Early Childhood Development DEECD (2011) these benefits consists of the following:

- Stakeholders can come in with expertise facts, technical know – how and diverse opinions making drought management easier;
- Stakeholders bring financial, professional and physical resources;
- Stakeholders avert challenges by being involved in the process;
- Stakeholders are likely to be best informed about local problems;
- Stakeholders result in streamlined drought policies and programmes; and

- The outcomes of drought management process will be responsive to the needs of the community.

2.11.2 Stakeholder engagement process

Jeffery (2009) proposes a 7 stage process: plan, understanding stakeholders, internal preparedness and alignment, building trust, consultation, respond and implement and monitoring evaluating and documenting. To Sinclair (undated) the process is however a three step process which involves stakeholder identification, analysis and engagement. According to the DEECD (2011) there is no 'one size fits all' model for stakeholder engagement but guaranteeing effective engagement entails good judgement – the 'what', 'who' and 'how' questions are the indispensable figments for deciding the most suitable methods of engaging stakeholders. The DEECD (2011) noted that poor engagement process may build distrust, waste stakeholder's time and results in 'engagement fatigue' that is stakeholders' unwillingness to contribute in upcoming drought management programs. This process needs to be well executed so that duties, roles and responsibilities will be effectively allocated and well understood, mistrust is avoided, time wasting is avoided and engagement fatigue is thwarted. The steps of engaging stakeholders to DEECD (2011) include:

2.11.2.1 Step 1: What is the purpose?

The DEECD (2011) propounds that this step involves establishing why engagement is important to an institution – for example the DDRC – as well as identifying outputs or outcomes that are to be achieved by undertaking stakeholder engagement. The essence of setting objective through identifying outputs or outcomes can fall in Jeffery's (2009) planning stage.

2.11.2.2 Step 2: Who to engage?

According to DEECD (2011) this step involves creating a list of relevant stakeholders. In other words this step involves stakeholder identification and analysis. Stakeholder analysis is a "technique that can be used to identify and assess the importance of key people, groups of people, or institutions that may significantly the success of an activity or project" Obadire et al

(2013:279). Hence stakeholder analysis helps to determine the suitable level of engagement for each stakeholder identified (DEECD, 2011). Identification of stakeholders' falls in Jeffery's (2009) planning stage. Levels of stakeholder engagement are fully explained in 2.11.3.

2.11.2.3 Step 3: How to engage?

This step involves determining and choosing the suitable method/way of engagement and key messages to communicate and consideration of stakeholder engagement risk (DEECD, 2011). Jeffery (2009) refers those engagement methods as consultation techniques. These techniques or methods include personal interviews, workshops, working groups, public or 'town hall' meetings, surveys, participatory tools, stakeholder panels, web 2.0, fact sheets, advisory committees and among others (Jeffery, 2009 and DEECD, 2011). Stakeholders engagement methods should be effective in terms of communication, timeliness, transparent, collaborative and inclusive (MCMPR, 2005). All these methods can be used to ensure that all identified stakeholders would be invited and participate effectively in drought management. This is also the stage where stakeholders are actually engaged through the use of these methods.

2.11.2.4 Step 4: Evaluate the engagement process

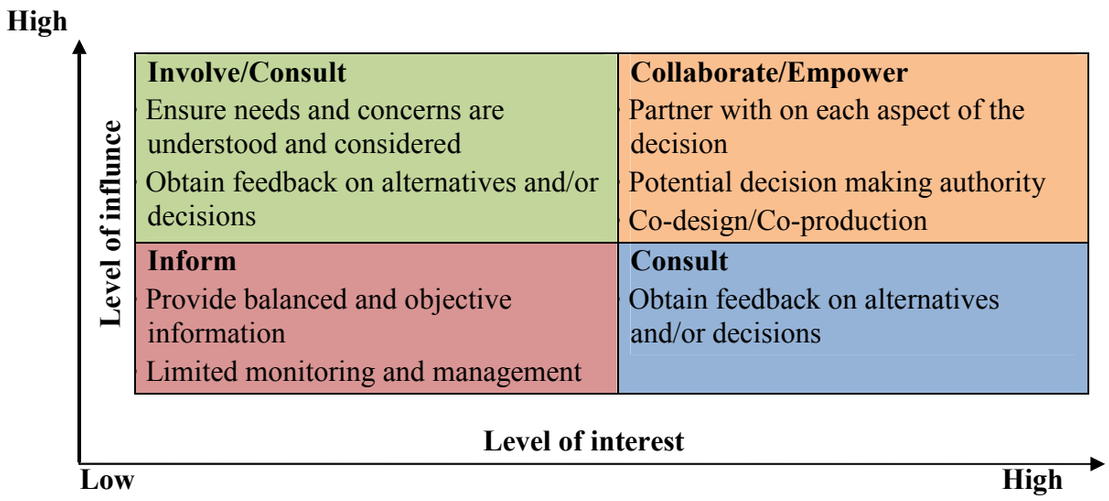
The DEECD (2011) argues that there is need to develop performance standards to examine all stages of the engagement process. This would allow the process of engagement to be effective since each step will be guided to remain on the right track in order to achieve the set objectives.

2.11.3 Levels of engagement

According to the DEECD (2011) there are different levels to which stakeholders can be engaged, and these are inform, consult, involve, collaborate and empower. Morris and Baddache (2012) refer these to as tactics. The DEECD (2011) specifies that these levels are determined by a precise and proper level of involvement needed by each stakeholder groups. The level of informing requires the organisation provide unbiased, purposeful, correct and reliable information to help stakeholders to comprehend the problems, options, prospects and/or solutions, consult – to get

responses and opinions from stakeholders on investigations, options and/or results, involve – work directly with stakeholders from the start to the end of the process to make sure that their concerns and requests are always understood and considered, collaborate – to partner with the stakeholder from development of different options to decision making and establishment of effective solutions and empower – to give all stakeholders final decision making powers (DEECD,2011).

FIGURE 2.2: STAKEHOLDER ANALYSIS TOOL



Source: adapted from DEECD (2011:13)

Ways, methods or format that can be used for each level also differ for example website or newsletters can be used to inform, working groups to consult, workshops to involve, research collaborations, social media or experimental projects to collaborate and joint planning to empower (DEECD, 2011 and Morris and Baddache, 2012). Figure 2.2 by (DEECD, 2011) shows how levels of engagement are determined. "If a stakeholder has high levels of influence over and interest in the project's outcomes they should be placed in the top right quadrant. Conversely, if they have a low level of influence and low interest they should be placed in the bottom left quadrant" – (DEECD, 2011:13) Stakeholders in drought management may include; the citizens of the community concerned, community based organisations, farmers' groups or unions, residents associations, religious organisations, local traditional leaders, different government departments, local authorities, parastatals, private organisations and NGOs and among others.

2.11.4 Partnership

A partnership is an essential component of engagement. A partnership refers to mutual and/or joint relation between an institution and its stakeholders that that enables them to work collectively with a common sense to achieve results agreed amongst partners (DEECD, 2011). The DEECD (2011) further postulate that partnership arrangements can be formal or informal, and when they are formal they are often referred to as formal partnership agreements and when they are informal, informal partnership agreements and those are usually partnerships with indigenous stakeholders. Formal partnership agreement is the engagement between a drought managing institution and other institutions like government departments, the private sector, and civil society organisations like NGOs. On the other hand partnership with the indigenous stakeholders is inclusive stakeholder engagement, (DEECD, 2011), in which the drought management institution engages indigenous people or communities of the concerned area through, approaches like bottom up approach, community capacity building and community participation and among other approaches.

2.12 Effectiveness of Engaging Multiple –Stakeholders

2.12.1 Managing Droughts in Rajasthan in India

2.12.1.1 Overview

Rajasthan is an Indian State which is located in the North western part of India. According to Bharatiya Agro Industries Foundation's (BAIF, undated) the Bundi district of Rajasthan has suffered droughts for four years that is 1999, 2000, 2001 and 2002. According to BAIF (undated) the most affected areas were Gokulpwa, Govardhanpwa, Thana and other surrounding villages. The villages according to BAIF (undated) received erratic rainfalls and extreme temperatures are common features which has negatively affected the yield of food grain in the area. In this respect BAIF (undated) specifically argued that in (1998) the watershed received only 245mm, 438mm in 1999, 399mm in 2000, 601mm including 344mm which fell over three days 2001 and 200mm in 2002. The rainfalls received therefore fell short of average normal rainfall of 508mm in Rajasthan

state districts. In addition to this he noted undulating terrain, low soil fertility, denuded wasteland with rock outcrops and high rate soil erosion were typically features of the area, have all contributed to the occurrence of droughts in four successive years. People, environment and the economy in the area also suffered severe drought impacts.

2.12.1.2 The process and stakeholders

BAIF (undated) noted that BAIF, an NGO based in Pune with the financial assistance of India Canada Environment Facility (ICEF) came to rescue the area from the impacts of successive droughts. The NGO according to BAIF (undated) engaged various stakeholders including the Gram Panchayat, Charagah Samiti; self help Groups, Micro enterprises, Nature Club, WUG irrigation, WUG Drinking and Gramsabha to form a watershed committee that would manage and implement water projects so as to fight the droughts. Other stakeholders that were involved according to BAIF (undated) include other NGOs, the government and bankers. These various stakeholders participated in the process, others received proper training required, other helped with advanced knowledge in advanced planning and designing facilities like remote sensing data GIS, expert inputs in Engineering, Geo-hydrological, Agriculture Cattle development and among others (BAIF, undated).The BAIF provided a technical field staff and resources for the project designed to combat drought. According to BAIF (undated) under the drainage line treatment, 1500 Gully plugs, 36 stone Bunds, 21 permanent check dams, 6 underground Bandar's and 13 Gabion were successfully constructed for water recharge or harvesting. In addition to this traditional and modern techniques of irrigation were improved or established.

2.12.1.3 Achievements

BAIF (undated) argues that the villages in Bundi district within the natural and social frame work has come out of the evils. He also argues that a true drought proofing model had emerged in Bundi district .BAIF (undated) found out that the wastelands have been turned into grasslands and forestry and soils have been conserved. BAIF (undated) also noted that some of these wastelands

have been converted into pasturelands. Water sources were even full in the off-rain seasons, people have gone for to cultivate basmati rice from the cultivation of basmati rice the area food production per acre has significantly increase to 25000 Rupees from 3000/- to 4000/- Rupees per acre and in 2000 and 2001 the Rajasthan region was declared drought affected but this area was eliminated from the government list of drought affected villages showing that the area has successfully prepared for the drought with effective copping strategies (BAIF, undated). The area under assured irrigation now shows a significant rise from 45% and the yield of wheat, which was 2.7 tons per hectare, has increased to 3.7 tons per hectare (BAIF, undated).

Maize production has also increased from 1.0 tons to 1.9 tons per ha. According to BAIF (undated) the India Remote sensing satellite images show that the impacts of the droughts to the social, economic and environment sector have been significantly dealt with. The work can be attributed to BAIF and various/multiple stakeholders that were involved in transforming Bundi village into drought proofing area. Therefore the involvement of multiple-stakeholders is beneficial in the management of the droughts .since it can ensure successful fights against the creeping hazard.

2.13 Chapter Summary

The chapter has reviewed literature that is successfully defining what a drought is, its causes, and impacts. The chapter has also reviewed the drought management approaches which are proactive and reactive management approaches. The experiences of Bundi district in Rajasthan has also been captures in the literature review to solidify the strength of the study. The next chapter specifies how the researcher obtained the information. It deals with the research design, study area, sampling methods, data collection instruments, data presentation and data analysis.

CHAPTER III

RESEARCH METHODOLOGY

3.0 Introduction

This chapter provides the research methodology which outlines how the research was done so as to find ways that close the gaps that have been identified in chapter one and two and it bridges this research to chapter four of the findings. The way in which a research is conducted may be understood in terms of the research methodology adopted, the research design that the researcher utilises, and the research instruments used to achieve the aim of the research – that is to achieve the research objectives by answering research questions.

The purpose of this chapter is to discuss the research methodology that the research subscribed to, provide a description of the research design that was used for the research as well as justifying its selection and highlight the target and sample population. This chapter looks at the sampling methods as well as sampling techniques that were used. It shall also be the purpose of this chapter to introduce the research instruments that were used to make the research a success. This chapter also discusses the validity and reliability and the pre-test aspects of the research. The last part of this chapter expounds the data collection procedure that was followed, provides an explanation on data analysis and presentation as well as highlighting research ethical considerations that were upheld by the researcher during the time of the research and then closes with a chapter summary.

3.1 Research methodology

Research methodology refers to an analytically technique of resolving a study problem and it can be understood as a discipline of learning how a research is exactly done (Kothari, 2004). In this light Rajasekar et al. (2013:5) argue that it is, “essentially, the procedures by which researchers go about their work of describing, explaining and predicting phenomena…” Rajasekar et al. (2013) further argues that it is the study of techniques through which knowledge is obtained and its main

objective is to give a work plan for the study. A research methodology is therefore a study and/or a systematic analysis of the methods that a researcher uses to gather data and information which aids a researcher to create a new body of knowledge in his/her field of study. Hence, the research methodology of this research was be built around the most suitable, relevant, accurate and efficient methods which were enough to identify effectual drought management processes, impacts of a drought, assess the capacities of DDRC, strength of drought response mechanisms and assessing methods of engaging various stakeholders in managing drought in Mutoko District. Research methodology has different dimensions and research design is part and parcel of it.

3.2 Research design

This is an inclusive plan for data gathering in a practical research project (Bhattacherjee, 2012). A further argument by Bhattacherjee (2012) pinpoints that a research design is a 'blueprint' for a practical research which is meant to provide answers to research questions or to test specific assumptions of the study. Research design is therefore, a structured plan which is arranged in a specific manner to aid the collection of data aimed at answering research questions. This research revolved on three important processes of a research design that were put forward by Bhattacherjee (2012) which are (1) the data collection process, (2) the instrument development process, and (3) the sampling process. This means that the research design was responsible for the logistical arrangement to carry out this study.

The primary concern of this research was to assess the innovative ways of engaging stakeholders in the management of droughts in Mutoko district. The researcher has used the interpretive data collection method (which according to Bhattacherjee (2012) employs an inductive approach that starts with data collection and tries to derive a theory about the phenomenon of interest from the observed data) which relies heavily on qualitative data. Specifically the researcher has used the qualitative research design/technique because much of data to be obtained was qualitative in nature – that included interviews data, observations data and among other non numeric data which

depended on human perceptions. The researcher did not however abandon the quantitative technique as this method would aid the research with proven, valid and reliable structural depth and statistics.

3.2.1 Qualitative study design

Kumar (2011) portrays a qualitative research as a "research which is based upon philosophy of empiricism, follows an unstructured, flexible and open approach to enquiry, aims to describe than measure, believes in in-depth understanding and small samples, and explores perceptions and feelings than facts and figures". Kumar (2011) further argues that a qualitative method is less specific and precise, and do not have the same structural depth as quantitative methods, but it however focuses on specific issues like understanding, explaining, discovering and clarifying situations, perceptions, attitudes, values, beliefs and experiences of a group of people. A qualitative approach therefore subscribes to non complex and non numeric methods of researching.

As mentioned in 3.2 this research mainly followed the qualitative way and the qualitative research design that this research followed provided room for interpretive and descriptive techniques which helped to interpret and describe the behaviour of people towards management of droughts in Mutoko district. The researcher also analysed, interpreted and described observations. Specifically the qualitative study design for this research was anchored with interviews, focus groups and observations. The qualitative method was therefore used because it suited the nature of the research and because of its advantages over the other option.

According Barker et al. (1995) as cited in Matachi (2013) reasons for choosing the qualitative methods include:

- Its ability to enable a researcher to do in depth and in detailed studies,
- The researcher can explore three fields of study, specifically the affective, cognitive and psychomotor spheres of influence,

- The researcher can probe and dig deep into the mind of the respondent in order to clearly understand a given phenomena,
- The researcher is able to study the more complex aspects of people's experiences for example the experience of people in Mutoko district,
- There are fewer restrictions on the data underlying theoretical models,
- Issues which cannot be qualified can still be explored for example empathy, and
- It is easy to understand because it does not necessarily need statistical analysis.

According to Barker *et al.*, (1995) as cited in Matachi (2013) the disadvantages of the qualitative research design are as follows:

- It is time wasting and costly especially when conducting interviews.
- Data analysis is time costly mostly when open ended questions are used.
- Data analysis is not as explicit as in quantitative research because it does not necessarily deal with quantities.
- Analysis of qualitative data is through conceptualisation.
- Conceptualisation assumes subjectivity and can be tricky to an inexperienced researcher.

3.2.2 Quantitative study design

Kumar (2011) suggests that a "quantitative research is a second approach to inquiry in the social sciences that is rooted in rationalism, follows a structured, rigid, predetermined methodology, believes in having a narrow focus, emphasises greater sample size, aims to quantify the variations in a phenomenon and tries to make generalisations to the total population". A quantitative research design is therefore structured or planned in Kumar's (2011) way. As Kumar (2011) suggests that quantitative study designs are specific, well structured, have been tested for their validity and reliability, and can be explicitly defined and recognised, this researcher has also fused the quantitative study methods in this research. In this case the researcher has used questionnaires to carry the quantitative connotations of this research

In light of the above the researcher has used a mixed method design. The research design was therefore an essential component of this research as it helped the researcher to learn the facts pertaining problem identification and select useful materials and aspects of this research – for example identifying the target population, the necessary sampling techniques, proper judgement and selection of the data collection methods and outlining the sequence of the research.

3.3 Target population

In research, population is a collective term which refers to a collection of all elements that are being studied for example people, animals, plants, insects and/or organisations. A population in research is not only measured in terms of people. Kitchenham and Pfieeger (2002) defines target population as the group or individuals to whom the research or survey applies – that is groups or individuals who are in a position to answer the questions and who the results of the survey apply. The, "…target population…" of this research therefore was, "…a finite list of all…" people of Mutoko district because the survey was concerned with Mutoko district (Kitchenham and Pfieeger, 2002:17). The target population was 2649, an approximate number of house heads living in the selected wards. This target population did not only include people from the three wards but it also included 20 key district informants – the council chairman, heads of departments from the District Administrator's office (DA), Agricultural Technical and Extension services (Agritex), Livestock Production Department (LPD), Veterinary Services Department (VSD), Department of Social Services, the Grain Marketing Board (GMB), the Chief Executive Officer and Executive Officer Social Services of Mutoko Rural District Council (MRDC) and representatives from NGOs. The chairman of the Mutoko Farmers Association was also part of this population. All Mutoko district chiefs and some village heads, councillors and agritex officers were also part of the target population. The target population for this research comprised of both male and female in the study area.

3.3.2 Sampling

Mugo (2002:1) postulates that sampling is an act, a process or a "technique of selecting a suitable sample, or a representative part of a population for the purpose of determining parameters or characteristics of the whole population". A sample is therefore a set of respondents selected from a larger population for the purpose a research survey (Mugo, 2002). In this research, the researcher obtained data and information from a sample, "rather than a complete enumeration (a census)…" of the whole population due to a number of reasons (Mugo, 2002:1). Firstly sampling was cost effective (cheap) and time economical for this research as opposed to the census method which if it was used could have been costly and time consuming because every element must be reached. Sampling was not exhaustive as compared to the census method which would be tiresome as it demands the researcher's energy through a door to door approach. Thirdly and lastly the sample provided more accurate data to this research as the researcher obtained an amount/quantity of data which was manageable than lots of data which could be generated through the census method.

3.3.2.1 Sampling framework

Mutoko district has a total of 29 wards with a total population of 145 676. Out of 29 wards some are heavily affected by droughts and others are not. The researcher has partitioned these wards into two zones – that is grouping the heavily affected on their own and the rest on their own as well. Out of the most affected wards the researcher has studied three wards which are ward fourteen, fifteen and eighteen. The researcher proposed to study these wards because they were among the drought prone wards of Mutoko district. In addition to this the wards are close to each other which allowed the researcher to easily study them without bearing any costs like transport costs. The researcher has also selected four villages to study from each ward.

From each village three households were selected to be informants for the research. A simple random sampling – in which the researcher randomly selected household respondents – was used to get household respondents. This means a total of twelve householders per each ward equalling

thirty six householders from all three wards were targeted respondents for this research. Traditional leaders were stratified into chiefs and village heads strata and nine village heads were targeted from the study villages through the simple random sampling technique. Simple random sampling was put in place to select two agricultural extension workers (Agritex officers) from each ward, and purposive sampling was employed to select a ward councillor of each of the three wards as key informant to provide ward data. This means the total sample size for each ward was made of about nineteen respondents. This translates to fifty four respondents for all three wards.

For this research, research questionnaires were distributed to Key District Informants (KDIs). KDIs were obtained through purposive sampling from institutions which are part and parcel of the drought management team in Mutoko district which include government line ministries, NGOs, parastatals that make up the DDRC and other institutions. A total of fifteen KDIs will therefore be obtained through purposive sampling. All four chiefs in the district were also contacted – and purposive sampling was used to target chiefs. The researcher targeted fifteen KDIs inclusive of the district administrator's office, MRDC and AGRITEX department. The total sample size for this research therefore translated to seventy two respondents.

3.3.3 Sampling methods

3.3.3.1 Probability and Non – probability sampling

The sampling techniques used in research spring from two sampling methodologies, namely probability and non probability sampling methods. All probability sampling techniques use the random system of selecting respondents which increases the chances of any member of the study population to participate in a study. On the other hand non probability has techniques which uses a non random system to choose the respondents and this means every element does not have the chance to be chosen. In this research both probability and non probability methods were used. Stratified sampling and simple random sampling follows the probability method whereas purposive sampling follows the non probability method.

3.3.4 Sampling techniques

3.3.4.1 Stratified sampling

Stratified sampling was used both as a probability and non probability technique. Stratified sampling is a technique in which a researcher divides the population into subgroups (strata) based on mutually exclusive criteria, and then samples are randomly or systematically taken from each group (Westfall, 2008). This means that the researcher divides a heterogeneous population into homogeneous small units and selects a sample from each group using a random procedure. In this research a stratified sampling technique was therefore used. As can be seen from table 1.3 the sample for the research was taken from various strata – which were stratified in terms of their common characteristics – to which a simple random or purposive sampling technique was used to get the actual respondents. Stratified sampling was also used for selecting traditional leaders who were further put into chiefs and village head strata. Simple random sampling was used to get samples from householders, traditional leaders and agricultural extension workers as it is explained in 3.3.2.2. It is very interesting to note that an element of judgement/purposive sampling was used in stratifying these strata. This researcher has used stratified sampling because:

3.3.4.1.1 Advantages of stratified sampling

- It would reduce the sampling errors for it would be representative and inclusive of all elements of the study. In other words any person had the opportunity to be selected.
- It would make the process of administering the survey very easy as focus was to be made on identified strata. In other words it was administrative efficient.
- It would help to improve the precision of the estimates.

The researcher was going use stratified sampling sparingly because it could cause complexities to the researcher for example:

3.3.4.1.2 Disadvantages of stratified sampling

- It would draw much of the researcher's energy and time to properly classify the strata. The researcher has used the knowledge acquired during the work related learning period to determine homogeneous groups in the district. This helped to serve energy and time.
- Sampling errors could go unnoticed since some groups that represent particular portions of the population could be omitted unknowingly from the research. The researcher also used work related learning knowledge and consulted key informants to ensure that all groups were represented.
- It was difficult for the researcher to balance time of studying all strata and lectures. The researcher has capitalised on free time to do the research specifically the semester break.

3.3.4.2 Simple random sampling

According to Kothari (2004) this is a probability sampling technique in "which each and every item in the population has an equal chance of inclusion in the sample and each one of the possible samples, in case of finite universe, has the same probability of being selected". In other word O'Leary (2010) specifies that Simple Random Sampling (SRS) involves identifying all elements of a population, listing those elements and randomly selecting from list. The advantage of SRS as according to O'Leary (2010) includes the fact that it would be fair and allow generalisation. It is very easy to use than other techniques. O'Leary (2010) also captures the disadvantages of SRS being that the process of identifying, listing, and randomly selecting elements is unfeasible and the resulting sample may not capture enough elements of particular subgroups you are interested in studying. For this research simple random sampling was used to get respondents from householders and Agritex officers. The researcher has obtained the lists of these elements from the ward councillors. The researcher specifically used a fishing bowl to pick numbers and if for example card number 5 is picked it meant the person who was number 5 on the list provided by the councillor would participate in the research.

3.3.4.3 Purposive sampling

Purposive sampling was used to target and select district key informants like the DDRC members and traditional leaders (chiefs) because the researcher assumes that these groups hold much of the data on the management of droughts required by this research which also cover a wider area. Purposive sampling follows the non probability method. O'Leary (2010) views this as handpicking sampling – selection of a sample with a particular purpose in mind. This technique is also referred to as judgemental sampling by Marshall (1996) and to him it is a process by which sample population is acquired through the discretion given to a particular group or individuals of the population by the researcher because they hold information of the target population that is required by the researcher. The researcher opted to use this technique because accurate data would be timely obtained. The researcher however used this technique cautiously to avoid a high risk of sampling error which is highly probable with this technique because if wrong groups were targeted and selected wrong information would be obtained.

3.3.5 Sample size

Sample size is the actual number of elements that would be selected from the target population to provide data for the research. The total sample size for this research was seventy two and it is shown in table 3.1.

TABLE 3.1: SAMPLE SIZE

Category	Target population	Sample size	Sampling Technique
Householders	2598	36	SRS
Traditional Leaders			
• **Chiefs**	4	4	Purposive Sampling
• **Village Heads**	12	8	SRS
Agritex officers	12	6	SRS
Councillors	3	3	Purposive Sampling
KDIs	20	15	Purposive Sampling
Total	**2649**	**72**	

3.4 Research instruments

Wilkinson and Birmingham (2003) defines research instruments as devises for obtaining information relevant to your research project. According to Wilkinson and Birmingham (2003) there are many research instrument and no single one is par excellence. As such, since Annum (2014) argues that the validity and reliability of any study always and extremely relies on the accuracy of the research devises, this research extensively used four of them – questionnaires, interviews, focus groups and observations – so that they could complement each other to make sure adequate and accurate data was attained from the sample population. These are often called primary data sources. Secondary data instruments (readings) were regularly consulted as well. These instruments have largely assisted the researcher to get data about practices, situations and views concerning drought management in Mutoko district.

3.4.1 Primary data sources

3.4.1.1 Questionnaires

Annum (2014) argues that a questionnaire is a document which is methodically planned containing a set of sequential questions intentionally created, to obtain answers from research informants, principally for data collection purposes. These questions in a questionnaire provide clear depiction of the research problem being investigated (Annum, 2014). According to Wilkinson and Birmingham (2003) three broad types of questionnaires are, mail survey (delivered through mail and responses are sent back by mail), the group administered questionnaires (used to collect data from groups) and household drop – off survey questionnaires (delivered by the researcher by hand to identified household/respondents and can be collection on a specified date). In addition to this questions in a questionnaire can be structured (closed form questions) or unstructured (open ended questions). This means a questionnaire can be a structured or structured questionnaire if it contains only structured or unstructured questions respectively. A questionnaire can however have a mixer of these questions (a mixed questionnaire which was used in this research).

According to Annum (2014) structured questionnaires basically contain short questions which require a 'yes' or 'no' answer, or ticking/marking a point(s)/an answer(s) on a set of responses provided or alternatives from which an informant chooses a response closer to his or her view. These are also referred to as close ended questions. On the other hand unstructured questionnaires contain open ended questions which allow respondents to provide responses in their own expressions (Annum, 2014). In unstructured questions the respondent expresses opinion from a set of alternatives and can make their input in the spaces provided (Annum, 2014). The questionnaire used for this research were group oriented and mixed questionnaire in nature – that is they contained both structured and unstructured questionnaires. A sample questionnaire for this research is shown in Appendix I. For this research a total of twenty questionnaires were crafted. Six of them were distributed equally to Agritex officers in the three wards and fourteen to KDIs.

The researcher has used questionnaires because of the following reasons and advantages. Questionnaires would:

- facilitate this researcher to collect vast amounts of data from a number of respondents with minimal effort,
- help the researcher to identify relationship between data if he manages to well – design them,
- help the researcher to protect the respondents' anonymity as they would be distributed secretly without anyone identifying the informant,
- help the researcher to conduct data analysis extremely quick with low error rates if the researcher appropriately codes them, and
- Allow the researcher to retain control over the research, directing how the study would be executed through providing guidance to research participants on particular issues (Wilkinson and Birmingham, 2003).

- Questionnaires would also extremely serve the researcher's time since he would have no dialogues with the respondents.
- The collection of these questionnaires would be easy as they can be simply posted.

Despite these advantages the researcher used questionnaires cautiously for a number of reasons.

- Firstly, easy production and distribution associated with questionnaires would result in collection of more data than the researcher can effectively use that is if the researcher does not take note of it, – to overcome this the researcher has generated a manageable number of questionnaires and used other research instruments –
- secondly there would be more questionnaires of other researchers and other activities competing for the respondents' time – thus some questionnaires would not be returned and others would retain half filled meaning the researcher would get superficial data, – to overcome this the researcher has distributed questionnaires in time so that respondents would have enough time to respond – and
- thirdly with questionnaires the researcher was likely to face costly expenses for example following up through phone calls and travelling to the respondents needs money and/or other means of 'chasing' the respondents (Wilkinson and Birmingham, 2003) – to overcome this the researcher upon the distribution of questionnaires made appointments for the actual dates and time to which the questionnaires would be collected.
- Fourthly, the researcher faced costs associated with printing questionnaires; as such inadequate questionnaires were to be printed for the research meaning the validity and reliability of the research was to be compromised. The researcher sought adequate funds for the whole research and has used them effectively, efficiently and economically.
- Fifthly, questionnaires would not provide a room for face – to – face interaction with the researcher so as to seek clarification on certain issues or to unearth well – substantial

farfetched data. Questionnaires were complimented with interviews which have done further probing from other respondents.

- This sixth factor is that, in this research, questionnaires would be difficult to apply to illiterate and physically handicapped people who are not able to read and write. Focus group discussions, interviews and observations complemented questionnaires to overcome this problem.

This researcher has however provided for these challenges as manifested by the contingency measures provided against each challenge which were used. In other words countervailing measures to deal with those assumed problems were in place and were used to get the best results. One of those solutions the researcher used was to compliment questionnaires with observations, focus groups and most importantly interviews.

3.4.1.2 Interviews

According to Annum (2014) an interview is an interaction between an interviewer and interviewee in which the interviewer orally asks an interviewee a set of questions to obtain data. This researcher has orally asked carefully prepared questions to get data from the respondents. There are two main kinds of interviews namely structured and unstructured interviews. An interview also varies from formal to less formal and absolutely informal according to Annum's (2014) argument. Structured interviews are formal interviews which contain a set of questions often referred to as interview questionnaires which are posed to each interviewee visited and the responses are recorded on a standardised schedule (Annum, 2014). With structured interviews the researcher follows a set pattern and adheres to the prescribed order as he or she go by the process of interviewing argues Annum (2014). On the other hand Annum (2014) says unstructured interviews are less formal interviews, in which – although sets of questions may be followed – the interviewer may not follow the chronological order of questions and may be flexible enough to make adjustments to the phrasing of question so that they are understood by all respondents. This

researcher has used both systems to elicit data from respondents. A sample of an interview guide for this research is shown in Appendix II. A total of sixteen interviews were expected to be conducted by this researcher; three of them with each of the ward councillors, one with the district administrator and twelve with the traditional leaders (chiefs and headmen or village heads).

This researcher has found interviews worth carrying out;

- because of the indirect involvement of this researcher, it was highly probable that 100% response rate would be achieved,
- because this researcher would have an opportunity to ask follow up questions which would allow gleaning of any further information which would add value to the research,
- Because some of the respondents would find an interview as an opportunity to voice their opinions and because they were expected to provide vast amounts of data for analysis (Wilkinson and Birmingham, 2003).
- Unlike questionnaires, interviews would be conducted with the illiterate and physically handicapped people thus they would reduce sampling errors by being representative of all people.
- Interviews would also give the researcher more room to control and keep the data on course by panel beating and directing the questions in a proper way.

This researcher has carefully used interviews because they would prove to be challenging.

- Firstly the data eliciting process would be spoiled and accurate and adequate data would not be retained if the researcher fails to be a good interviewer, – the researcher has read books and inquired from experts (lecturers) on how to effectively conduct an interview –
- In addition to this acquiring good interviewing skill could be costly in terms of money and time as the research has to commit some of his money and time in acquiring good interview skills (Wilkinson and Birmingham, 2003) – the researcher has used free space of time to acquire these skills, used books, the internet and consulted lecturers to avoid costs.

- The interviews themselves would also be time costly as the researcher had to spend time with the respondents – some of them were be rib crackers who would tell beautiful and interesting stories that would misdirect the research, – the researcher controlled the research by avoiding getting too much into non research related matters.
- data generated through interviews would be difficult to analyse, – to overcome this the researcher had to read extensively on how to easily analyse interview gathered data –
- Some few interviews would be done in vernacular *'Shona'* language (mostly understood by respondents) and they needed to be translated to English and this would be labourous and could be wrongly done, – the researcher has done this simply since the researcher knows both languages and also used knowledge obtained from communication skills –
- Lastly the interviews would easily deviate from the main topic if the researcher does not strictly control them (Wilkinson and Birmingham, 2003). The researcher constantly referred back to the research questions and objectives to avoid meandering.

This researcher has devised the above contingency measures against each of the above problems and focus group as a research instrument was used to compliment questionnaires, observations and interviews to ensure the validity and reliability of this research was achieved.

3.4.1.3 Focus groups

This research has also used focus groups to elicit data from respondents. Kumar (2011) argues that a "focus group is a form of strategy in qualitative research in which attitudes, opinions and perceptions towards an issue, product, services or programmes are explored through a free and open discussion between members of a group and the researcher". Kumar (2011:386) further asserts that a focus group is a facilitated group discussion in which a researcher raises matters or asks questions that, "…stimulate discussion among members of the group". Kumar (2011) further argues that the researcher selects groups of people who h/she assumes are best equipped to discuss and give data that the researcher wants to explore. For this research, the researcher has used the

focus group instrument which allowed the researcher to elicit data in a double folded manner – that is through ***questioning*** members of the group certain questions and ***discussing*** issues with group members that would provide answers to the research and expose data that is required by the research respectively. In this respect Kumar (2011) argues that it is like collectively interviewing a group of respondents.

For this research focus groups were used specifically for rural household respondents. The researcher opted to use focus group discussions because most of the household respondents in the study area could not able to read questionnaires. In addition to this the greater number of the sample size constituted householders and interviewing them one by one would need a lot of time. Focus groups were therefore ideal for time saving as Kumar (2011) argues that they need less time to complete. Focus group interviews and discussions were planned to done with equal groups of twelve household respondents from each of the three wards. In other words the researcher's plan was to convene three focus groups – each group would contain twelve respondents. Specifically the researcher would elicit data from a total of thirty six respondents using focus groups.

The researcher assumed that focus groups would be worth carrying out because;

- They could be used comfortably to elicit data from illiterate people.
- They would be less expensive as argued by Kumar (2011). This is because there would be no costs associated with paperwork like the printing of questionnaires.
- Conversations during focus group interviews and discussions would be tape recorded and the recordings would give a guaranteed source of data which could be referred to time and again by the researcher.
- They would need less time to complete, thus according to Kumar (2011)
- Information gathered through focus groups would be detailed and very wealthy and they could be utilised to search a vast variety of information (Kumar, 2011). This is because the researcher could critically and extensively ask for information s/he wants for the research.

The researcher also expected to face challenges that were associated with using focus groups,

- Firstly if the conversations were not cautiously guided, they would mirror the views of the members who have a tendency of dominating their groups (Kumar, 2011). For example Mutoko is a patriarchal society in which male dominate female. Women have a tendency of keeping quite to let the men speak whereas they are affected by drought just like any other people. To overcome this problem this researcher has given equal opportunities to all group members to say their opinions and answer the asked questions.
- Secondly Somekh and Lewin (2005) found another weakness being that, it is very difficult to ensure confidentiality with focus groups and people may fear to disclose information which is confidential but vital for the research. To trounce this weakness this researcher has reserved sensitive issues for other instruments which would keep the anonymity of the respondents like one – on – one interviews and questionnaires.
- Thirdly, the researcher assumed that focus groups were capable of diverting the focus of the research from the right track since people would bring forth interesting issues whose irrelevance to the research could not be obvious. To overcome this challenge the researcher kept on referring to the research objectives and questions in order to drive back respondents to specific issues required of the research.
- The forth aspect is that the researcher assumed that focus groups were going to be time costly as some of the group members would be too much critical, arguing useless arguments and pompous – behaviours – which would be time wasting. To overcome this, the researcher was intervening to give equal opportunities to all members.
- Fifthly and lastly, the researcher assumed that it was to be a ‘no easy task’ to gather respondents together. To overcome this problem the researcher has sought assistance from local leaders and other people who work on the ground who possessed standing skills and methods of gathering people in their area. The researcher also took advantage of meetings that took place concurrently with the time the research was convened.

The researcher has also used observations to compliment questionnaires, interviews, and focus groups to ensure that data was obtained timely and accurately as to ensure research validity and reliability.

3.4.1.4 Observations

An observation is a research instrument "characterised by a prolonged period of intense social interaction between the researcher and the subjects, in the milieu of the later, during which data, in the form of field notes, are unobtrusively and systematically collected" – that is Bogdan's (1972:116) argument as cited in Wilkinson and Birmingham (2003). This research instrument involves the researcher watching or listening to an interaction or event from the study elements at the same time taking down notes. This can be done by the researcher being a participant or a non participant observer. Participant observation is when the "researcher lives as a member of the subjects of the study while observing and keeping notes of the attributes of the subject that is being researched so that he can directly experience, the phenomenon being studied" (Annum, 2014:3). Conversely, non participant observation is the approach in which the researcher does not become an active member of the subject of the study (Annum, 2014). This researcher has used non participant observation, because drought management activities like drought management meetings which would allow the researcher to be a participant observer did not coincide with the study. The researcher has observed pictures and the prevailing circumstances. The researcher also observed the impacts of droughts, the drought management systems in place, report, minutes, and meetings taking place and among other items which are shown in the observation checklist (Appendix III). Secondary data sources are therefore essential for observations. The researcher has used observations concurrently with other research instruments.

The advantages that the researcher profited from using observations, include the fact that;

- the researcher obtained firsthand experience with informants (Annum, 2014),

- The researcher was able to elicit sensitive information that the informants did not want to disclose – bias data was therefore reduced.
- The researcher collected data at the time the observation occurred and did not have to rely on the recall of participants or their interpretation of events (Gray, 2009) – which could be forgotten ending up in respondents giving erroneous data.
- The researcher has triangulated the observations with other research approaches, such as interviews and questionnaires as suggested by Gray (2009). As such this has saved time.
- The researcher required technological methods to record observations for example taking pictures and videos which the researcher easily referred to which could also be used for long time and future references.

In opposition of this the researcher needed to be careful with observations as,

- they could grind much of the researcher's time since there was need to determine what need to be observed, create an observation checklist and do the actual observation, and to overcome this, observation preparations were done concurrently with other activities and methods when the researcher was planning other activities and actual observations were done as the researcher was moving from one village to another.
- data which mirrors the direct opposite of the population could be obtained since the respondents would pretend their roles to impress the researcher, – to overcome this the researcher had thoroughly explained research significance to the respondents – and
- Limited data could be obtained as the respondents would think the researcher has a hidden agenda other than researching. The researcher has clarified it to the respondents that he did not have hidden purposes but was determined to undertake an academic research.
- Some of the events that the researcher intended to observe did not occur during the time of the research causing lots of data to be missed. To overcome this problem the researcher has

used other instruments to elicit data which was intended to be collected through observations.

- It was difficult and costly to acquire technological devises like video and digital cameras as researcher intended to take photos. To overcome this, the researcher has borrowed the devices from those who possessed them.

3.4.2 Secondary data sources

FEP (undated) describes secondary data as data which has already been collected for purposes other than the problem at hand. To Livesey's (2006) understanding, secondary sources of data involves the researcher using data that already exists which has also been produced by other people. This type of data can be in form of numeric or non numeric and for it to fit neatly in the research the researcher needs to make slight adjustments which however do not change the meaning of the data. Secondary data can also be published or unpublished. For this research it was highly probable that the researcher was going to use secondary data. It was also obvious that the researcher was to acknowledge this data. The research made use of relevant and regularly updated websites. The researcher expected that this kind of data would help him to understand the primary data that was gathered. As the researcher assumed, this data was located quickly and inexpensively (FEP, undated). The researcher has planned to retrieve this data from DDRC committee minutes and reports, NGOs research reports, Zimbabwe Vulnerability Assessment Committee reports, Food and Agricultural Organisation reports, the District Administrator's office and the Rural District Council reports and records and among other secondary sources. The researcher also knew that this data could however be obsolete, biased and shallow.

3.5 Validity and reliability

3.5.1 Validity

Degu and Yigzaw (2006:44) conceptualise validity as the "degree of closeness between a measurement and the true value of what is being measured". Validity is therefore the relationship

between the results that the instruments of this research yield and the actual situation that will be measured. In this respect Miller (undated) pinpointed that "validity is the extent to which the instrument measures what it purports to measure". The research instruments used by this research elicited data that gave a correct measurement and/or give a true picture of what was really on the ground in Mutoko district. In other words the research instruments provided fair and correct data that would not mislead any users of the outcomes of this research. A pre-test was carried out to test the validity of research instruments – that was to determine if they were providing appropriate answers for research questions provided in 1.4.

3.5.2 Reliability

Reliability according to Degu and Yigzaw (2006:44) refers to the repeatability of a measure that is "the degree of closeness between repeated measurement of the same value…" and it is a concept which addresses the question, if the same thing is measured several times, how close are the measurements to each other? In this respect reliability is concerned with the consistency of the research instruments in giving similar results if the study is repeated under the similar circumstances. The research instruments for this research were deemed appropriate and reliable as they were structured in a simpler way understandable to any respondents that was chosen.

3.6 Pre – test

After the researcher has finished designing the research instruments the researcher has tested them before using them for actual data collection as prescribed by Kumar (2011). Kumar (2011) understands pre – testing as a process which entails a preliminary and critical examination of the understanding of each question or aspect in a research instrument and its meaning as understood by the respondents. The questionnaires, interview and focus group questions designed for this research were pretested with co – students so that:

- Their validity, reliability and effectiveness were determined.
- The appropriateness/inappropriateness of the questionnaire/questions was determined.

- Ambiguities in research instruments were identified and necessary adjustments were made.
- It was determined as to whether the main research would be a success or failure.
- A research procedure was established and its workability was tested.
- Preliminary data was gathered and measurement to the proposed data analysis techniques was made.
- Time and budget required in the main study was estimated.
- Problems that the potential respondents would have in either understanding or interpreting questions were known (Kumar, 2011).

The data gathered in the pre test for this research was not analysed nor presented in chapter IV of this research so as to avoid lying and data fabrication which is immoral in term of research ethics. The researcher used actual respondents in the actual study area to evade breach of research ethics.

3.7 Data collection procedure

Before collecting data, the researcher sought the permission to conduct a research in Mutoko District from the District Administrator – the highest authority in the district. After the researcher was allowed to carry out the research the researcher asked for permission to carry out the research from each of the institutions and people concerned. In doing all this the research would start by introducing himself, presenting a letter from the institution which confirmed that the researcher was a registered Midlands State University student seeking permission to conduct a research in the district. The researcher also explained the purpose of the research to all respondents so that they would fully understand the motive of the researcher. The researcher also clarified to the respondents the matters of note taking and respondents' confidentiality. After this was clarified, the research started eliciting data from the respondents using the designed research instruments.

The researcher prepared a time management chart which specified time and dates/days at which all activities like distribution and collection of questionnaires, carrying out interviews and observations were done. For the interviews and observations data was collected through note

taking at the same time ensuring that the two processes were performed. After the researcher had collected data he kept all the data on a safe and single place to make it ready for analysis and presentation.

3.8 Data analysis and presentation

Statistics Canada (SC), 2009) defines data analysis as a strategy of coming up with answers to research questions through thorough assessment, investigation of data using an interpretive approach. This process was done by this researcher and it involved sieving, cleaning and omitting unusable and irrelevant data that this researcher has collected. Unusable data is that data which does not answer the research questions of the research. This process also involved identifying usable or suitable data which provided answers to the research questions. To make this process simple the researcher has coded or categorised data into matching components. After processing data, the research presented the data in a narrative or tabular, graph, diagram or chart form. The researcher also used Microsoft Word to narrate findings and Microsoft Excel to create graphical presentations. The research also used simple narrative language and graphical presentations so that the results of the research would be easily understood by all audiences.

3.9 Ethical considerations

Ethics is generally defined as a set of rules, norms or standards that guides the moral conduct and the way in which a person behaves. In research a researcher should be ethically upright so that the research is credible, valid and reliable. There are a number of reasons as to why this researcher needed to adhere to ethical research standards. Firstly, ethical research standards have helped the researcher to promote the aims of the research, such as knowledge, truth and error avoidance – because they prohibit against fabrication, falsification or misrepresentation of data research, secondly research ethical standards have promoted trust, accountability, mutual respect and fairness by the researcher through research norms like copyright policies and confidentiality rules,

thirdly the norms would also make the researcher answerable to the public which helped the researcher to avoid acts of misconduct and to respect human rights (Resnik, 2011).

In this research the researcher has subscribed to Shamoo and Resnik (2009) – research codes of conduct – cited in Resnik (2011), which are; honest, objectivity, confidentiality and non discrimination so that this research would attain a highest measure of validity and reliability. Specifically the researcher had acknowledged information borrowed from other people's works to avoid copyright infringement, avoided bias in selecting respondents and in data presentation, protected confidential information through avoiding capturing information that the respondents did not want to be published in the research and avoided the use of names of respondents. All this has helped the researcher to uphold research ethics.

3.10 Chapter Summary

This chapter showed the research design used for the study and that the research used a mixed research approach. A descriptive research design was used to assess the impacts of engaging stakeholders in the process of managing droughts in Mutoko district. The target population for the research – which was 2649 – has been flaunted as well as the sample size of 72 respondents. This chapter has also introduced, explained and justified the sampling techniques that were used to get specific respondents for the research. This chapter also highlighted and expounded the research instruments – questionnaires, interviews, observations and secondary sources – selected by the researcher to elicit data from the respondents. In this chapter the researcher also justified the selection of each instrument and shows their rationing to the study population – that is twenty questionnaires were to be distributed and sixteen interviews were to be conducted. A pre - test was also done and research ethical standards were respected so as to achieve the credibility of this research. The data gathered was also critically examined and purified before it was presented. After the data was processed it is evident in this chapter that it was presented in simple narrative and graphical representation forms which are easy to understand for the audiences of this study.

CHAPTER IV

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.0 Introduction

This chapter presents, analyses and interprets the data that the researcher has collected from the respondents and research field through primary data collection instruments (questionnaires, interviews, focus groups and observations) and secondary data sources (reports, meeting minutes and other published and unpublished literatures). The data for this research was elicited form householders, traditional leaders, Agritex officers, councillors and key district informants to determine innovative ways of engaging stakeholders in managing droughts in Mutoko District. In this chapter data is presented in the form of tabulations – that is tables, charts, pictures and graphs – figures and narratives which easy the understanding of data by various users of the findings. Responses and findings will also be expressed in percentages which measure them in a uniform and standardised manner.

This section of the research also discusses the research findings relating them to literature provided in chapter II and research objectives of this research. The interpretation, analysis and discussion of the research results done in this chapter will provide a base from which research conclusions and recommendations are made to cover the gaps that the research has identified in the way droughts are managed in Mutoko District. Problems faced in managing droughts and suggestions provided by respondents will be discussed before a summary of the data presented, analysed and discussed closes this chapter.

4.1 Response rate

Response rate is the actual number of the population that participated in the research against the sample size. A higher response rate minimised the risk of response bias and it increased the

validity and reliability of the research results. The table below summarises the response rates for questionnaires, interview and focus groups.

TABLE 4.1 RESPONSE RATES FOR QUESTIONNAIRES, INTERVIEWS AND FOCUS GROUPS

	Population	Sample size	Response	Response rate
Questionnaires	KDIs	14	10	71%
	Agritex Officers	6	6	100%
	Total	**20**	**16**	**80%**
Interviews	Traditional leaders	12	12	100%
	Councilors	3	3	100%
	KDIs	1	1	100%
	Total	**16**	**16**	**100%**
Focus Group Discussion	Householders (ward 14)	12	10	83%
	Householders (ward 15)	12	8	67%
	Householders (ward 18)	12	12	100%
	Total	**36**	**30**	**83%**

Source: Research data (2014)

Out of 20 questionnaires handed out to key district informants and Agritex officers a total of 16 have been responded to. 4 of the questionnaires have not been returned. This translates to 80% of the questionnaires returned. 16 of all the interviews that were scheduled to be carried out with traditional leaders, councillors and the district administrator have been carried out – that is 100% response rate for interviews. Lastly, of the total 36 householders who were supposed to participate in 3 focus groups, 83% of them have participated (that is 30 out of 36). Each focus group had an average of 10 respondents. Specifically the first group had 10 respondents, the second had 8 and the last had 12 respondents. Therefore the focus groups were adequate since Wilkinson and Birmingham (2003) argued that an ideal focus group should not have fewer than four and more than twelve participants.

TABLE 4.2: TOTAL RESPONSE RATE

Sample Size	Participated Respondents	Response Rate
72	**62**	**86%**

Source: Research data (2014)

Out of a sample size of 72 respondents only 86% - that is 62 respondents - have participated in this research. The response rate is quite large enough to thwart response bias – hence the research results are valid and reliable.

4.2 Research Results

4.2.1 Respondents Details

TABLE 4.3: SEX OF RESPONDENTS

Sex	Number of Respondents	Percentage
Male	39	63%
Female	23	37%
Total	**62**	**100%**

Source: Research data (2014)

Out of a total of 62 respondents 39 (63%) of them were male and 23 (37%) were female. All of the 12 traditional leaders interviewed were male, 12 of the 30 householders were female, 5 of the 6 agritex officers were female, 2 of the 3 councillors were male and lastly 5 of the 11 key district informants were female. The sex of respondents has had influence on some of the responses for example on questions like which group of people is most affected by droughts. Most women householders pointed out that women are affected more by droughts than men. The influence of gender on finding will also be seen when household coping strategies are discussed later in this chapter.

TABLE 4.4: AGE OF RESPONDENTS

Age Group	Frequency	Percentage
Below 18 years	0	0%
From 18 – 30 years	24	39%
From 31 – 40 years	20	32%
From 41 – 50 years	12	19%
From 51 – 60 years	3	5%
Above 60 years	3	5%
Total	62	100%

Source: Research data (2014)

From table 4.4 it is clear that the majority of the respondents are between the age of 18 and 50 (constituting 90% of the total respondents). The population between these ages is economically active according to Waugh (2009). This is the group which included most people who are working in the district to which almost all of them are DDRC members. The age group of 18 – 30 years had 39% of the respondents, 31 – 40 years consisted 32%, 41 – 50 years consisted 19%, 51 – 60 years and above 60 years consisted 5% each. The age of below 18 years had 0% respondents. This means that data was elicited from mature people who provide prudent and objective data. Age of respondents had assisted in some areas of the research, for example when respondents were discussing about traditional drought early warning systems one of them argued, ”elders knows it better than us”. Elders surely provided this information when they expressed their experiences. Basing on this piece of information, factual data was provided for this research.

TABLE 4.5: NUMBER OF YEARS RESIDED IN MUTOKO DISTRICT BY THE RESPONDENTS

No. of years resided In Mutoko district	Below 5 years	5 – 9 years	10 – 14 years	15 – 19 years	Above 20 years	**total**
No. of Respondents	5	7	11	3	36	62
Percentage	8%	11%	18%	5%	58%	100%

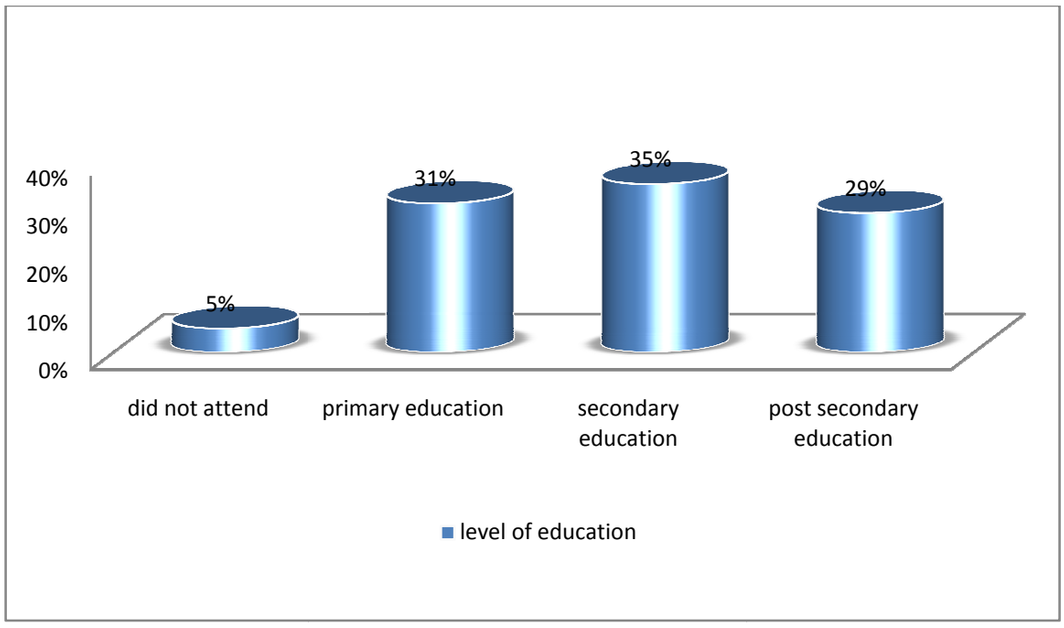
Source: Research data (2014)

The respondents of this research were also characteristically categorised by the number of years they have stayed in Mutoko district. This was done to determine the relationship between the

number of years and knowledge of droughts that have occurred in Mutoko district. As shown in table 4.4 only 8% of the total respondents have lived in Mutoko district. This means 92% of the total respondents have lived in Mutoko district for more than 5 years. This also means much of the respondents had first hand information about the droughts which have previously occurred in the district, stakeholders that were involved, methods of engaging stakeholders that were used, causes and impacts of droughts and response mechanisms that were used especially if it is considered that the highest number of respondents of 58% have lived in Mutoko district for more than 20 years. Provided that the research is based on these actual experiences, it is valid and reliable.

4.2.2 Relation between levels of education and drought management knowledge

FIGURE 4.1: RESPONDENTS' LEVEL OF EDUCATION



Source: Research data (2014)

From the results 5% of the respondents did not attend school, 31% reached primary education, 35% reached secondary education and 29% reached post secondary educational levels. The results portrays that all of the key district informants and agritex officers are part of the 29% to have attained post secondary education. This 29% was consisted of key district informants and a few other individuals. The majority of the respondents, 71%, have not reached this level of education.

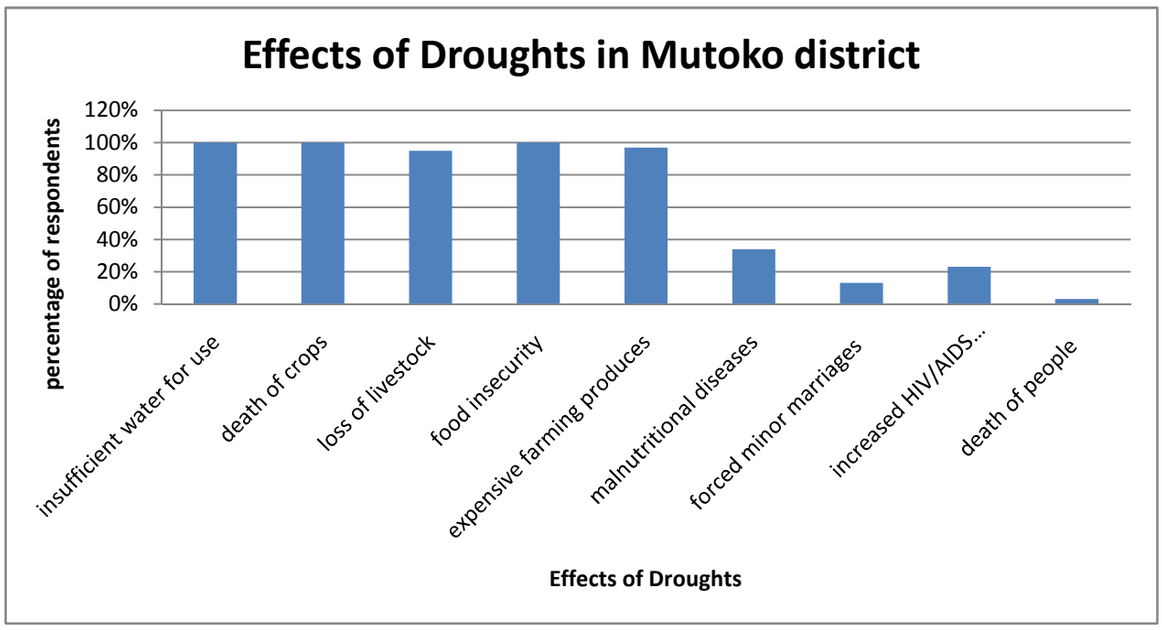
This clearly shows that Mutoko district does not have enough technical and higher learning institutions where people can acquire necessary skills like disaster management skills.

All of the respondents who reached post secondary education levels correctly defined the word drought in terms of inadequate precipitable water, a level of insufficient soil moisture and a condition of dryness which is not enough to sustain human, plant and animal life as according to Zyl (2006), Monacelli (2006) and NWS (2006). Of the rest 45 respondents only 13 (29%) of them were able to understand drought in correct terms. The remaining 32 (71%) of these 45 equated droughts to a period of hunger and starvation, *'nzara'* in vernacular Shona language as the respondents said. In this respect FAO (2004) only identified hunger and starvation (food insecurity) as an impact of droughts. This means that people do not really understand what a drought is. In this respect Ndlovu (2006) has a view that managing droughts without really understanding them is difficult.

4.2.3 Effects of Droughts in Mutoko district

Of the 62 total respondents all of them, that is 100%, propounded that droughts in Mutoko district are caused by poor rainfalls and 29% of the same respondents pointed out that the frequency of droughts has increased because of global warming and climatic changes. This means that Brown et al (2012) was correct to say global climatic changes are playing a huge role in increasing the frequency and impacts of droughts. Some respondents (13%) who have a little understanding of drought argued that they are sometimes caused by excessive rainfalls. In reality a drought is not caused by excessive rainfalls because one of the crucial aspects of defining a drought is the catchphrase, 'a condition of dryness' whereas excessive rainfalls result in a 'condition of wetness' (ibid). Thus defining a drought in terms of excessive precipitation is a shameful negation of the truth. About 5% argued that drought is a God's curse for immoral behaviours and practices. Whatever the case that causes droughts might be all respondents argued that droughts result in severe impacts. Graph 4.2 shows the impacts of droughts that are faced by Mutoko district.

FIGURE 4.2: EFFECTS OF DROUGHTS IN MUTOKO DISTRICT



Source: Research data

The findings of the research provide that all of the 62 respondents (100%) have witnessed the effects of droughts in insufficient water for domestic use, plant use and animal use. Most of the respondents pointed out that people walk long distances to access water since most of the convenient water sources dries in drought seasons. One of the respondents was quoted as saying, "drought times are always difficult times for use since we would either walk long distances to access clean water or use unprotected water from the rivers." Therefore in drought times when safe water sources are dry people resort to unsafe water sources from open wells which they dig in river beds know as *'mufuku'* in Shona language. This scenario of water scarcity, shortage and inadequacy would be referred by Marko (2012) as hydrological drought.

The researcher has even noticed non functional water sources in some villages for example a non functional borehole shown in picture 4.1, which forces people to use unprotected water from dry river bed wells. This means more water problems for people.

FIGURE 4.3: A NON FUNCTIONAL BOREHOLE AND AN UNPROTECTED RIVER BED SOURCE

Source: Research data (2014)

If water and soil moisture becomes unavailable for plants, crop will wilt and die as cited by Waugh (2009). This would be referred to as agricultural drought by FAO (2004). All of the 62 total respondents (100%) agreed that droughts result in crop and plant death. Picture 4.2 shows a picture of maize plants which have been wilting and dying before they mature due to drought.

FIGURE 4.4: WILTING CROPS

Source: Research data (2014)

When crops and plants die, it therefore means that there will not be enough food for people and pastures for animals. In this respect 97% of the respondents argued that livestock are lost as a result of droughts and 100% of the respondents highlighted that food insecurity would result and people would suffer from hunger. When food insecurity is high business people and other individuals would hike prices of food items' mostly farming produces like maize. 97% of the 62 total respondents thus pointed out that droughts would lead to high prices of food and farming commodities. This scenario would be referred to as socio – economic drought by Zyl (2006)

Food insecurity would lead to rise of malnutrition diseases, some parents would force their daughters to be married at tender ages to wealthy and renowned farming families in the district so as to secure a guaranteed source of food supply and other people would use sex or resort to prostitution as a survival strategy thus leading to increased HIV/AIDS infections. 34%, 13%, 23% of the respondents respectively argued that they have witnessed these problems. When the level of food security is extensive, droughts would result to deaths especially if institutions do not chip in with relief food aid. Only 3% of the respondents argued that they have witnessed death as a result of droughts.

Some effects of droughts that were raised by householders, traditional leaders and councillors include social disintegration. People would hate each other due to fight for scarce relief food and water. 93% of the householders expressed concerns about some food distributors who become corrupt and politicize relief food aid. In the same thought 52% of the KDIs and agritex officers also highlighted that desertification and soil degradation are also problematic issues since people would severely cut down trees for firewood which they sell for money to buy food. Lack of farming inputs, poor soils and poor rainfalls were suggested as drought impact exacerbating factors by 59%, 71% and 100% of the KDIs respondents respectively. Mutoko district therefore suffers from various impacts of droughts which are classified as social, environmental and economic by Monacelli (2006) and FAO (2004)

4.2.3.1 Vulnerability to droughts

Findings of this research also reflect that people are the most affected group as 71% of the 62 total respondents argued that people are affected than the environment (8%) and livestock (21%). This is quite valid taking cognisance that Wilhite et al (2000) as cited in Ndlovu (2011) argued that drought once affected 20 million in 1991/92 in Southern Africa alone. It is also the livestock and environment that people depend on for livelihoods, which means if the two are affected people are affected more.

In addition to the above 44% of the total respondents pointed out that the old aged group of people is the most affected group in the society, 29% factored out the Orphaned and Vulnerable Children (OVC), 17% pointed out the disabled people, while 5% of the respondents pointed out widows and another 5% indicated people living with HIV/AIDS. According to the results widows and HIV/AIDS infected people are the least affected. The reason for this is that widowed and HIV/AIDS infected people are able to work for themselves just like any other active groups of the society unless if they become chronically ill. This could be because these people are able to work on their own to earn something for survival. These groups can therefore be ranked in accordance to their level of vulnerable to droughts as shown in figure 4.1.

TABLE 4.6: DROUGHT VULNERABLE GROUPS

Rank	Group of People
1	Old aged people
2	Orphaned and Vulnerable children
3	Disabled people
4	Widows
5	HIV/AIDS infected people

Source: Research data (2014)

16% of the household respondents specified that old aged people are more vulnerable to droughts because most of them head their own families and live alone which means with their energies

drained of age they are not able to work for themselves to any extent of fully coping with droughts. To support this one of the respondents had this to say, “Droughts mostly affect the elderly people than any other group of people.” 10% of the household head respondents also stipulated that it is also worse for the handicapped people and OVC who head their own families. It therefore clear that the level of vulnerability is even high if vulnerable groups of the society are household heads for their own families. Other groups that were identified include those people who are very sick, children and women. These people also suffer severely from droughts.

83% of female and a few male – 16% – respondents who participated in focus groups propounded that women are the most drought affected groups of the societies. This is because most of them carry out vital household core functions like cooking and fetching water. They are therefore responsible for making sure food is available. Women compared themselves to men who spend most of their time in beer outlets drinking beer. One of the women respondents was quoted as saying, “men spent most of their time in beer halls drinking beer than supporting their families.”

4.2.4 Drought Early Warning Information

Of the 62 total respondents 87% reflected that they depend on Early Warning Systems (EWSs) to prepare for droughts and sharpen their coping strategies. 86% of household respondents suggested that they receive drought Early Warning Information (EWI) and Weather Reports (WRs) from radios. They however argued that EWI and WRs they receive from the radios are not that much reliable as it had misled them in some seasons. In this respect 84% (25/30) of them argued that they use Traditional Early Warning Systems (TEWSs). These respondents argued that flora and fauna hints them about a pending drought disaster for example if a tree known as *‘mushinga’* bears more fruits and *‘munyenza’* blooms more flowers it signifies a drought season. One of the respondents said, “It will not rain if an eagle nurtures its chicks in your area during the rainy season”. This also informs people that there would be a drought. For people this signals that there will be a drought. Some argued that the spirit mediums – *‘mhondoro’* – inform them. Some

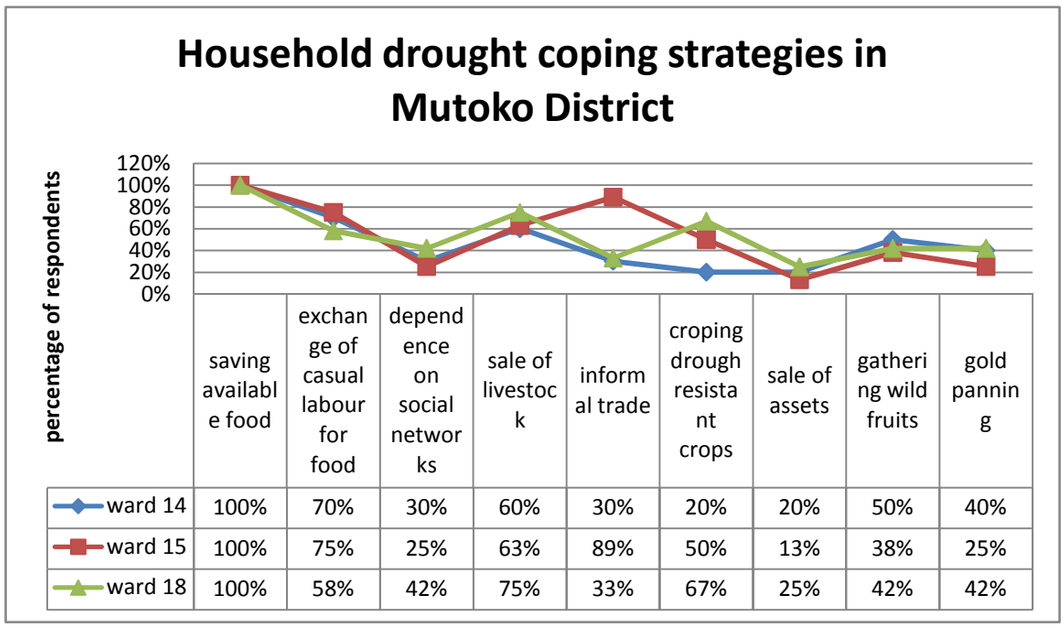
household respondents also pointed out that mountains like *'Katowe'* give signals drought through a fire which is visible only during the nights. Once people get those warnings they prepare droughts and sharpen their coping strategies.

4.2.5 Coping and adaptability to droughts

4.2.5.1 Household Coping Strategies used in Mutoko district

The graph below, graph 4.3, shows household coping or response mechanisms that different groups of people in Mutoko district use to adapt to or cope with droughts. Some people use all of the strategies as their survival means whilst others use only a few of the strategies.

FIGURE 4.5: HOUSEHOLD COPING STRATEGIES



Source: Research data (2014)

The most commonly used strategy to cope with droughts at household level is to save the available food. 100% of the household respondents who participated in three wards (ward 14, 15 and 18) argued that they use this strategy. Householders even pointed out that since they know that the area is prone to droughts they stock the food and save it until the next harvest. All of the householders suggested that they reduce the number of meals and quantity of food each person

consumes when there is drought so as to save food – "we eat only once day if there is a drought" argued one of the respondents. 70% (7 out of 10 householders), 58% (7 out of 12 householders) and 75% (6 out of 8 householders) respondents in ward 14, 15 and 18 respectively exchange their labour for food. In some cases they are given money which they use to buy food. This strategy is widely used in Mutoko district as one of the householders emphasised that, "we exchange our labour for food when there is a drought".

In addition to this 30% of ward 14 respondents, 25% of ward 14 respondents and 42% of ward 18 respondents argued that they also depend on social networks – that is the support that they get from friends and relatives in the form of food or money. Another strategy that ameliorates householders from drought impacts is the sale of livestock. As such the researcher through observations, noted that almost every household own livestock that could be goats, sheep, fowls, pigs or cattle. As shown in the above graph more respondents in ward 15 hugely depend on informal trade. This is because the ward is located near Makaha an area where there is high capital turnover due to extensive gold panning. Most of the people informally trade horticultural products and other stuffs like blankets, cell phones, clothes just to mention a few in Makaha. In addition to this most of the respondents – 75% – who participated in this ward were women who usually do this informal trading business.

20% of the householders suggested that they sell their assets like bicycles, wheelbarrows, ploughs and among others, as a survival strategy. The results shown on the above table reveals that people are not interested very much in selling their assets. This is because people would find it difficult to recapitalise/buy new assets to replace those that they have sold when they are recovering from a drought. Results also show that people gather wild fruits to cope with droughts. People gather fruits like the baobab fruits – which they argued they use the fruit powder to cook porridge. People also gather wild plant tubers known as *'manyanya'* which look like sweet potatoes. People also subscribe to gold panning as a survival strategy especially males in ward 15.

4.2.5.2 Institutional coping strategies

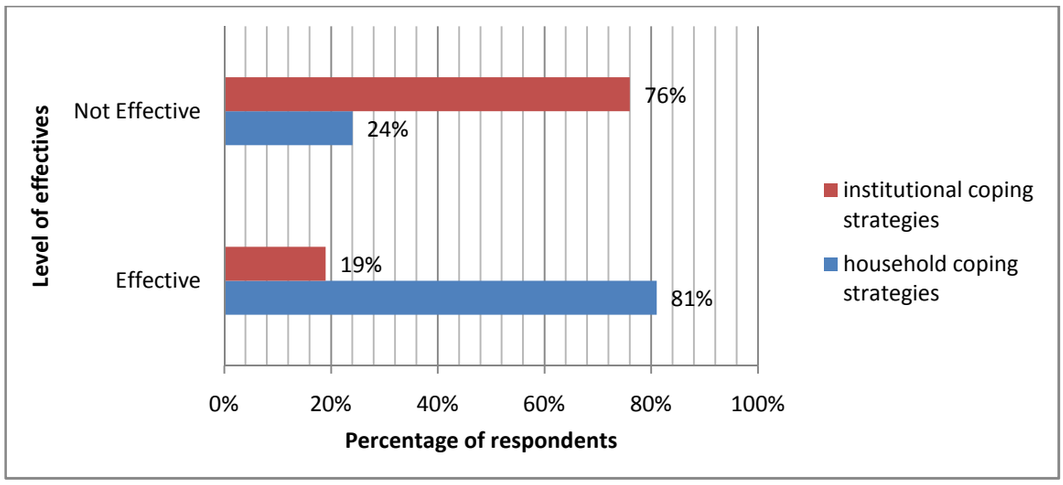
All household respondents also highlighted that they sometimes benefit from coping strategies that are provided by different institutions like government departments, Non Governmental Organisations and the Grain Marketing Board and a few private organisations. In focus group discussions held respondents pointed out that they mostly benefit from NGOs like Community Technology (COMMUTECH) which sinks elephant water pumps, provide farming inputs and food for work programs (for example the removal of sand in Kapondoro dam ward 14), farming education (for example zero tillage/conservative farming), (DA Monthly Development Report, 2012 and COMMUTECH Monthly Report, 2012). Zero tillage is a method which increases the capacity of soil to hold moisture for the crops. Out of 30 householders 25 of them confirmed that they have once received maize seed from the government programs. However they did not get fertilisers.

This means farming inputs are always inadequate. 63% of the householders also confirmed that they have once received maize from grain loan scheme while 97% of householders argued that they have once received relief food from NGOs like Catholic Relief Service, United Methodist Committee on Relief (UMCOR). The Zunde raMambo/Isiphala seNkosi from the institution of traditional leaders is not being practiced in the district due to lack of farming inputs – confirmed by all four chiefs. All respondents in all three wards also postulated that there are no irrigation schemes in their wards. However, 63% (7/11) of the key district informants argued that there are small irrigation schemes in the district. This therefore means that irrigation schemes are in other wards other than ward 14, 15 and 18. Thus the same coping strategies that were identified by Unganai (undated) and Mutasa (2010), Garissa et al (2009) and Dube and Sekhwela (2007) respectively in other Zimbabwe districts, Kenya and Botswana are the same strategies that are used in Mutoko district.

4.2.5.3 Effectiveness of Coping Strategies

All the respondents were asked about the effectiveness of household coping strategies and institutional coping strategies so that comparison can be made between the two. The findings are highlighted in the following graph.

FIGURE 4.6: THE EFFECTIVENESS OF DROUGHT COPING STRATEGIES



Source: Research data (2014)

Of the total 62 respondents 81% of them (50/62) argued that household coping strategies are effective whilst 19% pointed that they are not effective. On the other hand 24% of the same respondents argued that institutional coping strategies are effective whereas 76% accentuated that institutional coping strategies are ineffective. Therefore household coping strategies are more effective than institutional coping strategies in Mutoko district. The reasons for institutional coping strategies being ineffective include the fact that most institutions lack resources, lack commitment to manage droughts and lack understanding and skill required to manage drought.

4.2.6 Drought management approach in place

Out of 17 key district informants 94% of them answered that they use the reactive approach to manage droughts in the district. On the other hand 6% of the respondents highlighted/answered not sure. It is therefore clear from the results that a reactive approach is used to manage droughts in Mutoko district. The reactive approach is not recommendable because of its ineffectiveness.

Instead the proactive approach must be used but because of lack of resources and lack of drought management skills a reactive approach is being used. The institutional arrangement and capacities and methods of engagement used also contribute to reactiveness as reflected in 4.1.5.1. In this light a proactive management approach is an effective way that can be used to manage droughts because reactiveness is inadequate and it is leading to crisis management where people in Mutoko district move from one drought into another without reducing impacts and risks (FAO, 2004)

4.2.6.1 Institutional arrangement and capacities

From the data gathered from key district informants, it is clear that the District Drought Relief Committee in Mutoko is made up of the Office of the District Administrator (chairs the committee), Mutoko Rural District Council, Department of Social Services, Agricultural Technical and Extension Service (AGRITEX) department and NGOs like CADS, COMMUTECH, PLAN Zimbabwe, Mutoko Farmers Association, GMB, United Methodist Committee on Relief (UMCOR) and Oxfam. Wilhite et al (2005) regard a committee like this as a drought task force team. This is the main committee which manages droughts in Mutoko district. KDIs respondents were asked as to how often the DDRC meets. All respondents (KDIs) pointed out that the committee meets when there is urgent need to resolve droughts. This reflects that the committee only becomes active when the drought disaster occurs. This means the DDRC is a weak institution which manages droughts reactively.

In addition to this the researcher also found out that the DDRC does not have monitoring, early warning and prediction; risk and impact assessment; and mitigation and response sub – committees. According to Wilhite et al (2005) these committees are very important as they carry out monitoring, early warning and prediction; risk and impact assessment; and mitigation and response functions effectively. The absence of these sub-committees reflects that the DDRC is a weak institution and this is why droughts are managed reactively. The risk and impact assessment

function is fortunately done by the Zimbabwe Vulnerability Assessment Committee as was highlighted by some respondents as was suggested by the District Administrator.

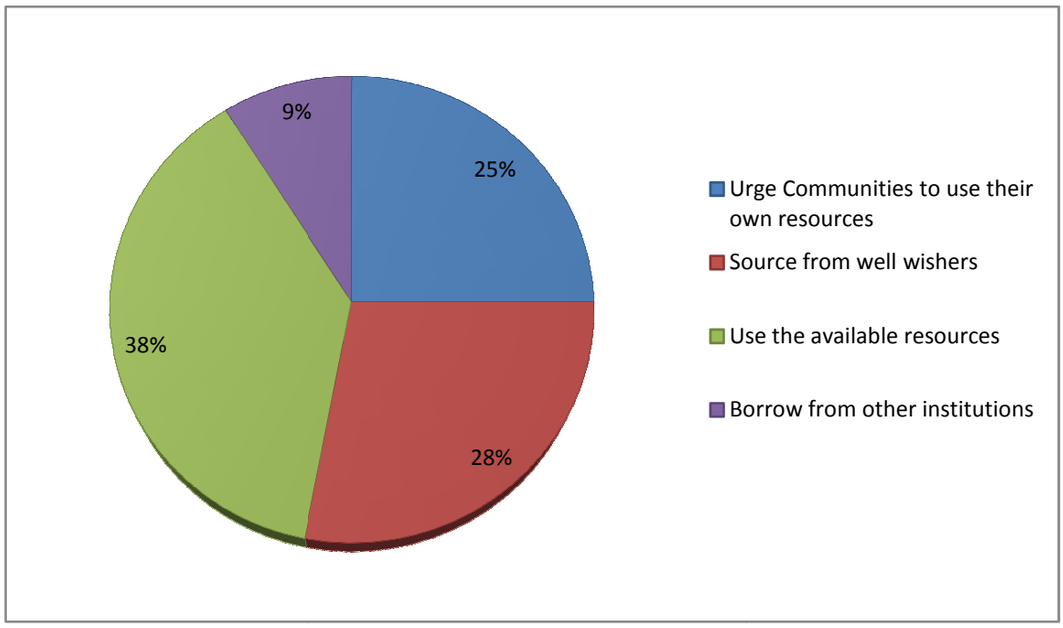
Results from the research also reflects that there must be Village Drought Relief Committees (VDRC) and Ward Drought Relief Committees (WDRC) at village and ward levels, (as was highlighted by 91% of the key district informants) to exclusively deal with drought matters and issues but interviews with traditional leaders and councillors pointed out that these committees have not been established. Instead traditional leaders and councillors argued that they use Village Development Committees (VIDCOs) and Ward Development Committees (WARDOs) to discuss drought matters. In this respect the DDRC does not have pre requisite committees to compliment its effort at village and ward levels. This means the DDRC of Mutoko district's capacity is weak.

In addition to this, 100% of the key district informants highlighted that the DDRC does not have a Drought Management Plan (DMP). According to Wilhite et al (2005) a drought management plan is very important as it outline responsibilities of actors, sources of resources, how droughts are planned for, mitigated, assessed and responded to and provides information to all of the citizens in the district pertaining drought management. Instead of a separate DPM, an interview with the DA shows that the Civil Protection Plan is used to cover all disasters including droughts. The fact that there is not a separate Drought Management Plan points to the ineffectiveness and weaknesses of the DDRC. This is the reason why droughts are managed reactively.

All key district informants', councillors, agritex officers and traditional leaders (32 respondents) pointed out that the institutions responsible for managing droughts do not have enough resources to manage drought. According to Schilderinck (2009) the lack of requisite capacities especially resources and skills by institutions are the reason why proactive drought management through the use of the Drought Cycle Management in Kenya failed. Resources are therefore very essential for effective and successful management of droughts and the DDRC can have a chance of having these financial, professional and physical resources through effective stakeholder engagement

(Swinburn et al, 2006). Figure 4.2 shows how droughts are managed with inadequate resources at the disposal of the DDRC and local people in Mutoko District.

FIGURE 4.7: SOURCES OF RESOURCES FOR MANAGING DROUGHTS



Source: Research data (2014)

The above chart is based on the responses of KDIs, councillors, agritex officers and traditional leaders (32 respondents' altogether) and it shows that people in Mutoko District mainly use few resources that they might have to manage a drought when it occurs. This is confirmed by the majority of the respondents 38% who propounded that they use the available resources. The other option which is mostly used is sourcing resources from well wishers like private organisations, individuals and NGOs. 28% of the respondents argued in favour of this option. The other option which is used is urging communities to use their own resources – 25% of the respondents confirmed the use of this option. This can also be confirmed by self household coping strategies which are mainly used than institutional strategies. The least used option is borrowing resources from other institution. This option is not favoured as shown by the least percentage, 9%, of the respondents, because of the risk associated with the failure to return resources.

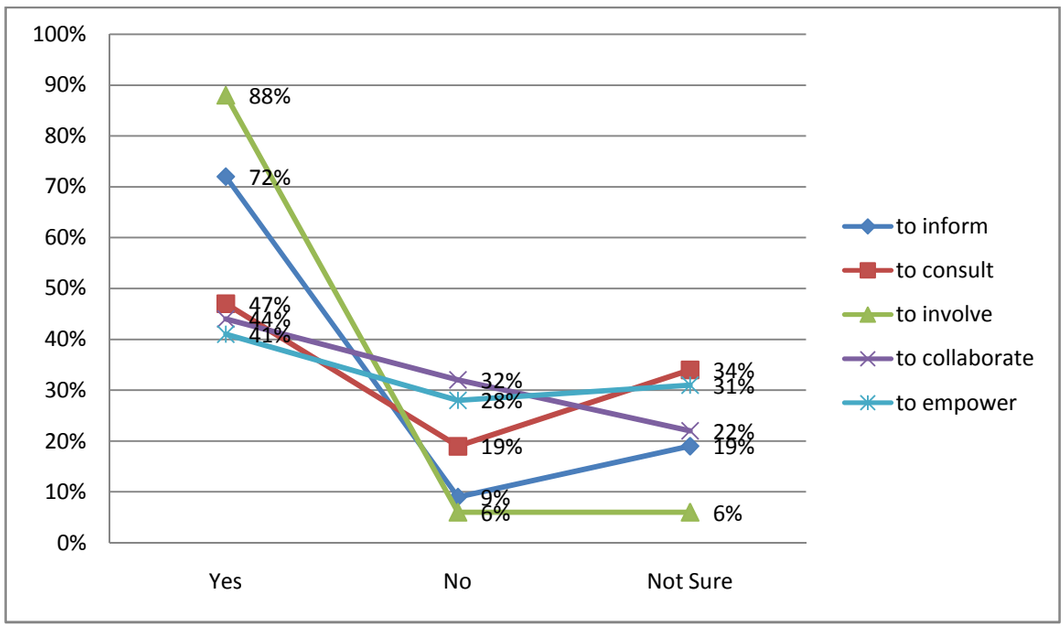
4.2.6.1.1 Engagement of stakeholders

All key district informants were asked a question as to how do they identify stakeholders to work with in managing droughts. 94% of them highlighted that they approach stakeholders who have resources, and 82% of the same KDIs argued that they approach stakeholders whose purpose of their organisations' existence is related to disaster management, whilst 73% pointed that willing stakeholders especially NGOs would come and approach to collaborate with them to droughts.

The methods of engaging stakeholders that an institution uses are very essential to strengthen the capacity of an institution. Effective stakeholder engagements allow institutions to keep in touch with key stakeholders. All of the 62 (100%) respondents confirmed that meetings are the method of engagement mostly used in the district. 6% pointed out that workshops are also used. None of the respondents have indicated the use of internet websites, working groups, Whatsapp groups, circulars, publications, research collaboration, Facebook pages and newsletters to engage stakeholders in drought management process.

21% of the total 62 respondents suggested that they mainly use meeting because it is the simplest and cheapest method of engagement to use, 26% argued that they use it because it is very effective as it provides face to face interface with stakeholders while 53% of the respondent provided that they use meeting because it is both the simplest and cheapest method and most effective method. 63% of those respondents even highlighted that they do not have the knowledge required to use the other methods of engagement. As can be seen in DEECD (2011) it is very essential and effective to use a mixture of engagement methods since this can keep stakeholders informed about the state of droughts in the district and the work that need to be done, when, how, by who and with what resources. In short weak stakeholder engagement methods are being used because you cannot reach as many stakeholders as possible using only meetings plus circulars and workshops.

FIGURE 4.8: LEVELS OF STAKEHOLDER ENGAGEMENT IN MUTOKO DISTRICT



Source: Research data (2014)

72% of the 32 respondents (key district informants, councillors, traditional leaders and agritex officers) who were asked about the levels to which they engage stakeholders highlighted that they engage stakeholders to inform them, whilst 9% does not engage to inform and 19% were not sure if they engage stakeholders to inform them or not. Less informed stakeholders are engaged to be given information. Engagement methods that can be used to inform stakeholders include fact sheets, meetings, electronic mails and websites. These could be co – drought relief committee members or community members who needs drought related information for example early warning information. Thus stakeholder engagement allows stakeholders to get information.

47% of the 32 respondents also argued that they engage stakeholders to consult them. Stakeholders who are consulted are those who are specialists in specific areas of drought management or those stakeholders who have the information. These could be drought relief committee members, drought assessment actors like the Zimbabwe Vulnerability Assessment Committee members and among others. Community members like householders can also be

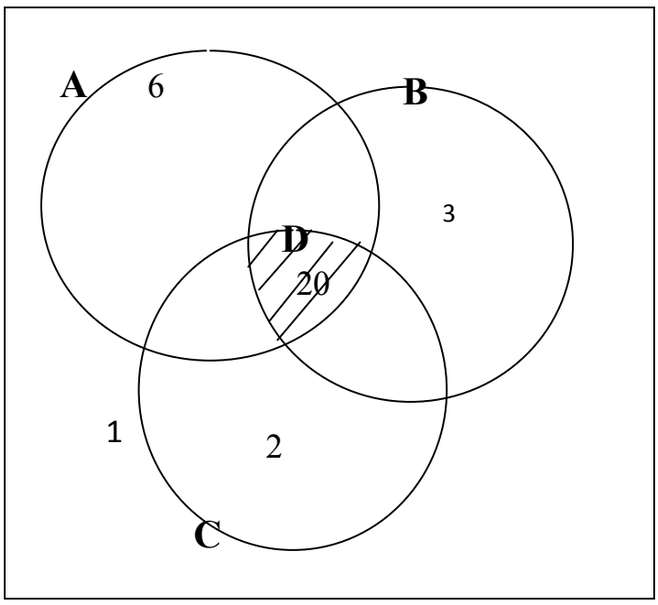
consulted so that they provide their views on droughts that affect them. Therefore stakeholder engagement allows institutions to gather information. Circulars, websites, and newsletters are essential methods that can be used to engage stakeholders for consultation and informing.

Furthermore 88% of the respondents argued that they engage stakeholders to involve them. Managing droughts requires all key stakeholders to be active participants in the process. Joint ventures or joint planning can be used to involve stakeholders. These stakeholders can include local people, private organisations, traditional leaders and among others. Stakeholders are also engaged for collaboration. Collaboration ensures that stakeholders are part and parcel of each and every step taken in drought management. In Mutoko district 44% of the respondents confirmed that they engage stakeholders for collaborations and these stakeholders include NGOs who partner with their resources. Thus stakeholder engagement opens avenues for resources. This can be confirmed by Swinburn et al (2006) who argue that from engagement you can benefit financial and material resources as well as professional human resources with expertise knowledge.

41% of the 32 respondents argued that they engage stakeholders to empower them. Stakeholders that need to be empowered are the community members like householders. They can be engaged through training workshops so as to acquire a better understanding of droughts. Stakeholders can therefore, be empowered through training workshops and other engagement methods like joint planning. Hence stakeholder engagement can allow different stakeholders to acquire necessary skills and knowledge on drought management.

Therefore the level of stakeholder influence determines the level at which stakeholders are engaged (DEECD, 2011). From the above analysis it is clear that effective stakeholder engagement can help to strengthen the capacity of the DDRC and its institutional members so as to manage drought proactively. Figure 4.3 summarises the benefits of engaging stakeholders in managing droughts in Mutoko district.

FIGURE 4.9: BENEFITS OF ENGAGING STAKEHOLDERS



Source: Research data (2014)

Of the 32 KDIs, traditional leaders, agritex officers and councillors respondents 6 of them – 19% – reflected that they benefit resources from stakeholders that they engage, whilst 9% benefits knowledge and 6% views stakeholder engagement as a tool for improved decision making. 20 of the 32 total respondents – that is 63% - pointed out that they benefit from all these benefits of engaging stakeholders which are gaining of resources, gaining of knowledge and enhancement of improved decision making. 3% of the respondents did not respond to this question. 4% of the respondents specifically provided that stakeholder engagement can also allow them devise solutions for the problems they face in drought management. Therefore engaging stakeholder has benefits (knowledge, resources, improved decision making and among others as cited in (Swinburn et al, 2006).

4.2.8 Problems faced in managing droughts in Mutoko district

Respondents were requested to give the challenges that they face in managing drought in Mutoko district. All of this research's respondents postulated that they do not have adequate resources to manage droughts in the district. For example they do not have scientific resources or money to buy

them, so that they conduct drought monitoring to provide people with early warning systems when droughts are predicted. 69% of the 62 respondents emphasised that they also face farming input problems so avoiding drought effects is a challenge. All councillor and traditional leaders' respondents argued that there are no proper mechanisms to ensure that the GMB buys food stuff from the people and stock it for future droughts. All KDI respondents argued that they face transport problems to transport relief food from different sources. 64% of KDI respondents also stressed a point that they face resistance from private organisations like large granite mine when they seek for assistance. 66% of the 62 total respondents put forward that lack of proper knowledge pertaining managing droughts is a problem.

4.2.9 Respondents' solutions to problems

The research required the respondents to suggest solutions that they think would help to counteract the problems highlighted in 4.1.7. 66% of the total respondents stressed that the government has the responsibility to provide resources therefore the government should provide. 58% of the 62 respondents argued that it is necessary to create a pool of drought management funds that gets money from well wishers and others sources. The funds would be used to acquire resources, construct drought mitigation infrastructure like dams, installing irrigation schemes, build grain stocking silos and respond to droughts and among other issues.

In addition to the above 61% out of 62 respondents suggested that the DDRC and people must capitalise on engaging NGOs and the private sector which have resources and skills required in managing disasters. If these stakeholders are engaged training people and the community (capacity building) disaster and drought management skill would be possible since it is a process which needs resources. 26% recommended that the Community Share Ownership Trust of the district which has not been launched must be launched so that the district benefits funds which can be used to buy resources and construct infrastructures. 57% of the community respondents suggested that they should not be over dependent to the government and NGOs, instead they should use

strategies like Internal Saving and Lending (ISAL) system (known as *'mikando'* in Shona language) to raise money so that buy their own resources, farming inputs so as to strengthen their own response mechanisms.

4.3 Chapter Summary

This chapter presented the findings of the research carried out by the researcher. Data gathered through primary data collection instruments and secondary data collection instruments was shortened and expressed in this chapter in the form of tabulations and descriptions which are very easy to understand. The first pages of this chapter show the response rate for the research which is 86% - 62 respondents out of the sample size of 72. Both men and women participated in this research as shown above – 37% women and 63% men as shown in table 4.3. Findings shows that Mutoko district suffers from drought impacts like shortage of water for people, animal and plants consumption and food shortage as shown in graph 4.2. The groups that more vulnerable to drought were also highlighted and are elderly, OVC and disabled people. Findings presented in this chapter also reflects that there is use of Household Coping Strategies (HCSs) and Institutional Coping Strategies (ICSs) used to cope and adapt with droughts to which it was made clear that HCSs are the most effective. The capacity of the DDRC was also assessed and was found weak as described in 4.1.5.1. the results also shows that the meeting is the mainly used method of engaging stakeholders and it was also made clear that stakeholders are engaged at different levels which are inform, consult, involve, collaborate and empower to which engaging stakeholders was also seen as beneficial as highlighted in figure 4.3. It was however noted that stakeholder engagement being used are very weak. This chapter also discussed problems faced in managing drought in Mutoko district and the solutions suggested by respondents. The next chapter dwells on the summary of the whole research, results and findings as well as conclusions plus recommendations of the research.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

The principal concern of this research was to explore the innovative ways of engaging stakeholders in the management of droughts in Mutoko district. An account of the main ideas and facts generated or raised in all of the preceding chapters of this research are summarised in this chapter. This chapter also provides conclusions from the presented findings of this research. In addition the chapter also presents a set of recommendations that the research has devised to cover up the gaps that has been identified from empirical findings of this research.

5.1 Summary

Innovative ways of engaging stakeholders in the management of droughts in Mutoko was the research topic that this research evolved from. The first chapter of this research has provided the background to the study which gave history and an insight of the study area the researcher had chosen to study; statement of the problem which identified the problems of the status quo – a gap that this research sought to cover; research objectives and questions which were the guidelines for this research, assumptions of the study; significance of the study; delimitation of the study which gave the scope of the research; limitations of the study and definitions of key terms in the research. The first chapter has therefore given an overview of the research through those components.

The main objectives that guided this research are: to identify the impacts of droughts in Mutoko district, to assess the strength of drought response mechanisms and coping strategies that are used in Mutoko district, to establish an effective way of managing droughts in Mutoko district, assess the capacity of the institutions responsible for managing droughts in Mutoko district and to suggest solutions for the problems faced in managing droughts in Mutoko district. Droughts have been a major challenge in Mutoko district because of their devastating impacts. Despite the

presence of the district drought relief committee and other institutions which must give a hand in drought management, the district's level of suffering from droughts has been not reducing each time the district faced droughts – the reasons being a weak stakeholder engagement mechanisms, poor resources and knowledge, and lack of drought management plan which all contribute to reactive drought management. Due to these problems a research was carried out in Mutoko's wards 14, 15 and 18 as a way to seek an understanding of the root causes of the problems and come with their solutions. As such the researcher found out that this research will benefit various stakeholders which include District, Provincial and National Drought Relief and Civil Protection Committees in Zimbabwe, other countries prone to droughts, the researcher and the Midlands state university.

The literature review of this research was folded into four levels of understanding. Firstly it contextualised and conceptualised the word drought – that is providing the meaning of the word drought, classification of droughts which are classified as meteorological, hydrological, agricultural and socio-economical, causes of droughts which are natural and human factors and effects of droughts. The second fold of literature review focused at the management of droughts, processes and approaches – that include the discussion on the proactive and reactive drought management approach, ten step drought management planning process and management of droughts in Zimbabwe. The third fold focused on the stakeholders' engagement process as a vital tool in drought management. The fourth fold provided empirical case studies on successful drought management in which stakeholder engagement was a key factor – that is the case study of the State of Nebraska in the United States of America and case study of Rajasthan in India.

The researcher used a research methodology which subscribed to both qualitative and quantitative research designs – that is a mixed method of research – to find ways of engaging stakeholders in management of drought in Mutoko district. The research also followed a descriptive approach to research. 2649 was the target population of this research to which a sample size of 72 respondents

was established. Stratified sampling, simple random sampling and purposive sampling techniques were used to get this sample size. The data collection instruments that were designed to elicit data from the respondents are: questionnaires, interviews, focus group discussions and interviews, and observations. Secondary data collection instruments were also targeted to provide data for this research. A pre-test was carried out with co-students to test the reliability and validity of the research instruments. The research methodology was structured in this way for effective and maximum elicitation of data.

Lastly, the researcher went to the actual field of research to collect data. Data collection was done and the researcher managed to collect data from a total of 62 respondents out of a sample size of 72 respondents. This means the response rate for this research was 86%. The findings of the data which was collected have been presented through graphs, charts, tables, pictures and narratives. The highlights of the findings include the fact that Mutoko district suffers from a lot of drought impacts; the elderly is the most affected group, household coping strategies are effective than institutional coping strategies, droughts are reactively managed and the capacity of the DDRC is very weak all because of weak stakeholder engagement methods which were in place. The conclusions for the findings are given in 5.2.

5.2 Conclusions

- The research found out that a lot of people do not have a proper understanding of what is meant by the term drought. Lack of proper drought knowledge means that people does not have proper skills required to manage droughts. This contributes to a state of reactiveness to droughts.
- The research also established that natural factors like poor and inadequate rainfalls and global climatic changes and human factors are the causes of droughts in Mutoko district.
- The research also found out that droughts have a lot of effects, in Mutoko district, which include inadequacy of water for domestic, animal and plant use, death of crops, loss of

livestock, food insecurity, cause food stuffs to be expensive, malnutrition diseases, forced minor marriages, increased HIV/AIDS infections and in rare cases deaths of people.

- The old aged people, orphaned and vulnerable children, disabled, widowed, people living with HIV/AIDS and people suffering from other chronic diseases were the most drought affected people in Mutoko district.
- People in Mutoko district depend on both household and institutional drought coping strategies. Household coping strategies were however found more effective than institutional coping strategies in Mutoko District.
- Drought managing institutions are weak and ineffective
- The reactive drought management approach which is highly ineffective and inefficient was found as the approach used by people and institutions that manages drought.
- The reactive drought management approach was being used in reverse of the proactive drought management approach because institutions and people lacked the proper capacities required to manage droughts proactively; that is lack of resources, disaster management skills, lack of a drought management plan and ineffective stakeholder engagement.
- The proactive drought management approach was therefore established as the most effective way of managing droughts which must be pillared on effective stakeholder engagement so as to lure resources and knowledge for drought management.
- Institutions managing droughts over relied on meetings as a way of engaging stakeholders. Engaging stakeholders was however found as a process which yields benefits like securing the resources and knowledge and helps to improve decision making.
- It was also established that people over rely on Traditional Drought Early Warning systems than the advanced early warning systems.

5.3 Recommendations

- The government of Zimbabwe should set up a Drought Management and Mitigation Centre at the national level which should be responsible for thorough drought researches, give

information about droughts that occur in Zimbabwe to the people through a website, newsletters and other methods, train people on effective drought management, look for bilateral and multilateral stakeholders who partner with massive resources so that drought would be managed effectively in Zimbabwe. This institution should also have offices at the provincial and district levels to perform the same functions outlined above for convenience's sake.

- The District Drought Relief Committee should be active throughout the year and should not only be visible in drought times. For the DDRC to be active, effective and proactive there is need to establish its sub – committees which deals with drought monitoring, early warning and prediction; vulnerability assessment and response and mitigation functions. These functions will keep the DDRC abreast to the current situations concerning droughts.
- The DDRC must make sure that Village Drought Relief Committees at village levels and Ward Drought Relief Committees at ward levels are activated to complement its roles.
- The DDRC must have a drought management plan which is regularly updated and separate from the civil protection plan. A drought management plan will allow the district to have contingency measures in place, clarify responsibilities of members and sources of the resources. A plan also helps to attract stakeholders as it would show that drought management institutions are committed to fighting droughts.
- There is need to train people in Mutoko district on essential drought management skills so that droughts will be managed effectively in the entire district.
- The district through the help of the central government must ensure that infrastructures that are necessary for effective drought management are constructed. Specifically boreholes and dams for extensive irrigation and guaranteed water supply to people; grain storing silos for grain and food storage for future droughts must be constructed. The Community Share Ownership Trust for the district can fund those projects if it is launched by the government.

- The department of Meteorological Services must disseminate information effectively and timely to all the people in the district by having weather monitoring plants and information centres established at district levels in Zimbabwe so that people can have easy access to information. It can also work hand in glove with mobile network operators so that Meteorological and early warning information is given through mobile phones to which this might be effective since almost every person in Zimbabwe owns a cell phone.
- The stakeholder engagement process must be taken seriously since it is the best way of identifying resourceful and knowledgeable stakeholders thereby helping to secure resources and knowledge and also guarantees effective decision making for managing droughts. In this case Public Private Partnerships can be used to engage stakeholders like black granite mines and the business community in drought management.
- Institutions managing droughts in the district must use a variety of innovative stakeholder engagement methods like joint ventures, focus groups, internet websites, publications, Facebook pages, newsletters, use of web 2.0 tools (Facebook and whatsapp pages) and among others to make sure a variety of stakeholders are reached. In line with this the government of Zimbabwe must immediately and effectively implement e-government so that stakeholder s will be engaged in drought management processes.
- Communities should not be over reliant on the government and Non Governmental Organisation for support in cases of droughts but should capitalise on the use of self or indigenous strategies that allow them to effectively prepare for and fight droughts. For example the use of the Zunde raMambo/Isiphala seNkosi social safety net can assist. The use of Internal Saving and Lending System can also benefit people.

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APPENDICES

Appendix I: <u>Questionnaire for Agritex officers and KDIs</u>

<u>INTRODUCTION</u>

Each and every questionnaire attached to an introductory letter.

INSTRUCTIONS

- Do not write your name or any other person's name in this questionnaire
- Please tick [√] where applicable
- Write your responses in the spaces provided
- Answer all questions.

SECTION A

Ward Number …….

1. Gender: Male [ ] Female [ ]

2. Level of Education: Ordinary level [ ] Advanced level [ ] Certificate [ ]
Diploma [ ] Degree: Undergraduate [ ]
Masters [ ]

3. Age:

Below 18 years [ ] From 18 to 30 years [ ] From 31 to 40 years [ ]
From 41 to 50 years [ ] From 51 to 60 years [ ] Above 60 years [ ]

4. How long have you been staying or working in Mutoko district?

Below 5 years [ ] 5 – 10 years [ ] 10 – 15 years [ ]
15 – 20 years [ ] above 20 years [ ]

SECTION B

5. What do you understand by the term drought? *(Please tick where appropriate)*

- It is a level of insufficient water, soil moisture and a condition of dryness that is not able to sustain human, plant and animal life [ ]
- It is a period of hunger and famine [ ]
- Not sure [ ]

6. Which management approach do you use to manage droughts in this district?

Proactive [ ] Reactive [ ]

(a) Explain why you use the approach that you have chosen in 6?

It is effective [ ] Shortage of resources [ ] Not sure [ ]

7. What do you think is mostly affected by droughts between the following?

People [ ] the environment [ ] Livestock [ ]

8. Which group of people do you think is most vulnerable to the impacts of droughts?

Old aged people [ ] Orphaned and Vulnerable Children [ ] Disabled [ ]

Women [ ] Widows [ ] Men [ ] people living with HIV/AIDS [ ]

9. Can you mark the season/s in which the impacts of droughts were most severe?

1981/82 [ ] 1991/92 [ ] 2001/02 [ ]

2004/05 [ ] 2007/08 [ ] 2011/12 [ ]

(a) If there is/are any other season/s please specify:

…….

10. Which factors do you think worsens the impacts of droughts in Mutoko district?

Soil infertility [ ] HIV/AIDS [ ] Unemployment [ ]

Lack of farming Inputs [ ] Poverty [ ]

(a) If there is/are any other factor/s please specify:

…….

11. Have you ever witnessed the following as the effects of droughts in this district?

	Yes	No
Deaths of people	[ ]	[ ]
Loss of livestock	[ ]	[ ]
Food insecurity	[ ]	[ ]
Forced marriages	[ ]	[ ]
Increased HIV/AIDS infections	[ ]	[ ]
Malnutrition diseases	[ ]	[ ]
Insufficient water for domestic use	[ ]	[ ]
Expensive farming produces	[ ]	[ ]
Death of Crops	[ ]	[ ]

(a) If there is/are any other impact/s please specify:

……..

12. Do you have a committee responsible for managing droughts? Yes [ ] No [ ] Not Sure [ ]

(a) If, **Yes** would you please list the members of the committee:

……

……

(b) How often does the committee meet?

Once every week [ ] Once in a month [ ] Once a year [ ]

Once in every three months [ ] Once in six every months [ ]

(c) Do you have any of the following committees/sub committees which are key to drought management:

	Yes	No	Not Sure
Drought **monitoring** sub-committee?	[ ]	[ ]	[ ]
Vulnerability **assessment** sub-committee?	[ ]	[ ]	[ ]
Drought **mitigation** sub-committee?	[ ]	[ ]	[ ]

(d) If, Yes to any of the above please fill in the name of the institutions that are members to each committee in the table below:

Monitoring	assessment	Mitigation
……	……	……
……	……	……
……	……	……
……	……	……
.		

13. Do you have a drought management plan? Yes [ ] No [ ] Not Sure [ ]

(a) If, **Yes** please explain how often the plan is updated?

……

14. (a) How do you identify stakeholders to work with in drought management?

Approach those with resources [ ] willing stakeholders approach us [ ]

Approach those who are involved in disaster management [ ] Not sure [ ]

(b) Which methods do you use to engage various stakeholders in the management process of droughts in Mutoko district?

	Yes	No		Yes	No
Meetings	[ ]	[ ]	Internet Websites	[ ]	[ ]

Working groups	[ ]	[ ]	Workshops	[ ]	[ ]
Whatsapp groups	[ ]	[ ]	Circulars	[ ]	[ ]
Facebook pages	[ ]	[ ]	Newsletters	[ ]	[ ]
Publications	[ ]	[ ]	Surveys	[ ]	[ ]
Surveys	[ ]	[ ]	electronic mails	[ ]	[ ]

(c) Which method of engagement do you mostly use? .....

(d) Why do you mostly use the method you specified in (b)?

It is not expensive to use [ ] It is effective [ ]

It is both cheap and effective [ ] Not sure [ ]

(e) Why do you engage stakeholders?

To inform them	Yes [ ]	No [ ]	Not Sure [ ]
To consult them	Yes [ ]	No [ ]	Not Sure [ ]
To involve them	Yes [ ]	No [ ]	Not Sure [ ]
To collaborate with them	Yes [ ]	No [ ]	Not Sure [ ]
To empower them	Yes [ ]	No [ ]	Not Sure [ ]

(f) What benefits do you get from engaging various stakeholders in managing droughts?

Resources [ ] Knowledge [ ] Improves decision making [ ] Nothing [ ]

15. Are there any structures at village or ward level that assists in the management of droughts in this district? Yes [ ] No [ ] Not Sure [ ]

(a) If, **Yes** what are of these structures?

……..

(b) Are these structures effective? Yes [ ] No [ ] Not Sure [ ]

16. Do you have enough resources required to manage droughts in this district? Yes [ ] No [ ]

(a) If, **No** explain how you manage droughts with inadequate resources:

Use the available few resources [ ] Source resources from well wishers [ ]

Borrow from other institutions [ ] Urge communities to use their own resources [ ]

17. What coping strategies do people use to cope with droughts at household level? *(Please tick all strategies that are used)*

Saving available food	[ ]	Growing drought tolerant crop	[ ]
Exchange casual labour for food	[ ]	Dependence on social networks	[ ]

Distress sale of assets	[ ]	Sale of livestock	[ ]
Informal trade	[ ]	Wild fruits gathering	[ ]
Gold panning	[ ]		

Others specify please:

……..……...

(a) Do you think these household coping strategies are effective?

Yes [ ] No [ ] Not Sure [ ]

18. (a) What are the response mechanisms and coping strategies provided by various institutions such as the government, Non Governmental Organisations (NGOs) and Private Organisations?

	Yes	No	Not Sure
Sinking Boreholes	[ ]	[ ]	[ ]
Food for work programs	[ ]	[ ]	[ ]
Provision of Farming inputs	[ ]	[ ]	[ ]
Small Scale Irrigation Schemes	[ ]	[ ]	[ ]
Off farm employment	[ ]	[ ]	[ ]
Livestock support	[ ]	[ ]	[ ]
Grain Loan Schemes	[ ]	[ ]	[ ]

Others specify please:

……

(b) Are institutional coping strategies effective? Yes [ ] No [ ] Not sure [ ]

19. What challenges do you face in managing droughts in this district?

……

……

……

20. What do you think should be done to counteract these problems and to effectively manage droughts in this district?

……

……

……..

Thank you very much.

Appendix II: Interview Guide for ward councillors, the District Administrator and traditional leaders

INTRODUCTION

Self, purpose of the interview and topic introductions by the researcher.

Date of Interview:_____ Start Time:_____ End Time:_____

Sex of interviewee:_____ Age of interviewee:_____

Name of Organisation:_____ Job position:_____

Ward Name:_____

Can you please give a brief description of your work?

1. What do you understand by the term drought?

2. How many droughts has Mutoko district experienced since 1980?

3. What do you think were the causes and effects of these droughts?

4. Which group of people do you think is most affected by droughts in this district?

5. Which approach (between proactive and reactive) do you use to manage droughts in this district?

6. What coping strategies do householders design to manage droughts at household levels?

7. What coping strategies/response mechanisms have been put in place by different institutional stakeholders to fight droughts in this district?

8. Do you have any Monitoring, Vulnerability assessment and Mitigation institutional structures in place?

9. Are there any village or ward level structures to manage droughts?

10. How do you engage various stakeholders in managing droughts?

11. What problems do you face in managing droughts and what solutions you think are most appropriate for these problems?

Thank you, your cooperation is

highly treasured.

Appendix III: Focus Group Discussion Guideline for householders

INTRODUCTION

Self, purpose of the gathering and topic introduction and specification of instructions by the researcher.

Name of Ward:_____Location:_____Date:_____

Start Time:_____End Time:_____

Attendance: Male _____

Female_____

Total _____

1. What do you think a drought is?

2. How many droughts has Mutoko district experienced since 1980?

3. What do you think are the causes and effects of these droughts?

4. Which group of people do you think is most affected by the droughts?

5. Do you manage drought proactively or reactively?

6. Do you have any early warning systems which allow you to manage droughts before they occur?

7. What coping strategies/response mechanisms do you use at household level in order to cope with drought?

8. What institutional coping strategies are in place?

9. Do you have any village or ward level structures to manage droughts?

10. How does the community engage various stakeholders in managing droughts?

12. What problems do you face in managing droughts and what solutions do you suggest for these problems?

Thank you, your
cooperation is highly treasured.

Appendix IV: <u>Observation checklist</u>

Items to observe	Observations
	Date/s of observation: Location/s:
▪ Impacts on the environment, people and livestock. ▪ Any materials related to drought impacts in the district.	
	Date/s of observation: Location/s:
▪ Drought management approach in place. ▪ Methods of engagement being used. ▪ Drought management meetings taking place.	
	Date/s of observation: Location/s:
▪ Institutional response mechanisms and coping strategies in place. ▪ Household response mechanisms in place.	
	Date/s of observation: Location/s:
▪ Observe drought management structures.	
	Date/s of observation: Location/s:
▪ Observable drought management problems and solutions in place.	

Appendix V: Introductory Letter

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Department of Local Governance Studies
Faculty of Faculty of Social Sciences

03 April 2014

TO WHOM IT MAY CONCERN

RE: RESEARCH FOR MUNYARADZI KADIKI

This letter serves to inform that I, Munyaradzi Kadiki, am a registered fourth year undergraduate student with the Midlands State University – Department of Local Governance Studies. I am currently doing a field research (which is part of the final steps for the completion of my degree) tilted, **'Innovative ways of engaging stakeholders in managing droughts'** using Mutoko District as my case study. This research is going to base on your responses for its validity and your responses will not be used for any reasons other than academic purposes. This means your confidentiality needs will be upheld and respected. I therefore kindly ask you to participate in this research to enrich this study.

If you have any queries you may contact the department of Local Governance Studies provided below on this letter. You may also contact me on +263 775 419 969.

Your assistance will be greatly appreciated.

Yours faithfully

Munyaradzi Kadiki

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