Evaluating the effects of the 2018/2019 drought in Zimbabwe. A case study of Gwakwe Village, Ward 6 in Gwanda District

by

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DECLARATION

I declare that the work I am submitting for assessment contains no section copied in whole or in part from any other source unless explicitly identified in quotation marks and with detailed, complete and accurate referencing.

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ABSTRACT

Climate change is increasing the frequency, duration and severity of droughts. Drought affects the poor and vulnerable in many communities, particularly women and children. A huge number of people in developing countries and countries facing wars are vulnerable to the effects of droughts. More than two-thirds of food in developing countries is produced by smallholder farmers who depend on rainfed agriculture. Many people have lost their livelihoods because of drought. Millions of people in Zimbabwe are food insecure because of droughts. Smallholder farmers in Zimbabwe grow maize as a staple food, and it is very sensitive to droughts. This has increased people's vulnerability to drought.

This study identified the source of livelihoods for the people of Ward 6 in the Gwanda District in Zimbabwe. The area is prone to droughts because it receives poor and erratic rainfall. The study identified the effects of the 2018–2019 drought in Zimbabwe. The effects of the drought included poor crop yields, death of livestock, lack of water, hunger, school dropouts, and increases in prices of basic commodities and agriculture inputs, soil degradation, siltation of dams and rivers, and migration. These effects forced households to use different coping mechanisms. Some of the coping mechanisms used by households are informal trade, gold panning, reduction of meal amounts and meal times, sacrificing other projects, food aid from the government and NGOs, remittances from children and relatives abroad, and selling of livestock and assets.

A qualitative method was used to collect data for this study. Data was collected from rural households who depend on rainfed agriculture as a source of livelihood. Female and male-headed households were part of the study. Questionnaires, interviews and focus groups were used to collect data from households, village heads, councillors, government officials and nongovernmental officials. The study used a narrative analysis to analyse the data collected. The study found out that many households could not cope by themselves during drought. The food aid they received from the government and NGOs was not enough to feed families. Water sources near households dried-up and households had to travel long distance to

access water. The study recommends that the government develops a drought policy, and create awareness and mitigation strategies. The study also recommends diversification to drought tolerant crops and livestock varieties as a coping strategy. Irrigation schemes can bring stability to food insecure households and sustainable livelihoods. The study identified the construction and rehabilitation of dams as a solution to the problem of water scarcity.

Keywords: climate change, assets, coping mechanism, drought, households, rainfed agriculture, sustainable livelihood, smallholder farmers, vulnerability, rainfall pattern, community

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NGO	nongovernmental organisation
US	United States
WFP	World Food Programme
ZimVAC	Zimbabwe Vulnerability Assessment Committee
ZJC	Zimbabwe Junior Certificate

CHAPTER 1: INTRODUCTION

1.1 Introduction

This chapter discuss the background of the study, outline the problem statement, and explore the research aim, research objectives, research questions, scope of the study, limitations of the study, and importance of the study.

1.2 Background of the Study

Ward 6 is located in Matabeleland South province, a region that is very prone to droughts. The province receives very little rainfall with an annual average of less than 500 mm. The major sources of livelihood in this province are livestock rearing, crop production, and artisanal mining (African Risk Capacity 2019:20). The people in this region are vulnerable to drought most of the time, and they do not only suffer from food shortages but also from lack of reliable water sources. Droughts in this region are catastrophic because they tend to wipe out the sources of livelihood (Zimbabwe Vulnerability Assessment Committee 2019:43). In times of need, livestock is sold and the money earned from livestock sales is used to buy food for family consumption. A series of droughts in the province in recent years has caused many people to lose their source of livelihoods.

Currently, the world is facing climate change. Climate change exacerbates the frequency, duration and severity of droughts. All the regions of the world, whether wet or dry, are affected by droughts at some point (Food and Agriculture Organisation 2019:1). Different areas are affected differently by droughts, and those in rural areas and the poor are more vulnerable to drought. According to Keshavarz, Maleksaeidi and Karami (2017:223), “agriculture as a dominant form of global land use is the main source of livelihood for more than 2.5 billion rural residents of the developing world”. Rural residents are one of the most vulnerable groups in the world because they depend on natural assets and resources such as land for their livelihood (King-Okomu, Tsegai, Pandey & Rees 2020:2). The areas worst affected by droughts are in countries facing civil unrest, wars or those

with weak economies. In addition, countries with weak economies face worst drought impacts because they do not have the capacity and resources to proactively deal with the impacts of drought (Frischen, Meza, Rupp, Wietler & Hagenlocher 2020:2).

More than a billion people in the world are food insecure, and the majority of these people are in developing nations. Drought has killed more than 11 million people since 1900 and has affected more than 2 billion people (Food and Agriculture Organisation 2019). Drought has affected and killed more people than any other natural hazard. About 90% of food in sub-Saharan Africa comes from rainfed agriculture, which is a source of livelihood for about 70% of the total population in the region (Jiri, Mafongoya & Chivenge 2017:778). With an increased frequency of droughts, more than half of the population of sub-Saharan Africa might be at risk of starvation.

Droughts increase the vulnerabilities of poor people to food insecurity. The problem is worsened because most people in Southern Africa plant drought sensitive crops such as maize, which is a staple food for many people in the region. Food deficit nations that depend on rainfed agriculture as the primary economic sector are more susceptible to droughts, and rural people in these nations who are poor and practise subsistence farming are especially vulnerable (Frischen et al 2020:2). Smallholder farmers produce most of the food in Africa, and about 70% of these farmers are women (Gnacadja & Wiese 2016:63).

Davis-Reddy and Vincent (2017:1) assert that Southern Africa is susceptible to extreme weather events such as drought, and these event are expected to increase in the 21st century. Although subsistence farmers are the biggest producers of food in Southern Africa, they rely on erratic rains, and in the five year period between 2015 and 2020 there has been only one normal growing season (The World Food Programme WFP 2020a). Millions of people in Southern Africa are vulnerable to the effects of drought, such as the shortage of food and water and many people have been plunged into poverty because of loss of livelihoods.

During drought, many families in Southern Africa eat less, skip meals and even sell their precious assets to acquire food (WFP 2020a).

According to Davis-Reddy and Vincent (2017:42), “severe droughts such as those of (1982–1983; 1991–1992; 1997–1998 and 2014–2015) have been linked to the El Nino-Southern Oscillation (ENSO) phenomenon”. The worst of these droughts is the 1991–1992 drought where millions of people lacked food and water for survival, crops failed and both domestic and wild animals died because of starvation and lack of water. The WFP (2020b) postulate that El Nino related droughts has greatly affected rural smallholder farmers who depend on rainfed agriculture. This kind of drought is accompanied by higher than normal temperatures and extremely low rainfall. The 1991–1992 drought reduced crop yield by at least 40% in Southern Africa, 30 million people were placed on the brink of famine, an estimated 49 000 agriculture related jobs were lost, and both surface and underground water sources were severely depleted (Baudon, Vogel, Nortje & Naik 2017:129).

Agriculture is the sector most affected by drought because it relies on the availability of water (Food and Agriculture Organisation 2019). The most notable impact of drought is crop failure, especially staple foods such as maize. This has food insecurity as well as health, social, environmental and economic impacts. Rural smallholder farmers who depend on rainfed agriculture for livelihoods are the most affected (Ainembabazi 2018:3). Lack of infrastructure, technology, policies and economic development have led to famines and a loss of livelihoods. Proper planning and proactive policies can help minimise the problem of vulnerabilities of poor communities to droughts and other extreme weather events.

Zimbabwe is one of the many countries in Southern Africa that are severely affected by droughts. In recent years the intensity and frequency of the droughts in Zimbabwe has increased. This puts many people at risk of losing their livelihoods because “maize is the most common grown staple food in Zimbabwe, cultivated by smallholder farmers for subsistence farming, but is highly sensitive to dry conditions and erratic rainfall” (Frischme et al 2020:2). Droughts do not only

put people at risk of starvation but also slows the process of achieving Sustainable Development Goals, particularly SDG 1 (No poverty) and SDG 2 (Zero hunger).

1.3 Problem Statement

In recent years Zimbabwe has faced recurring droughts, which put millions of people at risk of starvation. In the 2018–2019 farming season, Zimbabwe received lower than average rainfall, which placed more than half the population at risk of severe food shortages. The majority of these people are poor and rural dwellers with little or no opportunities available to make money to buy food. About 5.5 million rural residents in Zimbabwe are facing food insecurity (Chingono 2019), and most of these are smallholder farmers who depend on rainfed agriculture. Matabeleland South is in Region IV and receives an average of between 450mm and 600mm of rainfall in a normal season. It is semi-arid and prone to severe droughts. Most of the people live in rural areas and people plant maize as a staple food, a crop that is very sensitive to drought. When there is a drought, people harvest far less than required for their food requirements.

According to Wilhite (2000:85), droughts deplete food stocks and requires an intervention by governments and NGOs to supply people with food and prevent loss of human life. In light of the above, this study evaluated the effects of the 2018/2019 drought in Zimbabwe by focusing on Ward 6 in the Gwanda District.

1.4 Research Questions

- What are the main sources of livelihood for the people of Ward 6 in the Gwanda District?
- What are the effects of the 2018/2019 drought on the livelihoods of the people of Ward 6?
- What coping mechanisms have been used by the people of Ward 6 to survive the 2018/2019 drought?

- What strategies can be used by the people of Ward 6 to recover from droughts losses?

1.5 Research Aims

This study sought to evaluate the effects of the 2018/2019 drought to the livelihoods of the people of Ward 6 in the Gwanda District.

1.6 Research Objectives

The research sought to do the following:

- To identify the main source of livelihood for the people of Ward 6.
- To evaluate the effects of the 2018/2019 drought on the livelihoods of the people of Ward 6.
- To establish the coping strategies used by people to survive the effects of the 2018/2019 drought.
- To provide possible ways which the people of Ward 6 could use to reduce losses during droughts in the future.

1.7 Scope of the Study

Ward 6 is a rural area in the Gwanda District in Matabeleland South. This ward comprises seven villages, namely Gwakwe, Gonkwe, Sibona, Wabayi, Khozi, Sitezi and Mtshabezi Village. The ward has a population of about 4 905 people, with 2 387 males (48.7%) and 2 515 females (51.3%) (Zim Stats 2012). Gwanda District is in Region V, and it receives an average of less than 600 mm of rainfall annually. This area is highly susceptible to droughts. The recent drought occurred in the 2018/2019 farming season and overlapped to 2020. Agriculture is a source of livelihood to most residents. Growing crops, such as maize, a staple food, and keeping domesticated animals, like chickens, goats, sheep, donkeys and cattle, are the main agricultural activities. The people in Ward 6 are small-scale farmers who depend on rainfed agriculture, and there are no irrigation activities besides

small vegetable gardens by a handful villagers on the river banks. Recently, these gardens have disappeared because there has not been enough rainfall to sustain them and the rivers dry before the vegetables mature. Women and children are more involved in agriculture as some men have migrated to cities or to other countries, such as South Africa or Botswana, to seek employment. Others are engaged in gold panning in disused mines in the district or at Sheet Farm (a neighbouring farm) where they practise opencast mining. IsiNdebele is the main language spoken in the area and most people can speak, read and write English.

1.8 Limitations of the Study

1.8.1 Challenges

The first challenge the researcher experienced was that he is not based on the research site, and therefore, had to travel several hundred kilometres to collect data, which meant money was needed for travel expenses. It was also a challenge to find the people who had to be interviewed because they were in the bush at Sheet Farm or in disused mines digging for gold. Politics in the area under an opposition councillor may have hindered some interviewees from giving the much required data because they thought the researcher is aligned with the ruling party. Many people in one of the villages (Gwakwe), including women, are becoming involved in gold panning during droughts. The findings of this study may not be applicable to other wards in the district, the province or the country. Rural residents are used to drought relief from the government and NGOS, and therefore, they may have thought participation in the study had rewards as it dealt with their losses in past droughts.

The study was conducted at time when the world was facing the Covid-19 pandemic. This brought some challenges to data collection. Governments globally had created measures to contain the spread of the pandemic, such as lockdowns, prohibiting travel and meetings between people from different families and areas, social distancing, wearing of masks, washing and sanitising hands regularly, and curfews. This affected the freedom of association between the researcher and the

research participants because of fear of being infected with Covid-19, especially those over the age of 50 years and with comorbidities.

1.8.2 Mitigating the challenges

The challenges discussed above had a serious bearing on the data collection. However, this did not stop the research and certain measures were put in place to collect data. The researcher carried sanitizer and a thermometer to check the temperatures of the research participants with him. Participants were screened before interviews, and during focus group meetings social distancing of 1.5 m was observed. Participants always wore masks before, during and after sessions. In some cases, social media platforms such as WhatsApp were used, and the participants were allowed to use pseudonyms only known to the researcher. Government officials (rural district council and Agritex) and NGOs officials were interviewed using emails and recorded phone conversations.

The researcher had to go to the study area for about two weeks to make sure the participants know him. Furthermore, to enhance participation and openness by the participants, the researcher explained to the participants that this is an apolitical academic study and that the information they shared would be confidential and kept safe from unauthorised persons. Participants were allowed to choose dates and times they were free to participate (Wednesdays and Sundays where people in the area do not work for cultural reasons). To cater for those who might be too busy to participate or who withdrew from the study, the researcher over recruited by 20%.

1.9 Importance of Study

Ward 6 has been experiencing droughts for decades, and the frequency and severity of the droughts have increased in recent years. From 2018 to 2020, people in Ward 6 did not harvest anything from their fields because of low rainfall during that period. Drought impacts are devastating because they affect the livelihood of people who depend on rainfed agriculture. The livelihoods of many

people in the area is agriculture based, such as keeping livestock and growing of crops. Some people have diversified to small-scale mining as a source of livelihood because of the poor rains received in the region in recent years. Maize crops are very sensitive to the amount of rainfall received in a season, and less or too much rain is not good for its growth. Reduced precipitation leads to reduced crop yields and death of livestock, which is a source of livelihood for most people. In addition, droughts have led to lack of water for human consumption and watering animals. Many people have lost livestock because of lack of water. During a drought, animals wander off to the forest in search of water, making them vulnerable to thieves who kill them and sell meat illegally to butcheries and individuals. Furthermore, droughts have seriously contributed to food insecurity in the country as a whole because most of the food is produced by subsistence farmers. This study made the villagers aware of their problem and proposed solutions to the problem.

1.10 Outline of the Research Report

This study followed the following outline: Chapter 1 is the introduction in which the researcher discusses the background of the study and outline the research problem, research aim, research objectives and the research questions. The researcher also provides the scope of the study, the importance of the study and the limitations of the study. The second chapter is the literature review and conceptual framework. Chapter 3 discusses the research methodology and research design. The fourth chapter presents the results and findings from the data collected. The fifth chapter discusses the results and findings. Chapter 6 is the conclusion and provides recommendations.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

In this chapter, the researcher discusses the concept of drought, types of drought, trends of drought globally, its impacts, coping mechanisms, and how this study addresses these impacts. This is done by looking at what other scholars say about drought, and specifically, what other scholars say about coping and adaptation mechanisms displayed by regions with similar characteristics as Ward 6.

2.2 The Concept of Drought

Drought is an environmental disaster with devastating effects that have attracted attention from different groups of professionals, such as environmentalists, ecologists, hydrologists, meteorologists and agriculturalists (Mishra & Singh 2010:2). Drought can occur in both high and low rainfall areas (Mishra & Singh 2010:2; Wilhite & Glantz 1985:112; Wilhite, Hayes & Svoboda 2000:150). Though drought occurs in all climate regions, its impacts differ from region to region depending on the risks and vulnerabilities of the people in the area. Unlike other natural hazards, such as floods, earthquakes, volcanoes, and tsunamis, drought is non-structural and its impacts accumulate over a long period of time and can be experienced long after the drought has ended (Wilhite 1993:3). In addition, the impacts of droughts are spread over larger areas than the damages that occur from other natural hazards that are restricted to the areas where they occur (Wilhite et al 2000:151).

Some of the major characteristics of a drought include high temperatures, high winds, and low humidity (Mishra & Singh 2010:2). A drought is different from aridity and a heat wave because a drought is temporary and characterised by a deviation from normal climatic conditions (Hisdal & Tallaksen 2000:1). Aridity is a permanent climate feature and exists in low rainfall areas whereas a drought is a temporary aberration (Mishra & Singh 2010:2). A heat wave differs from a drought in that it

exists for a short period of time, such as a few days to a week, while a drought can last months, a year or a couple of years (Wilhite & Glantz, 1985:113).

Droughts are a result of reduced precipitation over a period of time, such as a season or a year, and climatic factors, such as high temperatures, high winds, and low humidity, which can aggravate the severity of drought (Wilhite 1993:4; Wilhite et al 2000:150). A drought reduces the available of water in surface and groundwater resources, which impacts the quality of water, crop production, power generation, riparian habitats, recreation activities as well as economic and social activities (Mishra & Singh 2010:2).

2.3 Definition of Drought

There is no universal definition of a drought but common to all types of drought is that they originate from a deficiency in precipitation that results in a shortage of water for different activities and for different groups of people (Wilhite & Glantz 1985:113). The defection for a drought must be area specific because it affects different groups of people differently (Wilhite & Buchanan-Smith 2005). According to Yevjevich (1967:1), “every water user has its own conception of drought, and that conception changes with the user’s conditions of operation”. Paulo and Pereira (2006:38) define drought as a natural but temporary imbalance of water resulting from persistent below average rainfall that is unpredictable and leads to reduced availability of water from water sources.

According to Zargar, Sadiq, Naser, and Khan (2011:334), it is not easy to define drought and many people consider extreme precipitation shortage as drought, but this is not enough to be objectively used for planning and managing droughts. They define drought “as the extreme persistence of precipitation deficits over a specific region for a specific period of time” (Zargar et al 2011:334). Wilhite et al (2000:150) define drought as a result of reduced amount of precipitation for a period of time that amount to a season, a year, or more and is often associated with climate factors such as high temperatures, high winds, and low relative humidity, and these climatic factors can aggravate the severity of drought. Wilhite

and Glantz (1985:3) point out that finding a universally accepted drought definition is a difficult task and may seem impossible.

Drought definitions are classified into two categories, namely conceptual and operational. A conceptual definition is stated in relative terms, and an operational definition attempts to identify the onset, severity and termination of drought periods (Mishra & Singh 2000:4). Conceptual definitions are formulated in general terms and are used to identify boundaries of the concept of drought, and they do not offer enough information for use in current drought assessments but can be useful when creating drought policies (Wilhite & Glantz 1985:4; Zargar et al 2011:334).

Operational definitions provide information about the onset, severity and the end of drought events (Wilhite & Glantz 1985:4). Furthermore, operational definitions can provide information on daily precipitation in relationship to evapotranspiration to determine the rate of moisture depletion and how this may affect plant growth in different stages of development (Wilhite & Glantz 1985:4). Operational definitions objectively define the start, end and severity of drought for a specific application (Zargar et al 2011:334).

2.4 Types of Drought

Droughts are categorised into four types: meteorological, agricultural, hydrological and socioeconomic. Figure 2.1 shows how the different types of droughts and the impacts they have.

2.4.1 Meteorological drought

Meteorological droughts are also known as climatological droughts and are defined in terms of the amount of rainfall received in a region for a specified period of time. Mishra and Singh (2010:5) define meteorological droughts as lack of precipitation in a region for a specific period of time. Hisdal and Tallaksen (2000:6) define meteorological droughts as a period where there are more days with less precipitation than a specified amount for a particular region. Different regions receive different amounts of rainfall, and therefore, when defining meteorological

droughts, it is necessary to take note of the average annual rainfall received in that area and the time in which rainfall is received in that year. Meteorological droughts are a precipitation deficiency that goes with an increased evapotranspiration in a large area for an extended period of time (Van Loon & Laaha 2015:361). The other features of a meteorological drought are increased temperatures, low formation of clouds and a lot of sunshine, which reduces relative humidity in the air.

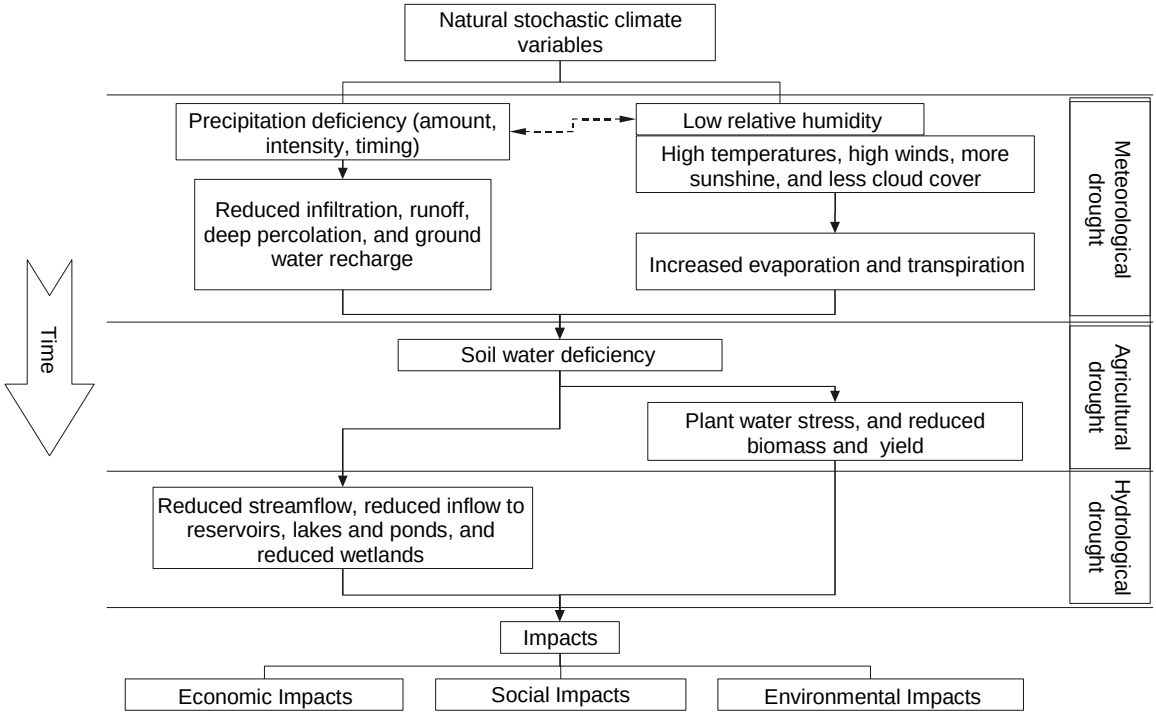

Figure 2.1: Sequence in the formation of droughts (Source: Zargar et al 2011:335).

2.4.2 Agricultural drought

According to Mishra and Singh (2010:5), an agricultural drought refers to a decline in soil moisture leading to crop failure without any reference to surface water resources. Richard (1960:431) defines agricultural drought as when soil moisture at root level is below permanent wilting percentage. A key feature in the definition of agricultural drought is the consideration of moisture state of the soil and how this affects plant growth (Richard 1960:432). A plant's demand for water depends on prevailing meteorological conditions, characteristics of the plant, its stage of growth, and the properties of the soil (Wilhite & Glantz 1985:6). Crop failures lead

to reduced crop yields, which is detrimental to rural households depending on rainfed agriculture. Agricultural droughts also affect the growth of plants and grass suitable for ground cover and grazing by animals.

2.4.3 Hydrological drought

Van Loon & Laaha (2015:359) defines a hydrological drought as lack of water in hydrological systems such as rivers, dams, lakes, reservoirs and underground sources. This is caused by reduced flow of water into streams, rivers, lakes, dams and underground sources of water such as aquifers. These droughts can last for a long period (months or years) and have a devastating effect on ecological systems and economic sectors. The influence and severity of a hydrological drought is seen in both surface and underground water bodies (Wilhite & Glantz 1985:7). For example, for 'Day Zero' in Cape Town in 2016, residents almost faced a situation where there would be no water from taps because the supplying dams had almost dried up (Welz 2018).

2.4.4 Socioeconomic drought

A socioeconomic drought happens when water resource systems fail to meet water demands, associating droughts with supply and demand for an economic good (Mishra & Singh 2010:5). Features of meteorological, agricultural and hydrological droughts affect the demand and supply of economic goods and services (Wilhite 2000:12). Zhao, Huang, Huang, Wang, Leng and Xie (2019:1085) define socioeconomic droughts as a condition where water supply fails to satisfy water demand, leading to adverse effects on society, economy and environment. Water supply is under stress because of the ever increasing population and climate change. Arid and semi-arid areas are at great risk of socioeconomic droughts due to their vulnerability to climatic variability (Zhao et al 2019:1085).

2.5 Global Trends of Droughts

There is an expected increase in the frequency, duration and severity of droughts because of climate change (McCabe & Wolock 2015:223). This will be characterised by a decrease in regional precipitation and an increase in evaporation because of global warming (Sheffield, Wood & Roderick 2012:435). Southern America, South America, Africa, Australia, Europe and Central and Western Asia are areas that will likely face increased drought duration and frequency and the soil moisture is expected to become drier (Xu, Chen & Zhang 2019:2375).

Trnka et al (2016:143) state that climate change is expected to increase the frequency, duration and severity of droughts in Central Europe. From 2006 to 2010, a period of five years, 15% of Europe and 17% of its population was affected by droughts annually (Spinoni, Nauman, Vogt & Barbosa 2016:4). Droughts in many parts of Europe have increased in severity; for example, the 2005 drought reduced yields by almost 10% in the European Union (Mishra & Singh 2010:3). The northern parts of Europe expect an increase in precipitation and the southern parts of Europe are expected to have an increase in frequency of droughts (Gudmundsson & Seneviratne 2015:75). This is a clear indication that drought is area specific.

There has been an increase in droughts and their severity in North America in the last two decades (Mishra & Singh 2010:3). Global warming has led to an increased duration of droughts, for example, the near 20 year drought in the south-western United States (Krajic 2019). There is an expected increase in wetness in some parts of eastern and central Asia as well as northern North America (Dai 2012:54). Increased drying due to reduced precipitation is expected in most of Africa, Southeast Asia, eastern Australia and southern Europe (Dai 2012:52).

- Precipitation in Southern Africa is expected to decrease by almost 20% by 2080 due to climate change (Ainembabazi 2018:1). This is expected to hit subsistence farmers who solely depend on rainfall to water their crops. From 2014 to 2016, Southern African Development Community countries

suffered one the most severe droughts recorded in a century (Nhamo, Mabhaudi & Modi 2019:75). This is one of the poorest regions in the world with over 70% of the population living in rural areas and depending on rainfed agriculture. The Southern African Development Community region is classified as a climatic hotspot because of its varying climate characterised by decreasing precipitation and increasing temperatures (Nhamo et al 2018:77).

2.6 Drought in Zimbabwe

The agriculture sector in Zimbabwe accounts to about 12% of the gross domestic product, and 70% of the population depends on subsistence farming (Frischen et al 2020:2). According to Samu and Bertug (2020:449), Zimbabwe has experienced many droughts ranging from mild to severe but has not experienced a famine where people die of starvation and malnutrition. From 1983 Zimbabwe has recorded 22 droughts, and eight of them are regarded as major droughts (African Risk Capacity 2019:8). Though drought severity and frequency vary in Zimbabwe, the most affected areas are in the southern and western parts of the country (Frischen et al 2020:1). It is estimated that Zimbabwe faces major to severe droughts every 5 years (African Risk Capacity 2019:8). Recently, droughts even overlap into the following year, increasing its impacts on the poor rural dwellers. Figure 2.2 shows that the Gwanda area had between 5.65 and 7.05 droughts in a period of 30 years, which is approximately one drought every four years. Some of these droughts happen in succession from one year to the next.

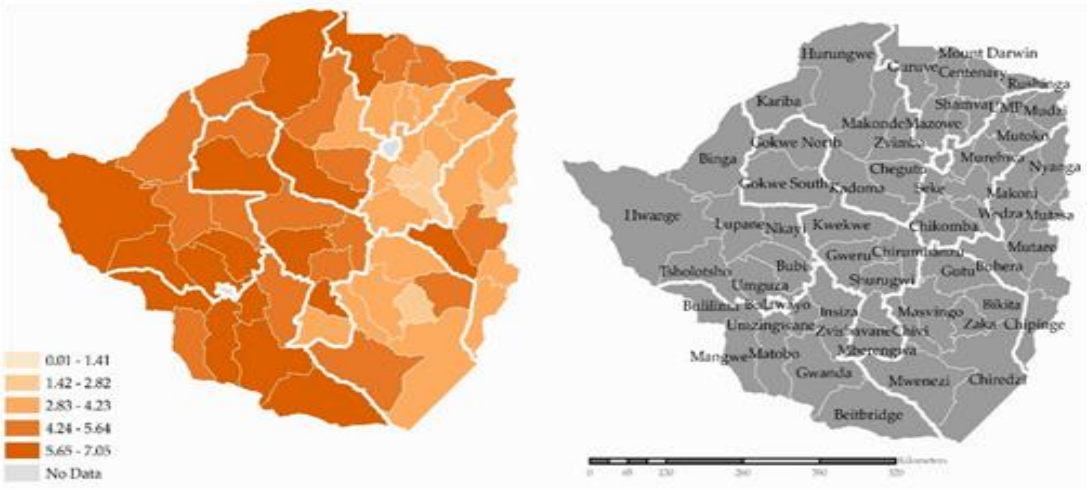

Figure 2.2: Drought severity index (Source: Frischen et al 2020:10).

Zimbabwe has been hit hard by droughts. Though most of the droughts are mild, their effects have been devastating because of their frequency. Table 2.1 shows drought years in Zimbabwe from 1950 to 2013 and also the severity classification (extreme, severe and mild).

Table 2.1: Droughts in Zimbabwe from 1950 to 2013 (Source: Nangombe 2014:2)

Grade	**Extreme drought**	**Severe drought**	**Mild drought**
Flood/Drought years	1983; 1992	1968; 1973; 1982; 2004	1951; 1960; 1964; 1965; 1970; 1984; 1987; 1991; 1995; 2002; 2003; 2005; 2007; 2008; 2009; 2010
Total	2	4	16
	3.3%	6.7%	26.7%

Table 2.1 shows that there have been two extreme droughts recorded (1983 and 1992), and that the extreme droughts were preceded by either a mild or a severe drought. The 1983 extreme drought was preceded by a severe drought in 1982, the extreme drought of 1992 was preceded by a mild drought in 1991, and the severe drought of 2004 was preceded by mild droughts in 2002 and 2003.

The 1992 drought left about three quarters of the county's population in dire need of food (Nangombe 2014:1). This drought was recorded as the worst drought in living memory of Zimbabwe as a nation, and the 1992 drought was exacerbated by mild droughts in the previous years (1987 and 1991) because the country depleted all the grain reserves during the past three years (Maphosa 1994:53). In 1992 the country harvested a paltry 13 000 tonnes of maize, which was enough for only two days of the nations' consumption (Maphosa 1994:53; Nangombe 2014:1). People were not only in need of food but also suffered a heavy loss of livelihood. An estimated million-plus cattle died in Zimbabwe due the drought, and people had to travel long distances in search of drinking and household water. Thousands of people lost jobs in the lowveld sugar farming areas and in the ancillary factories (Maphosa 1994:54). This increased poverty in the already struggling households who had to depend on food handouts from the government and NGOs. Maphosa (1994:53) points out that in the cities people were running after trucks carrying food to deliver in shops, and in rural areas people would spend days at depots waiting for the delivery of maize by the Grain Marketing Board.

In August 2019, the government of Zimbabwe declared the 2018/19 drought a national disaster (Act Alliance 2019). This led the government to appeal for humanitarian assistance from international organisations and NGOs. The Zimbabwe Vulnerability Assessment Committee (ZimVAC) reported that an estimated 5.5 million people (59% of the rural population) were food insecure (African Risk Capacity 2019:27). The WFP estimated that this drought's hunger period, during which millions would be food insecure, will go into March 2020 (United Nations 2019). Harvest time in Zimbabwe usually starts in May, and therefore people were food insecure before then in 2019. In 2019, the Ministry of Agriculture estimated that Zimbabwe harvested 776 600 tonnes of maize, which is a decline of 45% from the previous year and 59% of the five years average (Fewsnet 2019:1). In 2019, the country received below average rainfall, and the most affected areas were semi-arid areas. In most parts of the country, many households did not harvest anything (Fewsnet 2019:1). This pushed many households deeper into food insecurity, which meant they needed assistance from

the government and NGOs. Lower amounts of rainfall led to below normal stream flows, and some boreholes dried as early as May. Water availability became a challenge to many households for domestic use, livestock watering and other livelihood uses (Fewsnet 2019:7).

2.7 Ecological regions in Zimbabwe

Zimbabwe is divided into five ecological regions. These regions are also known as farming regions. These regions are divided according to the amount of rainfall received, soil quality, and type of vegetation. Region IV and V receive lower amounts of rainfall and are prone to droughts. In each drought episode these regions are more affected than Region I, II and III. Region V receives an annual average of less than 450 mm of rainfall. Figure 2.3 shows the distribution of ecological regions in Zimbabwe.

The southern parts of Zimbabwe (Matabeleland South, Matabeleland North and parts of Masvingo) are prone to drought. Matabeleland South receives less rainfall (450–650 mm annually) and is susceptible to severe droughts most of the time. People in Ward 6 practice subsistence farming and rely on rainfed agriculture for mostly drought resistant crops and cattle production. According to WFP (2016), in 2016, Zimbabwe harvested 50% less than the previous year's harvest because of reduced rains. Lack of infrastructure and development in the area has increased the risks to people and suffering during droughts. Approximately more than 70% of the people in this area live in rural areas and agricultural activities are their source of livelihood.

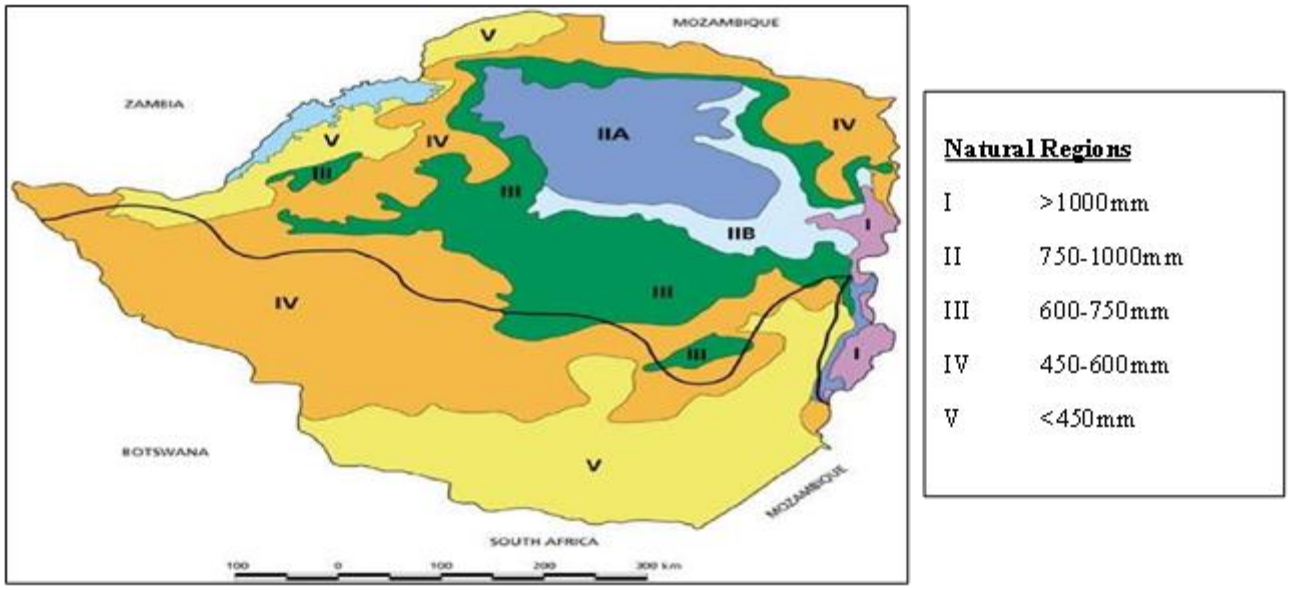

Figure 2.3: Ecological regions (Source: African Risk Capacity 2019:11)

The government of Zimbabwe declared the 2019 drought a state of national disaster because they had a deficit of about 900 000 tonnes of maize (Munyoro 2019). The majority of these food insecure people live in rural areas, and farmers produced less than 50% of what was needed to feed the nation. The people of Ward 6 in the Gwanda District needed humanitarian assistance to meet their food requirements. Poor villagers were the hardest hit as they failed to harvest anything and some even lost a large number of livestock, which is their source of livelihood. Though humanitarian assistance would be good, it is a temporary solution. The people of Ward 6 need proactive strategies that will help them minimise their losses and sustain their livelihoods during droughts.

2.8 The Impact of Drought

Droughts have devastating impacts that have greatly affected the poor worldwide, leading to water shortages, decreased crop yields, food insecurity and economic downturns (Frischen et al 2020:1). Drought impacts differ from area to area depending on societal vulnerabilities (Wilhite & Glantz 1985:3). The most affected are the women and children. According to Nangombe (2014:1), the increased occurrence of droughts in Zimbabwe since 2002 has led to the stagnation of rural

livelihoods that mainly depend on rainfed agriculture. Furthermore, droughts have contributed to a low life expectancy and high levels of emigration (Nangombe 2014:1). Makuvaro, Walker, Munodawafa, Chagonda, Masere, Murewi & Mubaya (2017:222) identify agriculture as a major economic backbone in Zimbabwe and smallholder farmers as major contributors to the national food security. Though drought has several impacts, direct and indirect, in the following subsections the impacts are grouped into economic, environmental and social impacts. The impacts of drought have a slow onset that grows over a significant period of time and is felt long after the drought period is over (Rezaei, Gholifer & Safa 2016:56; Wilhite et al 2000:150).

2.8.1 Economic impacts of drought

Many economies in Southern Africa are vulnerable to drought because of their dependence on rainfed agriculture (Hlalele, Mokhatle & Motlogeloa 2016). The economic impacts of droughts can be direct or indirect and include economic loses, job loses, loss of livelihoods, and increases in prices of agriculture related products such as food and animal feed. According to Dai (2012:46), a severe drought severely affects agriculture, water sources and human welfare. For people who depend on agriculture, the impacts are mostly direct since agriculture depends on water availability, and therefore, lack of water directly impacts the sector. Many African countries lack the capacity and resources to address drought impacts (Masih, Maskey, Mussa & Trambauer 2014:3636). However, people living in developed countries with high coping mechanisms, such as irrigation systems, can survive these impacts better compared to those in vulnerable regions (Dai 2011:46).

Droughts reduce agriculture production, which leads to an increase in food prices and food insecurity (Kalaba 2019). Gautier, Denis and Locatelli (2016) claim crop failure is the biggest consequence of drought. Hlalele et al (2016) point out that drought can lead to slow economic growth and political disorder due to famines and food insecurity emanating from drought. Reduced food production often leads to importing food to cover the food deficit, which increases the import bill and

consequently pushes up food prices, especially staple foods and basics, such as mealie-meal, sugar and cooking oil. Droughts do not only affect the agricultural sector but also affect sectors such as tourism and energy (Hlalele et al 2016). These sectors rely on the availability of water, for example, for electricity generation. A shortage of electricity greatly affects the economy of any nation.

2.8.2 Social impacts of drought

According to Masih et al (2014:3635), droughts are a climatic phenomenon that affects humanity. Droughts affect the lives of people in many ways, such as lack of water and food and social and psychological problems. The first and most important thing that people face during drought is lack of water because of reduced precipitation, which leads to decreased surface and groundwater resources (Keshavarz, Karami & Vanclay 2012:121). When droughts are poorly managed, they lead to famines, which is detrimental to people, especially poor women and children. Hlalele et al (2016) point out that droughts in poor communities can bring famines.

Gautier et al (2016) state that droughts cause lack of water, which leads to poor water quality and results in health problems. Lack of clean water in communities force people to live unhygienically in order to save the available water. Diseases such as cholera and bilharzia mostly spread in areas where there is lack of water. King-Okomu et al (2020:8) postulate that droughts cause water stress and scarcity, leading to increased cost of accessing water, which disadvantages lower income groups.

Drought is a threat to food security (Farooq, Wahid, Kobayashi, Fujita & Basra 2009:185). In the period 1900–2013, 642 droughts were recorded worldwide, which killed about 12 million people and affected more than 12 billion people (Masih et al 2014:3635). During droughts many people, especially the poor, have reduced or no access to food. Drought is a threat to sustainable livelihoods in sub-Saharan Africa in arid and semi-arid regions and has resulted in deficiency in food supplies (Wilhite 2000:3). Families eat less or even skip meals during droughts

(WFP 2020a). This leads to poor nutrition, which puts many people at risk of malnutrition and causes stunted growth in children. Chingono (2019) state that the 2018–2019 drought in Zimbabwe affected children's health, and almost 90% of infants suffered from malnutrition and stunted growth. In some cases, children were forced to miss school or drop out because of hunger (WFP 2016).

Droughts have caused the death of thousands of livestock, a source of livelihood to many people in rural communities, especially the poor. Hlalele et al (2016) points out that droughts cause loss of livestock because of loss of grazing land. In some cases, droughts become a source of conflict over scarce resources such as grazing land and access to water (Gautier 2016). Loss of livelihoods can lead to migration in search of better life or employment opportunities. Droughts can lead to conflicts, rural to urban migration, reduced quality of life, and have psychological and emotional impacts such as depression and suicide (Keshavarz et al 2012:121; Wilhite 2000:3).

2.8.3 Environmental impacts of drought

According to Keshavarz et al (2012:121), the environmental impacts of droughts include loss of natural habitats, reduced crop productivity, increased temperatures and evapotranspiration, reduced soil productivity, and lowered water sources. These impacts exacerbate economic and social impacts. Drought has devastating impacts on agriculture, water resources, and the environment and are mainly blamed for causing land degradation, aridity and desertification (Masih et al 2014:3635; Sheffield et al 2012:435). Reduced precipitation affects plant growth, which offers food and habitats to animals and acts as soil cover to prevent soil erosion. Reduced stream flow affects the availability of water in rivers and dams. Some environmental impacts of drought become permanent features (Wilhite & Vanyarkho 2000:253).

2.9 Drought Coping Mechanisms

Despite the devastating impacts of drought, people have ways to try and deal with these impacts. Keshavarz et al (2012:121) point out that during droughts people employ various ways to mitigate drought consequences, including borrowing money at exorbitant rates, and selling their land, livestock and valuable assets at low prices in order to survive. These are short-term measures aimed at providing food on the table for households or preserve the little that people have. This is a difficult time that reduces the dignity of all humans. Some women are forced into prostitution in order to provide food for their families, which is something that degrades their dignity and seen as immoral in African cultures (Chingono 2019). In serious cases, families skip meals and or eat less to preserve the dwindling food stocks (WFP 2020a). Fewsnet (2019:4) point out that poor households use various strategies such as reducing the number of meals eaten in a day, reducing portion sizes, and preferential feeding, where food is given to kids before adults. This happens in critical stages of droughts when there is very little left for families to eat.

After a drought is declared as a state of national disaster by the government, people are provided with food aid by the government and NGOs, but this is often late (Frischen et al 2020:16). The majority of the population in rural and drought prone areas rely on food aid during droughts. According to Ainembabazi (2018:2), reactive solutions such as the provision of food aid fail to promote sustainable and adaptive technologies. Sustainable and adaptive technologies are meant to create long-term solutions that help create sustainable households, communities and nations that can withstand drought shocks.

Drought is also a reason some people migrate from their homes in search of better opportunities (Wilhite & Vanyarkho 2000:245). When people get employment in places where they migrated to, they send food and money back home. This helps migrants' families back home to get food and avoid starvation. In the long term, migration can bring unintended results, such as family break-ups and failed marriages. In some areas people have diversified to non-agricultural activities

such as gold panning. In addition, people plant drought resistant crops such as sorghum and millet.

2.10 Drought Coping Mechanisms in Other Countries

People affected by droughts in different parts of the world employ different coping mechanisms depending on available assets and means of livelihood. This study look at coping mechanisms employed by people in Kenya and India because these areas are similar to that of Ward 6 in climate and means of livelihood.

2.10.1 Drought coping mechanisms in Kenya (Baringo County)

Baringo County in Kenya is an arid area that receives between 350 mm and 600 mm of rainfall a year, and most of the people who life here are pastoralists (Pepela, Nabiswa & Mugalavai 2019:4). The area is drought prone because of the low and erratic rainfall received in recent times. Pepela et al (2019:5) identifies water shortages, loss of life, death of livestock, destruction of crops, and poor harvests as the effects of droughts. These challenges have taken a source of livelihood away from many people there. Most livestock affected by drought in the area are domesticated animals, which are a source of livelihood for most of the people (Pepela et al 2019: 6). Despite the challenge of drought, people have devised some coping mechanisms. Short-term measures are employed to reduce the effects of climate change events such as droughts (Antwi-Agyei & Nyantakyi-Frimpong 2021:2) to cushion people from the harsh effects of droughts. The following subsections discuss the coping mechanism people use in this area.

2.10.1.1 Diversification of livelihoods

Reliance on agricultural activities as a source of livelihood has put many at risk of starvation during droughts. With little and erratic rainfall received in Baringo County lowlands, many people, especially subsistence farmers, have lost their livelihoods, and therefore, people have diversified their livelihoods to off-farm activities in order to survive (Pepela et al 2019:6). These off-farm activities are meant to supplement the agricultural livelihoods that have become very risky and

unreliable. Ezenwa, Ibe, Ochor & Ogbonna (2018:2) state that in sub-Saharan Africa where there is a reduction in agricultural production because of climate change, and households now depend on other livelihood means. Households engage in non-farm activities, such as petty trading, to generate some income to help them survive the harsh conditions created by droughts.

2.10.1.2 Moving livestock to areas with better pastures

Since most people in Baringo County are pastoralists, droughts pose a huge danger to their cattle because of poor pastures. To try and avoid losing much of their herds, some cut grass when there is plenty of grass to use it as feed during the dry season (Ezenwa, Omondi, Nwagbara, Ggadebo & Bada 2018:704). However, this is a short-term strategy that cannot sustain large herds (Quandt 2021:6). Ezenwa, Omondi et al (2018:704) postulate that in the long run, the most common coping strategy is moving livestock to areas with better pastures. Though this is a better strategy, it can easily cause conflicts with the inhabitants of the area where the livestock is moved to.

2.10.1.3 Irrigation

Droughts have made practising agriculture as a means of livelihood very difficult and unreliable. Many have tried to devise ways to continue farming during droughts. In Baringo County irrigation is used as a coping strategy during droughts, but it is expensive and requires a lot of capital, which excludes households that cannot raise the capital to buy the required resources unless it is a community project aimed at helping poor households (Ezenwa, Omondi et al 2018:704). Irrigation can be the future in drought prone areas as it allows cultivation during dry periods. Irrigation is seen as an opportunity to supplement the little and erratic rainfall received (Antwi-Agyei & Nyantakyi-Frimpong 2021:8). Though irrigation can be viewed as a long-term strategy, it can be very useful in the short term as it allows people to get food and can create employment when successful farmers employ the poor.

2.10.1.4 Food diversity

Droughts bring different changes in people's lives. During droughts people lack food, which forces them to seek alternatives to their usual diet. Though food diversity has been adopted by a few households in Baringo County, some households identified poverty and poor education as a reason for not diversifying their food (Pepela et al 2019:7). Food diversity creates an opportunity when drought resilient crops and livestock are used to reduce the effects of drought. Ezenwa, Ibe et al (2018:12) assert that it is necessary to create an adaptive capacity for future household resilience and sustainable livelihoods.

2.10.2 Drought coping mechanisms in India by the Oraon tribe

The Oraon tribe lives in the Sundragarh District of Orissa and are marginal farmers. During droughts, they employ various coping mechanisms to try alleviating the devastating effects, such as diversify their livelihood to non-farm activities and temporarily or permanently migrate to other areas (Mishra 2007:181). Marginal farmers and landless households are the hardest hit, making them more vulnerable to the drought effects, and therefore, they are the first to diversify. The coping mechanisms the Oraons use during droughts are discussed in the following subsections.

2.10.2.1 Reduction of food consumed

When food is scarce, many households cannot attain food and food prices tend to increase. To conserve available food, households reduce the amount of food eaten and even change their eating patterns (Mishra 2007:183). This is not enough because households have less resources. Adjusting food consumed is seen as a very important strategy during drought episodes (Mishra 2012:65), and it is done by reducing the quantity of food eaten during meals or reducing the number of meals eaten in a day. This can lead to malnutrition, leaving households vulnerable to food deficiency diseases, especially children.

2.10.2.2 Changing occupations

During droughts, crops fail and households are forced to change their occupation to non-farm activities (Swarna & Anitha 2019:9). Households change to activities such as selling timber and firewood and some look for jobs. Selling timber and firewood is unsustainable as it involves cutting trees, which leads to deforestation. To make things worse, most of the people have no other skill besides agriculture, and they become unskilled labourers (Mishra 2007:183). Another problem is that when many people resort to selling firewood, it significantly reduces the price of firewood, and hence, it gives poor returns.

2.10.2.3 Mortgaging land and other assets

Droughts make land unproductive, which makes it less valuable at the time. Households faced with food shortages mortgage their land and other valuable assets. Mishra (2007:183) postulates that when crops fail, people view land as unimportant, and therefore, they take loans using it as collateral and owners pay back loans, including interests, in order to get back their land. Swarna and Anitha (2019:9) state that households take out loans using livestock as collateral security, depending on market prices. Failure to repay such loans leads to the loss of livestock, which make the households more vulnerable to droughts. Mishra (2012:79) asserts that households resort these coping mechanisms when other strategies prove ineffective or fail to satisfy their needs.

2.10.2.4 Borrowing to repay later in the form of labour or produce

According to Swarna and Anitha (2019:13), borrowing to ease pressure from seasonal fluctuations in agricultural income is common in rural areas. In some instances, farm labourers find themselves jobless because of less demand for labour. As a coping mechanism, they borrow food loans from their employer with an agreement to work extra hours or days or payback from the produce they expect to harvest from their land (Mishra 2007:183). Marginal farmers do not get enough from their land, and so, the little that they get in their next harvest is passed

on to the people who they owe, leaving them more vulnerable to shocks such as droughts.

2.10.2.5 Migration

Sometimes people must make tough decisions to try and cushion drought effects. Mishra (2012:79) assert that depending on the severity of the drought, people go to other places in search of employment. Swarna and Anitha (2019:12) point out that distress migration is an important source of income to landless labourers, but it can have unintended consequences. Landless labourers are unskilled, and therefore, the kind of jobs they attract pay poorly and may not be enough to support their families back home and themselves at the same time. In the long term, these migrants lose much socially and economically.

2.10.2.6 Selling of valuable assets

To cope with drought, people sell their valuable assets in order to buy food. These assets are sold at very low prices out of desperation (Mishra 2007:184). The assets sold include furniture, ornaments and livestock. Livestock is a source of livelihood and selling it out of desperation leaves households more vulnerable to drought effects. Swarna and Anitha (2019:9) identify livestock as the most valuable asset of the households that is sold during droughts to avoid major loses from the drought. Livestock are sold at a very low prices because of their poor condition and the desperation of the sellers.

2.10.2.7 Reliance on aid

In some cases, people receive aid from the government and NGOs in the form of food and cash. In many households, aid is the only source of income or food. The government of India developed a number of relief support programmes to help the poor survive the severe effects of droughts. These government sponsored programmes act as safety nets to poor marginal farmers, but they reach a very small number of needy households (Swarna & Anitha 2019:13).

2.11 Reaction to Drought

With increased frequency and severity of droughts, it is necessary to create drought plans to deal with drought issues. Governments and the international community must work together to develop drought plans to help reduce their impacts (Wilhite & Vanyarkho 2000:254). According to Wilhite (1996:235), developing drought plans is a step in the right direction as they will help anticipate droughts and outline preventative measures to reduce their impacts. At national level, governments usually have three ways to deal with droughts: pre-drought mitigation programmes (impact reduction), post-drought relief programmes (emergency assistance to victims), and preparedness planning (institutional capacity for timely and effective response to reduce impacts; Wilhite & Vanyarkho 2000:255). Though this is a good thing, governments face challenges developing and implementing these plans due to institutional, political, budgetary and human capacity issues (Wilhite 1996:235). Other challenges are that droughts have a slow onset, lack a universal definition, and its impacts are difficult to determine, which may lead to confusion and inaction by decision makers (World Meteorological Organisation & Global Water Partnerships 2014:5).

According to the World Meteorological Organisation & Global Water Partnership (2014:4), the development of drought policies and preparedness plans increases societal resilience to climatic shocks. Drought prone regions take time to recover from droughts, and in some instances they experience another drought before they fully recover from a previous drought. Countries must move towards proactive drought policies to make societies more resilient to drought events. Wilhite and Vanyarkho (2000:255) point out that reactive crisis management policies are inefficient, ineffective and may even increase vulnerability of communities and individuals to droughts. Once this happens, the vulnerable will always require relief from the government and NGOs.

2.12 Drought Planning and Early Warning Systems

Many people are vulnerable to droughts globally, and it is necessary to focus on planning and preparing for droughts. Wilhite (2000:7) stated that as vulnerability to drought grows, more attention has been focused on trying to reduce the risks associated with droughts by planning to increase operational capabilities and putting mitigation measures in place to reduce drought impacts. Robust and sustainable resilient solutions are needed to prepare households, communities and nations to withstand drought impacts (Ainembabazi 2018:3). Drought early warning systems provide timeous and effective information that enable exposed, vulnerable communities to prepare effective responses to the drought hazard (Nhamo, Mabhaudi & Modi 2019:76).

2.13 Drought Plans in Zimbabwe

According Nhamo, Mabhaudi & Modi (2019:76), Madagascar, Malawi, Zambia and Zimbabwe have no drought policies. However, these countries have infrastructure and institutional frameworks to deal with drought conditions on a reactive and crisis management basis (Wilhite 2000:5). This has helped governments to identify vulnerable sectors, groups and people. According to Wilhite and Vanyarkho (2000:14), “developing a drought policy and contingency plan is one way that governments can reduce the impacts of future droughts and improve the effectiveness and efficiency of future response efforts”. Currently, many drought prone countries are developing drought policies modelled on the 10-step planning process used in the United States. This development plan is generic, which allows any drought prone country to develop its drought plan to suit its needs (Wilhite 2000:6). Figure 2.4 shows the 10-step process.

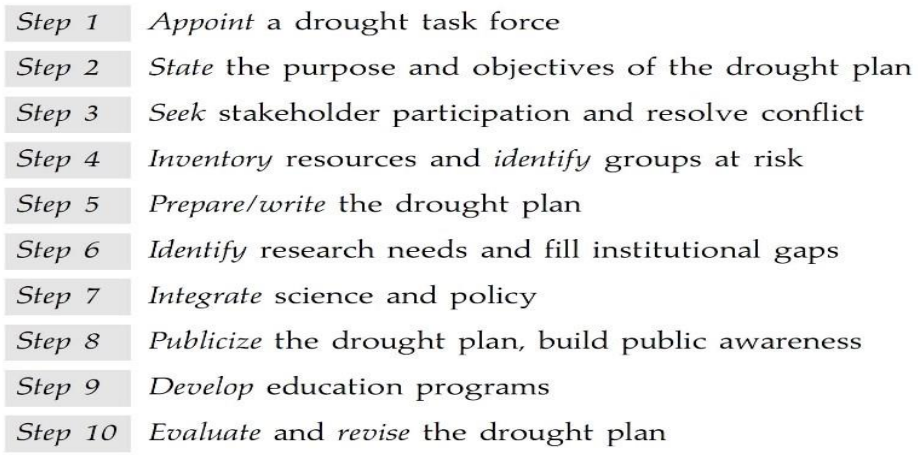

Figure 2.4: The 10-step planning process (Source: Wilhite 2000:11)

This is a holistic plan that seeks not only to address drought issues but also to make sure that everyone is prepared to avoid severe drought consequences. All stakeholders are involved and capacitated to withstand drought effects. The first step of the plan requires appointing a task force team with representatives from national to local level. This plan is developed and implemented during droughts and evaluated post drought.

2.14 Response to Drought in Zimbabwe

Zimbabwe's responses to drought has been reactive during the past 10 years. These reactive solutions are short-term measures meant to reduce drought effects for a particular time (Ainembabazi 2018:2). This has been done through distributing food to affected households. The government and large international organisations, such as the WFP, and NGOs, such as CARE International, World Vision, and Plan International, have distributed food to millions of needy households. Drought in Zimbabwe falls under the Civil Protection Act of 1989 (Chapter 10:06) (African Risk Capacity 2019:12). This Act guides and regulates all natural hazard activities in the country and "is managed and implemented by the Department of Civil Protection (DCP) under the Ministry of Local Government, Public Works and National Housing (MoLGPWNH)" (African Risk Capacity 2019:11). The DCP is given the responsibility to coordinate and manage all

drought disasters and relevant stakeholders. Even though Zimbabwe currently has no drought policy, it has several mitigation strategies that aim to lessen drought effects. These mitigation strategies include establishing irrigation schemes, dams for water storage and irrigation purposes, promoting drought tolerant crops (small grains), agriculture support schemes, and promoting conservation farming and strategic grain reserves (African Risk Capacity 2019:11).

2.15 Food and Livelihood Assessment in Zimbabwe

Zimbabwe assesses its food security through the Zimbabwe Rural Livelihoods Assessment and the Crop and Livestock Assessment. The Zimbabwe rural livelihoods assessment is done by ZimVAC. This committee comprises government, United Nations and NGO officials, is led by the Food and Nutrition Council of Zimbabwe, and aims to provide the government and development partners with information for policy and programming matters (African Risk Capacity 2019:17). Assessment reports from ZimVAC are presented to the Cabinet through the Working Party on Food and Nutrition Security chaired by the country's Vice President. The Rural Livelihood Assessments are done yearly after the harvesting period and are funded by the government and its partners.

The crop and livestock assessment is done in two phases: The first phase during the first quarter of the season establishes the area planted, growing conditions for all crops and the conditions of grazing for livestock; and the second phase is done during the last quarter and estimates crop yield and the condition of livestock (African Risk Capacity 2019:17). The crop and livestock assessment falls under the Ministry of Agriculture, Lands Water, Rural Resettlement, Fisheries and Water Management. A survey of farmers and extension officers is carried out using questionnaires, which are verified, analysed and written up by technical officers.

2.16 How the Study Sought to Address Drought Impacts

Droughts are climatic events that cannot be prevented but measures can be taken to prepare people to cope with its direct and indirect impacts (Solh & Van Ginkel

2014:63). This study will help people to see how drought affects them and help them realise how much they lose during droughts. By sharing ideas in interviews and focus group meetings, others will learn what their fellow villagers have done to avoid loses from droughts.

Smallholder farmers rely on rainfed agriculture, and when crops fail, they have less alternatives for livelihood. It forces them to turn to natural resources to try to fend for their families, which leads to exploitation of fragile land resources, making them victims and willing agents of environmental degradation and desertification (Shiferaw, Tesfaye, Kassie, Abate, Prasanna & Menkir 2014:68). This study will make them aware of how their agricultural practices and overreliance on the environment exposes it to desertification and loss of biodiversity. A change in how they use land resources during droughts will contribute to sustainability.

This study will help research participants diversify from their traditional methods of farming and natural resource use because diversification help people manage droughts (Shiferaw et al 2014:77). Villagers in Ward 6 mainly grow maize, a crop that is very sensitive to lack of rainfall. This study will suggests that villagers shift to drought resistant crops, such as sorghum and millet, and crops that mature early, such as cowpeas. This study will also make them aware of how diversifying to activities such as gold panning can improve their livelihoods and will also highlight the sustainability issues of such activities in the long term.

2.17 Conceptual Framework

This study was based on the sustainable livelihoods approach. Oxfam (2013:6) identifies organisations in Global South, Amartya Sen, United Nations Human Development Programme and Robert Cambers as key players in the development of sustainable livelihoods approach. The Brutland Commission on Environment and Development was the first to introduce the idea of sustainable livelihoods (Krantz 2001:6). People in their communities have a certain way of living, and they use different strategies, activities and resources to meet their daily needs. Some

of these have been passed on from generation to generation and some have been developed with time to meet changing needs and the environment.

What people do to earn a living or meet their basic needs is their livelihood. Chambers and Conway (1991:5) define a livelihood as “adequate stock and flows of food and cash to meet basic needs”. In order for individuals or households to meet their daily basic needs, they need enough food and a constant source of income. In rural areas, households have several ways, such as farming and employment (formal or informal), to meet their basic needs. Krantz (2001:7) says a livelihood comprises capabilities, assets and activities that people need for their day-to-day living. Livelihood strategies vary between people and households depending on the assets they own, their age, income levels, gender, ethnicity, social and/or political status (Krantz 2001:9). Those who own more assets or are socially or politically connected are better placed to avoid shocks and stresses, and those with few assets are vulnerable to shocks and stresses. Scoones (2021:31) argues that “poverty remains mostly rural and vulnerable livelihoods results from lack of resilience and adaptive capacities to respond to variable contexts”.

When something is sustainable, it can sustain itself, and therefore, nothing from outside its operation is needed to keep it going. Chambers and Conway (1991:5) say “sustainability connotes self-sufficiency and an implicit ideology of long-term self-restraint and self-reliance”. For a sustainable livelihood to take place, people must use available resources in a way that they do not deplete them to continue using them in future and for many generations to come. The manner in which people use available resources determine whether livelihoods will be sustainable.

A livelihood is sustainable when it can cope and recover from stress or shocks and still continue to provide for the people in the short and long term (Oxfam 2013:6). In drought prone areas, people face many challenges such as water shortage, depreciation of food stocks, and loss of grazing land, leading to loss of livestock. These people must be able to withstand drought conditions and recover from drought loses without external help if they are to have sustainable livelihoods.

Different assets available in communities and households must be used to ensure sustainable livelihoods. In addition, Krantz (2001:11) postulates that reducing people's vulnerability to risks may motivate them to engage in new productive areas that can improve their incomes.

These assets include physical or natural assets (for example, land, water, and seeds), human assets (for example, skills and knowledge), social assets (for example, formal and informal relationships), economic or financial assets (for example, cash, debt, savings and production equipment) and public assets (for example, local organisations, community centres, local projects, levels of participation, engagement and involvement in community activities; Oxfam 2013:7). Therefore, how many assets an individual or household owns determines their vulnerability to a stress or shock. Livelihoods of rural Zimbabweans depend on agriculture activities so land becomes a critical asset, (Mutopo 2014:197). Female-headed households and people living with disabilities tend to own less assets, which increases their vulnerability to stresses and shocks.

The United Nations Development Programme uses an asset-based approach to help vulnerable people achieve a sustainable livelihood. For generations people have used available assets to cope and recover from stress. The indigenous knowledge that they possess is vital to help them achieve sustainable livelihoods. Krantz (2001:11) state that the poor know their situation much better than anyone and therefore, they must be involved in designing policies and projects to uplift them. This creates ownership of projects by those meant to benefit from them.

Access to capital assets, policies and institutions affects livelihood strategies. Policies and governance also affect people's livelihoods, and therefore, they must be taken into consideration in order to take people out of poverty (Krantz 2001:13). Policies and laws can determine who has access to what, and therefore, they can create vulnerabilities among poor individuals and households. "The ability to respond efficiently to shocks and stresses is essential to reducing vulnerability", (Scoones 2021:30). Livelihood strategies influence livelihood outcomes. During a drought people rely on their personal assets, natural resources and support from

the government and NGOs. This may affect the sustainability of natural resources, such as trees, which are cut down for firewood. Livelihood outcomes affect capital assets in the sense that depleted natural resources can leave assets exposed to things like soil erosion and depleted social relations through fighting or competing for these resources. Below is a diagram of a Sustainable Livelihood Framework showing the relationship between assets and livelihoods and how assets can be used to meet or deny livelihoods.

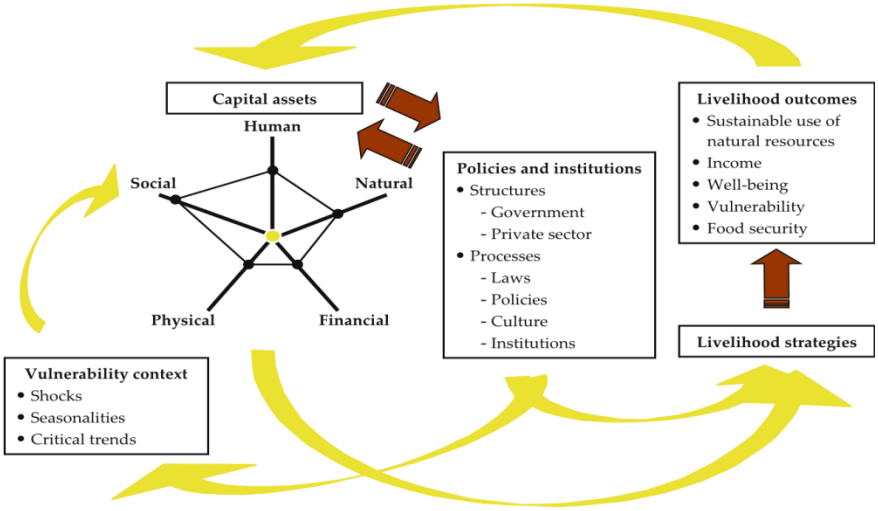

Figure 2.5: The Sustainable Livelihood Framework Source: Serrat (2017:22)

Before considering the sustainable livelihood approach, the researcher also looked at the basic needs approach and the capability approach to help the vulnerable mitigate the effects of droughts. The basic needs approach was widely used in the 1970s and looks at meeting the basic needs of the people. Stewart (1985) states that the basic needs approach deals with the fulfilment of nutritional needs, such as food and water, and other needs, such as clothing and the provision of health and education services. Although droughts deplete basic needs such as food and water, affect the health of people, and make children drop out of school, it is materialistic and may overlook sustainability issues in terms of how people use their environment to meet their basic needs (Streeten 1979:137). The other weakness of the basic needs approach is that it is a more top down approach.

The researcher also looked at the capability approach as an alternative approach to deal with the effects of drought. This approach was developed by development economist Amartya Sen and others such as Martha Nussbaum (Walker & Unterhalter 2007:2). This approach focusses on the development of a person to be able to lead a normal and healthy life. Considering that people are vulnerable to droughts because they do not have enough assets, their development equip them with skills to be able to withstand drought effects. Alkire and Deneulin (2009:1) state that the objective of capability approach is to expand what people are capable of, give them what is known as 'people's real freedom' and puts people first. A problem with this approach is that it may choose a growth in the economy to help people achieve their needs but that it could be something that harms the environment, which is an important aspect in the sustainability of livelihoods of the people.

2.18 Conclusion

The chapter outlined the concept of drought and different definitions of drought. Different types of drought were also discussed. Global trends of drought were reviewed showing how drought has increased in frequency in different parts of the world. A few selected severe droughts in Zimbabwe were reviewed. Different drought impacts and coping mechanisms employed during drought events were also discussed. Furthermore, drought mitigation strategies were outlined in attempt to show how drought impacts can be minimised or avoided at local and national level. The importance of drought planning and early warning systems was noted in an attempt to create systems that are prepared for drought hazards. In addition, the response to drought in Zimbabwe was outlined together with how Zimbabwe assesses the vulnerability of people and communities. In conclusion the chapter outlined how this study sought to address drought impacts and the theoretical framework the study employed to deal with issues of drought.

CHAPTER 3: METHODOLOGY AND DESIGN

3.1 Introduction

This chapter discusses the methodology and research design used in this study. Firstly, an outline is given of the study area, its location, demographic details, the climate, and agriculture practised in the area. Next, the research paradigm, research approach, research design, study population and sampling are discussed. This is followed by a discussion of the data collection tools/ instruments, procedure and data analysis. Lastly, the ethical considerations and limitations of the study are outlined.

3.2 Study Area

The study area is in the Gwanda District in Matabeleland South Province, which is one of the 10 provinces in Zimbabwe. Gwanda District is divided into 24 wards. Ward 6 is one of them and has seven villages, namely Gwakwe Village, Sibona Village, Gonkwe Village, Mtshabezi Village, Sitezi Village, Wabayi Village and Khozi Village. The people in the district speak IsiNdebele, and the majority can also speak English. Traditionally, Ward 6 is under Chief Mathema. Ward 6 has a population of 4 911 people, with 2 518 women and 2 393 men, and there are 1 023 households with an average of 4.8 people per household (Zim Stat 2012:77). The area has seven primary schools and three secondary schools, one of which is a boarding school. Only a few households can afford to send their children to this boarding school because of the fees charged by the school. There is one clinic, one hospital, and one police station. The ward has access to Agritex services, which is stationed in one of the villages.

The area is rural and most people practise subsistence farming as their main source of livelihood. The people grow maize, a staple food, and keep domesticated animals such as cattle, donkeys, goats, sheep and poultry. Gwakwe Village was chosen as the case study because the people there rely on rainfed agriculture as their main source of livelihood and some have diversified to small-scale mining as

a livelihood. The area receives erratic rainfall, which makes it vulnerable to droughts. Maize is the major crop grown in the area, but it is very sensitive to low rainfall, and many people do not harvest enough to have a stable supply of food. Other crops grown in the area are groundnuts, roundnuts and cowpeas. People keep domesticated animals, mainly cattle, donkeys, goats, sheep and chicken.

3.3 Research paradigm

An interpretivist paradigm was used in this study. The choice of this paradigm was influenced by the topic of the study which aimed at understanding the effects of the drought in the study area. “Knowledge can be gained or generated from the point of view of the individual who is directly involved”, (Ugwu, Ekere & Onoh 2021:120). The data generated was understood from the participant’s perspective.

3.4 Research approach

The researcher used a qualitative method. Qualitative research allows the researcher to see things through the lens of the research participants. The participants gave the details of the drought events in the way they experienced and understood it. Purposive sampling was used to identify participants, and a questionnaire, interviews and focus groups were used to collect data from the participants.

3.5 Research design

The research design is the plan the researcher followed to sample the population, collect data, analyse the data and communicate his findings. Kumar (2011:94) defines a research design as a procedural plan adopted by the researcher to answer research questions validly, objectively and accurately. The researcher used a case study which allowed the researcher to understand the situation in its totality in reference to the research objectives.

3.6 Population and sampling

This section outlines the population of the study and discusses sampling that was done.

3.6.1 Population

Bryman et al (2018:170) define a population as universe units from which a sample is selected. This research focused on subsistence farmers who rely on rainfed agriculture for a livelihood and small-scale miners from Gwakwe Village. Subsistence farmers solely depend on farming for their livelihood. The number of small-scale miners seems to be increasing in the area because the many droughts in the area forces people to substitute farming for mining. The research focused on male and female-headed households lead by people between the ages of 18 and 70 years. The people in Ward 6 live in seven villages listed in section 3.2.1. Gwakwe Village was used as the case study for this research because it is the biggest village in the ward with a population of more 1 000, and it has people who rely on subsistence farming and artisanal mining.

3.6.2 Sampling

This section discusses the sample frame, sampling technique and the sample size.

3.6.2.1 The sample frame

A sample is a part or subset of the population that is selected to participate in a study. A sample frame is the list of all units that form a population from which a sample can be selected (Bryman et al 2018:170; Kumar 2011:193). Households, village leaders, ward councillor, the Agritex official and NGO officials from organisations active in the area formed the sample frame for this study. Everyone who participated in the study was over the age of 18. Among them were subsistence farmers and small-scale miners, commonly known as Otsheketsha, and female and male heads of households were included. These people provided information about the frequency and severity of droughts, how it affects their

livelihoods, and the survival strategies used in times of drought. Government officials and officials from NGOs gave information on the help given to people during droughts and projects done in the villages to help people sustain their livelihoods.

3.6.2.2 Sampling technique

A purposive sampling technique was used to identify people to give the researcher the much needed information. Bryman (2018:186) define purposive sampling as a non-probability form of sampling that strategically selects research participants who are relevant to the research questions. Heads of households, village leaders, a ward councillor, government officials and NGO officials were selected to participate in the study. Households participating in the study were directly affected by the drought, and their experiences and survival strategies were very important to the study. Village leaders and the ward councillor are the link between the rural district office, NGOs and the people. They initiate projects and update the council about the state of affairs in the villages. NGO officials are involved in community projects and the distribution of food relief during droughts. Agritex officials advise people on agricultural issues in the ward and help farmers with information on which crops to grow, how to manage them, how to rear livestock, livestock diseases, and breeding strategies.

3.6.2.3 Sample size

Kumar (2011:193) define sample size as the number of people from whom the researcher obtain the required information. A total of 36 people were interviewed in this study. The researcher interviewed six kraal heads, 12 households (focus groups discussions) of which three were female-headed and nine were male-headed, the ward councillor, an official from Agritex, an official from the rural district offices and an official from NGOs that help people with food relief during droughts and are involved in community projects to empower people in the community. The researcher distributed 15 questionnaires to 15 households to collect biographical data as shown in APPENDIX C.

3.7 Data collection tools/instruments and Procedure

Data collection tools/ instruments and procedure followed to collect data from research participants is outlined below.

3.7.1 Data Collection

Data was collected from primary and secondary sources.

3.7.1.1 Primary sources of data

The researcher conducted unstructured interviews with the Agritex official and NGO official, and semi-structured interviews with the village leaders and the ward councillor. Focus group discussions were conducted with selected households. A questionnaire with structured questions was used to collect biographical data from households.

Interviews

Kumar (2011:144) defines an interview as a verbal interchange, either face to face or through a telephone, where the interviewer tries to elicit information from another person. Semi-structured and structured interviews were conducted to get the required information from selected officials from various departments, village leaders, and the ward councillor. The interviews with the Agritex and NGO officials were unstructured, and the questions were from an interview schedule that was compiled before the interview process. The interview questions were emailed to the respondents prior to the interview to allow them to familiarise themselves with the questions before the interview. The researcher did not follow the order of the questions in the schedule and added some follow-up questions. The officials were asked about the role of their departments and organisations in helping communities during drought and to achieve sustainable livelihoods.

The village leaders and ward councillor were asked semi-structured interview questions. The researcher prepared one set of questions for the village leaders and ward councillor (Appendix E) and another set for the households (Appendix

D). These questions were standard questions and were not asked as set out in the interview schedule with the respondents having a choice in answering the way they understand the questions. The community leaders and the ward councillor were asked about their roles in helping the community during droughts, and mainly about initiating projects that can lead to sustainable livelihoods that can withstand drought effects. Households were asked about losses suffered because of the 2018/19 drought, coping mechanisms employed to survive the harsh effects of the drought, and what help do they need in terms of projects and assets to achieve sustainable livelihoods.

Focus group discussions

Two focus group discussions each consisting of 6 members were conducted. Each focus group consisted of 6 members where the first had 1 female and 5 males and the other had 2 females and 4 males. The aim was to get the views and perspectives of households about the effects and coping mechanisms of the 2018/19 drought. In addition, the focus groups were used to triangulate the data collected from the village households during the interviews. Each group consisted of various members of the community and included village heads and others who are knowledgeable about the development and aid projects in the community. Community members who rely on subsistence farming as a source of livelihood, who have diversified to mining as a source of livelihood, and who are informal traders were also part of the focus group discussions. Each focus group discussion had at least one participant who was a female household head to understand how women are affected by droughts compared to men.

Questionnaires

A questionnaire was used to get personal biographical details about the 15 households that were asked structured questions (Appendix C). The aim was to get an idea of some important information, such as level of education, age range, forms of livelihood, and types of livestock kept by households, crops grown in the village, and sources of water during drought and in a normal year.

3.7.1.2 Secondary sources of data

Documents sourced from the Agritex official, the NGO official and the rural district official were consulted. This information was used to collaborate what the village leaders, ward councillor and households said about the help and role played by the department of agriculture and the NGOs to improve the livelihoods of the people in the area.

3.7.2 Procedure

Firstly, the researcher contacted the Ward councillor about intent to conduct a research in his area. The councillor then directed the researcher the Rural District Council, an NGO, Ministry of Agriculture, Lands, Rural Resettlement, Fisheries and Water Management and village leaders. A letter was written to the Chief Executive Officer asking for permission which was then granted. Thereafter, village leaders were approached and they agreed to be part of the research and helped identify research participants who also agreed to participate. The researcher was made aware of suitable days where participants were free to participate. Questionnaires were distributed to research participants and collected a week later. Two focus group discussions were conducted physically with participants described in the research sample. The Ward councillor and village leaders were interviewed telephonically and follow up questions were made via Whatsapp.

For the NGO (Cultivating New Frontiers in Agriculture), an email was written to the Director asking for an interview since the organisation offered aid in the area during drought. Permission for an interview was granted and an official (Food Security Technical Coordinator) was assigned to the researcher to interview him. The official was interviewed through email.

For the Ministry of Agriculture, Lands, Rural Resettlement, Fisheries and Water Management. A letter was written to the Provincial Director asking for permission for an interview. Permission was granted and the Agritex Official responsible for the area was interviewed telephonically.

3.8 Data analysis

The study sought to discover the effects of and coping mechanisms for the 2018/19 drought, and participants mainly narrated their experiences of the drought. Thematic analysis was employed to give an overview of the participants' experiences. The data was analysed through the lens of the participants without changing its meaning. The researcher read the notes he took during the interviews and noted and coded important ideas. These codes were used to develop relevant themes. The information gathered during the interviews was put into themes that reflect the effects of drought, the coping mechanisms employed during the drought, and the projected solutions that can lead to sustainable livelihoods. The themes were checked against the original data from notes to make sure that nothing was missed and that they represent the collected data.

3.9 Ethical Considerations

The study was conducted in a rural area where most people are vulnerable to drought and hunger. These are people who must be protected from exploitation and they had to participate in the study willingly without any coercion by the researcher. The UNISA Policy on Research Ethics (University of South Africa 2016:12) states that "research should respect and protect the dignity, privacy and confidentiality of participants and where relevant, institutions". The researcher made sure the personal information of the participants are kept confidential. Participants participated freely and were made aware that they can withdraw from the study at any time without giving a reason. Participants were also made aware of the risks and benefits of participating in the study. Culture is very important to rural people, and the researcher made sure not to disrespect their culture and sacred places.

The researcher treated all research participants equally and as equal partners and made a fair selection of research participants. The research questions were translated to the language of the research participants, and where necessary clarification of questions and concepts was given. Before collecting the data, the

researcher sought consent from all the research participants. The participants were not interviewed at night or during meal times. The researcher ensured that the interviews did not exceed one hour and were conducted at a time convenient to the participants. The researcher used pseudonyms for the participants to ensure privacy, anonymity and confidentiality. The researcher availed the UNISA Ethics policy to the research participants to make them aware that the researcher is bound by rules to protect them. The participants were made aware that records will be kept safely for a period of 5 years after the completion of the study.

3.10 Study Limitations

Every study has its own limitations, the current one included. The biggest challenge was the network challenge for the research participants based in the village. Load shedding made it very difficult to connect with the research participants. The other limitation was time to interview the research participants. Since most of the research participants are self-employed, they spend most of their time doing things to earn an income. Some are informal traders, others are involved in gold panning, and others were looking after their livestock to make sure they have water and to move them to better pastures. The last limitation was getting the letters of approval from the government departments and the NGO and there were certain processes that had to be followed to get approval to interview the officials.

3.11 Conclusion

The chapter discussed the methodology and the design used to collect results from the research participants. The study area was discussed by looking at its location, the demography of participants, its climate, and the type of agriculture practised. The study outlined the research paradigm, research approach, research and the research design. The study outlined the population and sampling looking at the sample frame, sampling technique, and the sample size. The data was collected from primary as well as secondary sources. The data from primary sources was collected through interviews and focus group discussions. The data

from secondary sources was obtained from documents from the Agritex official. The study outlined the procedure followed in the study to collect data. Thematic data analysis was employed to analyse the data collected. Ethical considerations were taken into consideration during data collection. The study limitations were outlined.

CHAPTER 4: DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents the results and findings from the interviews and focus groups. The biographical details of the research participants are provided in table format. The results are presented under sections formulated from the research objectives, namely sources of livelihood; effects of drought; coping strategies; and possible ways to create sustainable livelihoods in drought risk areas.

4.2 Biographical Details of Research Participants

Table 4.1 shows the biographical data of the research participants that were gathered using the questionnaire (Appendix C).

Table 4.1: Biographical data of research participants

Participant	Gender	Age	Level of education	No. of people in household	Source of livelihood	Method of farming	Livestock owned	Crops grown	Harvest 2018/19	Water source in normal seasons	Water source during drought
1	F	57	ZJC	2	Farming, informal trade	Hand hoe	Goats, chickens	Maize, groundnuts	Nothing	Rivers, wells, boreholes	Dams
2	M	42	Diploma	4	Farming, informal trade	Hand hoe	Cattle, goats, chickens	Maize	Nothing	Wells, rivers, streams, borehole	Dam, buy
3	M	70	ZJC	9	Farming, pension	Ox-drawn plough	Cattle, goats, donkeys, chickens	Maize, groundnuts	Nothing	Wells, river, stream	Far away river
4	M	40	O Level	5	Farming, gold panning	Ox-drawn plough	Cattle, goats, chickens	Maize, groundnuts, roundnuts, cow peas	Nothing	Wells, rivers, borehole	Far away borehole
5	M	40	O Level	4	Farming, informal trade	Hand hoe, hire	Goats, chickens	Maize, groundnuts, cow peas	Nothing	Rivers, borehole	Dam, buy
6	F	51	O Level	6	Farming, gold panning	Hand hoe	Chickens	Maize, groundnuts, cow peas	Nothing	River	Borehole
7	M	46	Diploma	5	Farming, gold panning	Ox-drawn plough	Cattle, goats, donkeys, chickens	Maize, groundnuts, roundnuts, cowpeas	Nothing	River, borehole	Borehole
8	M	64	ZJC	7	Farming, informal trade	Ox-drawn plough	Cattle, goats, donkeys, chickens	Maize, groundnuts	Nothing	River, borehole	Dam, buy

Participant	Gender	Age	Level of education	No. of people in household	Source of livelihood	Method of farming	Livestock owned	Crops grown	Harvest 2018/19	Water source in normal seasons	Water source during drought
9	M	66	ZJC	12	Farming, informal trade	Ox-drawn plough	Cattle, goats, donkeys, chickens	Maize, groundnuts, roundnuts, sweet potatoes, cow peas	Nothing	River, open wells	Dam, borehole
10	M	58	Degree	3	Farming, pension, gold panning	Ox-drawn plough	Cattle, goats, donkeys, chicken	Maize, vegetables, groundnuts, cow peas	Nothing	River, borehole	Dam, buy
11	F	58	ZJC	6	Farming, informal trade	Hand hoe, hire	Goats, chickens	Maize, sorghum	Nothing	Rivers, borehole	Dam, buy
12	M	45	Grade 7	6	Farming, self-employed	Ox-drawn plough	Goats, chickens	Maize, groundnuts, cow peas	Nothing	River, borehole	Dam, borehole
13	M	52	Grade 7	7	Farming, pension	Ox-drawn plough	Cattle, goats, donkeys, chickens	Maize, groundnuts, cow peas	Nothing	River, borehole	Dam, borehole
14	M	35	Grade 7	5	Farming	Ox-drawn plough	Cattle, donkeys, goats, chickens	Maize, groundnuts, roundnuts, cow peas	Nothing	Borehole, river	Dam, borehole
15	M	64	Grade 7	6	Farming, pension	Ox-drawn plough	Cattle, goats, chickens	Maize, groundnuts, roundnuts, cowpeas	Nothing	River, open well	River

ZJC: Zimbabwe Junior Certificate

4.3 Characteristics of Research Participants

Table 4.1 shows that 15 research participants were interviewed through questionnaires, and three were females and 12 were males. More males were interviewed because the community comprises more male-headed households than female-headed households. The female-headed households comprise two widows and one who never married. The average number of people per household is 5.8 people per household.

4.3.1 Educational level of research participants

The educational level of the household heads showed in Figure 4.1 range from Grade 7 to degree level. Four of the household heads exited at Grade 7, five exited at Zimbabwe Junior Certificate level, three exited at Ordinary Level, two have diplomas, and one is a bachelor's degree holder.

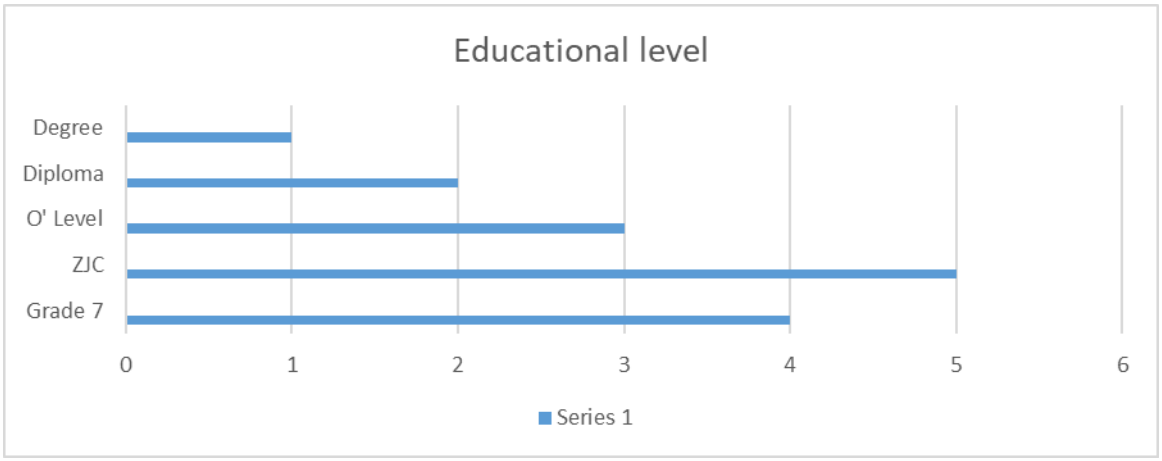

Figure 4.1: Educational level of participants

Household heads in the study provide for their families through subsistence farming, informal trade, gold panning, pension money or self-employment.

4.3.2 Method of farming

Farming is the main source of livelihood in the area, and it is done by ox-drawn ploughs by those who own cattle and donkeys or by hand hoes. Sometimes those

who do not own cattle and donkeys hire people to plough their fields. This is very costly since they are charged foreign currency (United States Dollars or South African Rands) because the hired ploughers do not accept the local currency as they say it is worthless. One participant said, “They charge us in US dollars or the Rand because our local currency cannot buy. It is just a paper. Even in shops they do not want it”. Figure 4.2 shows the proportion of participants using an ox-drawn plough and those using hand hoes or hiring someone to plough for them.

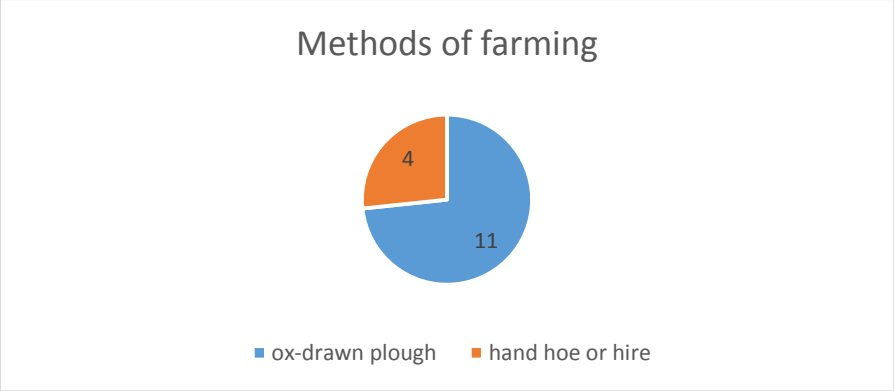

Figure 4.2: Methods of farming

4.3.3 Crops grown

The crops grown by households are maize, groundnuts, roundnuts, and cowpeas. One participant grows sorghum in addition to maize. Maize is the staple food in the area, and therefore, all subsistence farmers in the village grow it. Figure 4.3 shows the number of participants growing each of these crops.

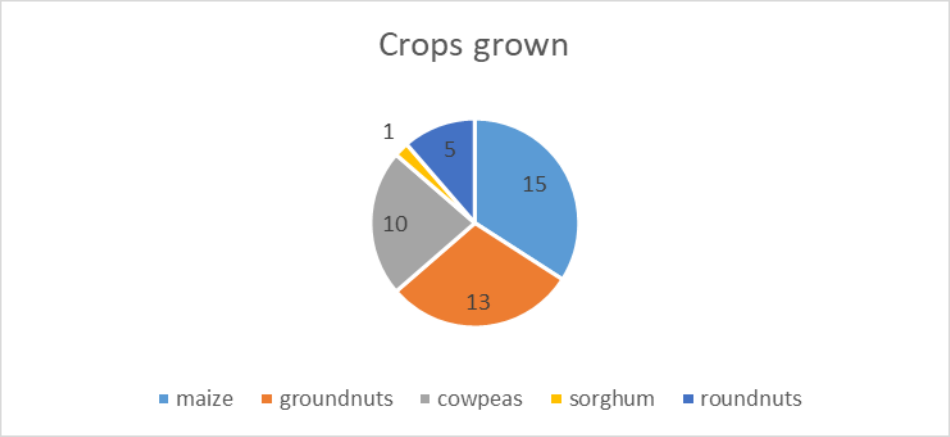

Figure 4.3: Crops grown

4.3.4 Sources of water in a normal year and during droughts

The sources of water in the study area are rivers, streams, boreholes, and dams. During drought some people buy water since their water sources have dried. Figure 4.4 shows the number of people using the different sources of water during normal years and during droughts.

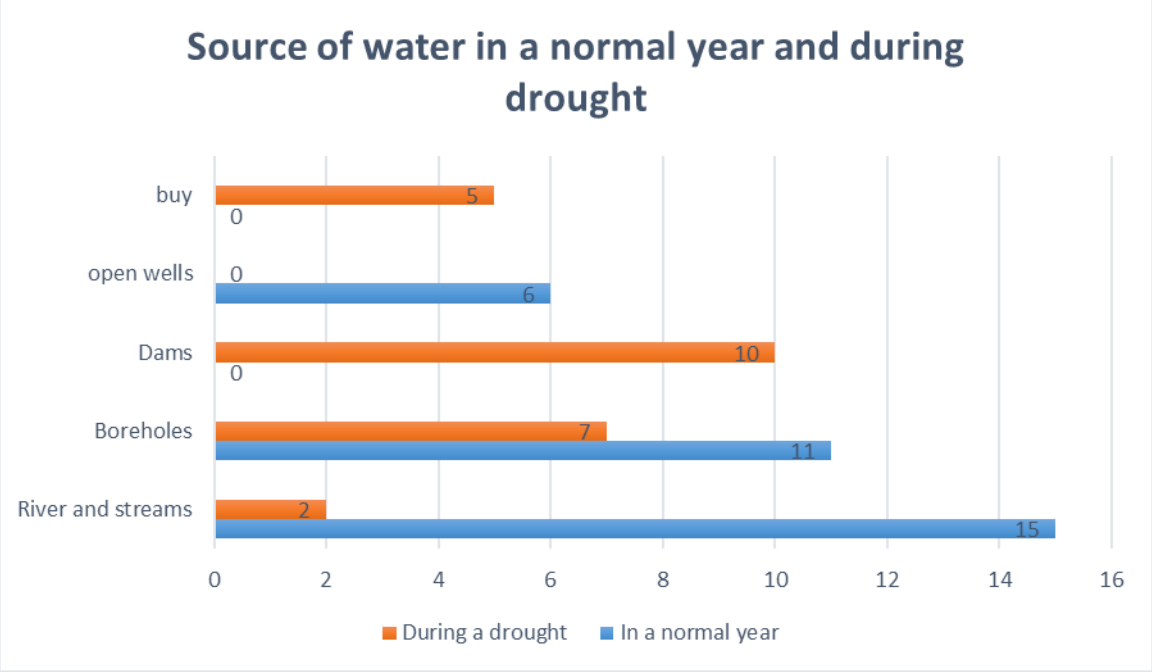

Figure 4.4: Sources of water in a normal year and during a drought year

4.3.5 Sources of livelihood

According to Oxfam (2013:6), “a livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living”. The major source of livelihood for the people of Gwakwe is subsistence farming. Every household has a field where they grow crops during the rainy season. They also keep livestock such as chicken, goats, cattle, sheep and donkeys. However, because the area has had eight droughts in the last 10 years (2010 to 2020), many people have diversified their livelihood to gold panning and informal trade. Some rely on food that they are sent by their children and relatives working in cities and in neighbouring countries, mainly South Africa and Botswana. The elderly and the most vulnerable, especially orphans and the disabled, get help from the government and NGOs. Figure 4.5 shows the livelihood sources of the participants.

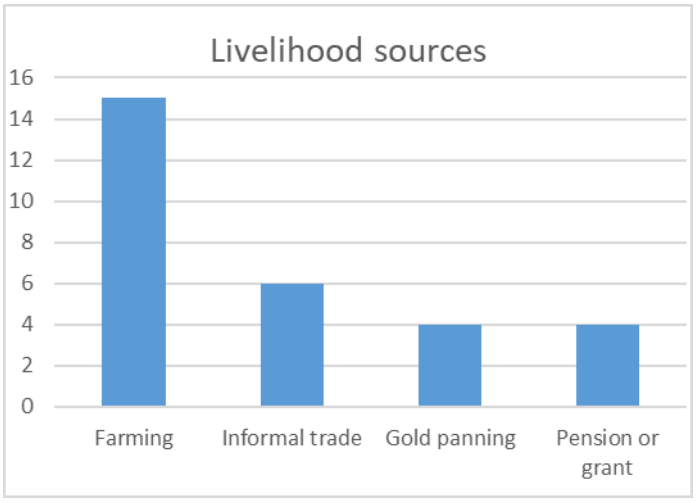

Figure 4.5: Livelihood sources

4.4 Effects of Drought

Droughts have caused tremendous damage to the livelihoods of the people in the study area, and many have lost their livelihoods. Since subsistence farming is the main source of livelihood in the area, a heavy reliance on rainfed agriculture has put the lives of many people at risk of famine. In the last 10 years, the study area

recorded eight droughts, which has made it very difficult for the people in the area to lead normal lives. Poor rains has affected the growth of crops, plants and grass for livestock, and poor harvests has forced people to buy food from the shops. The following subsections discuss the effect of the 2018/2019 drought according to the participants.

4.4.1 Poor harvests

From 2010 to 2020, less than normal rainfall were received in Ward 6. The participants stated that during this period they experienced about eight droughts during which nothing was harvested or not enough was harvested to last to the next harvest. However, in some years when there was enough rainfall to make the grass and crops grow to maturity, the rainfall pattern was too erratic. The rainfall was not distributed throughout the season, and too much rain was received early in the season followed by months without rain and more rainfall at the end of the farming season. This affected the growth of crops because they wilted and died. Another challenge was that there was too little rain at the start of the season to plant crops and for the plants and grass to grow and mature and then too much rain late in the season when it was too late to plant crops and for the grass to grow. This was echoed by one participant who said the following:

> "Our harvest has been very poor in the past years. The rain comes and goes for months and comes back when everything has died in the fields. This year though we harvested, but the rain rained heavily and never gave us time to work in the fields."

Sometimes poor harvests do not mean that there was not enough rain but that the distribution pattern of rainfall prevented a good harvest.

4.4.2 Loss of livestock

The people of Gwakwe Village have lost much livestock to droughts. Poor rains have affected the growth of grass, which is a source of food for livestock. This required people to buy stock feed to supplement the food; however, many could

not afford to buy stock feed. They ended up selling some of their cattle to buy stock feed to supplement their remaining cattle. The challenge is that this happened very late when the cattle had already lost a lot of weight. The cattle sold fetched very low prices because the farmers sold them when they lost too much weight.

In some cases, farmers lost their livestock to thieves who stole them and slaughtered them in the bush to sell the meat to bogus butcheries or nearby mines or who stole them and took them to villages far from where they were stolen. The problem was that during the droughts the livestock travelled long distances in search of food and water, which made it very difficult to track the livestock. One participant said the following:

> "Our livestock do not have water to drink. They wander off to very faraway places looking for water and food. This makes it easy for thieves who steal them and take them to other villages where you can never find them."

Once a farmer lost track of their livestock, the livestock was at risk of being stolen. Sometimes the livestock, especially cattle, wandered off and became stray animals in villages where the owner could not be identified. During drought years, there were many livestock diseases that were difficult to control because the livestock spent most of the time in the bush. In some instances the cattle became very sick or died in the bush, and the owner only saw it when it was too late to help. Dipping cattle happened irregularly during droughts because there was no water to fill the dip tank. This made cattle more vulnerable to tick-borne diseases.

4.4.3 Lack of water

In the past 10 years, rainfall has been very erratic, which made water scarce. This was a challenge to the people in Ward 6 because they get water from wells, rivers, streams and boreholes. Many households live near rivers (Gatsivumba River and Mtshabezi River), and during the rainy season people easily access water to use at home and water their animals. However, during the drought, these rivers and streams dried quickly. This was a problem because people had to travel longer

distances to fetch water. Water in many households is fetched by women who carry 20-litre buckets on their heads or push wheelbarrows full of water containers. Though the government has drilled boreholes and dug protected wells in some areas, most of these dried quickly, and only two boreholes remained functional during the drought. These boreholes failed to supply water to the whole community because of the high number of people who needed water. This caused them to break down or produce little water, increasing the waiting period to get water. One participant described it as follows:

> "The borehole near the school service many people during droughts. We wait for hours to get water. It sometimes break down and no one knows how to repair it since the death of Mr X who used to repair it for us." (Mr X was a community member who was trained by the government to repair boreholes in Ward 6.)

In severe cases people got water from nearby dams (Gonkwe Dam and Gwakwe Earth Dam). Gonkwe Dam has silted so it no longer holds enough water to stay usable for longer periods. During the drought, the water quality became too poor for home use or to water animals. Villagers complained that most of their animals miscarried or got sick because of the poor water quality. Some villagers ended up buying water from those who own scotch carts and vans at a cost of R120 for a 120-litre drum. One participants said,

"Water is a problem here. Water from the mine is salty, and it is undrinkable. We have to buy from those with scotch carts and vans. Imagine having to pay R120 for one drum of water. It does not even last us a week".

4.4.4 Hunger

Lack of rainfall severely affected the rainfed agriculture practised by people in Ward 6. When the rain season started, people had hope and planted crops, but then they had to watch as their crops wilted and died because of poor rains. Livestock, which is also a source of livelihood, also died. In the end people were left with nothing and could not afford to put food on the table. Some people

received food aid from the NGOs and the government, but very few benefited from these schemes. Most people were left to fend for themselves, which was very hard in a country with high levels of unemployment. In a normal season people eat three times a day, but during the drought, many households only ate twice a day, in the morning and evening, and others ate once a day in the evening. This was echoed by one participant who said, “We ate once a day in the evening when everyone is at home and there are no visitors”. Many could not afford to buy food to feed their families. This was a very difficult situation and people were unable to share the little they had with others who are not family.

4.4.5 School dropouts

The drought caused many children to drop out of school for reasons. The first reason was not enough food in the household. Some households spent days without a proper meal, which forced children to miss school as they could not go to school on an empty stomach because it would be difficult to concentrate. Some dropped out of school because their parents could not afford to pay school fees and buy school uniforms and stationary. One of the participants said, “We could not afford to buy school uniforms, buy books and pay school fees since the little money we had was used to buy food”. Another participant said, “Sending a child to school on an empty stomach is a waste of time. How will the child learn when hungry?”

Parents were faced with the difficult choice of paying school fees and buying uniforms and stationary for their children and buying food. The only option was to sacrifice the future of their children and attend to the immediate unavoidable situation, which was buying food for the family.

4.4.6 Increased prices of basic commodities

During the drought, food became scarce, and in some instances, had to be imported from other countries who had registered a surplus. Therefore, when the supply did not meet the demand, it pushed up the prices of goods. During the drought, people bought food from the shops because they harvested little or

nothing from their fields. This was a challenge to rural households where no one works for money and that have no one to support them. One participant said that the “prices of basic commodities go up, seed prices go up and livestock prices go up after the drought year”. Another participant said the following:

> “We travel to Gwanda Town to buy mealie-meal, a 50-kilogram bag of mealie-meal pays the price of one person in the transport. The little that we get is spent on food, and shops do not accept local currency so we have to buy in forex, which becomes very expensive.”

This was a challenge because most of the money people had was spent on food. They were unable to embark on other developmental projects, which makes them more vulnerable to future shocks.

4.4.7 Soil degradation

From 2010 to 2020, the study area experienced about eight droughts. These consecutive droughts have led to the death of grass and plants that provide soil cover. This has left the ground vulnerable to soil erosion. Soil degradation has made it difficult for plants and grass to grow since the soil is now very poor. According to one participant, “the soil is no longer good for the plants and grass to grow. Even if it rains, the grass and trees no longer grow well like some years ago. Soon this place will become a desert.” Soil erosion is not good for the plants, grass and rivers. Plants need nutrients from the soil to grow, and once there are no nutrients, the plants cannot grow, which can lead to desertification. Soil erosion has also led to the siltation of rivers and dams.

4.4.8 Siltation of dams and rivers

Running water and winds carry soil and deposit it in the rivers and dams, which causes siltation in the rivers and dams. The two small dams in the study area have been affected by this. Mpalawane Dam has completely silted and cannot hold any water, and Gwakwe Earth Dam cannot hold water to the month of September, which is a critical month for people and livestock. One participant said, “It is like

we have no dams. They cannot hold any water. When it rains a little, our dam gets full; then a few months later there is no water. The dam is silted, and so we struggle with water in this area". These dams have been a source of water for people, livestock and wild animals. Some people had small gardens near these dams and on the banks of the rivers. People benefited from these vegetable gardens as they got vegetables to feed their families and sold some to get some money to buy other food stuff.

4.4.9 Migration

The economic crisis in the country has created high levels of unemployment, which is worse in rural areas. The loss of livelihood because of the drought has driven scores of people from Ward 6, especially the youth, to cities and abroad, especially South Africa and Botswana. Those who chose to migrate hope to find employment in the cities and abroad to support their families back home. However, this has created bigger problems, especially for young couples. Some have failed to find employment in the cities and abroad or the employment they got, did not pay well, which made it difficult to support their families back home or even return home. One participant said, "You see, in some homes it is very difficult. The husband went to Johannesburg and has not sent a single cent back home, leaving the wife to suffer with kids".

4.5 Coping Strategies

Wilhite and Vanyarkho (2000:9) postulate that there are many strategies to respond to droughts, which range from household, community and national level. To survive the effects of the drought, each household had to do something to put food on the table. Different means were used by different households, including informal trade, gold panning, reducing meals, reducing amounts of food per meal, sacrificing other projects to buy food, food aid from the government and NGOs, and getting food from children and relatives who live abroad. Most of these strategies were short-term measures employed to deal with the existing situation at that particular time.

4.5.1 Informal trade

The frequency of droughts has forced many to become involved in informal trade. People buy different things like vegetables and clothes to sell to community members. This is a new way of livelihood for many people in the study area. This was echoed by a participant who said the following:

> "I buy vegetables and sell them to community members. It is not enough but it is not the same like just sitting and do nothing since no one can give you food to feed your family. Sometimes people buy on credit and do not pay."

In rural areas there are no prospects of employment, so informal trade has become one of the key ways people use to get an income. People involved in informal trade go from home to home selling their wares. This is tiresome since the homesteads are far apart and the village stretches for several kilometres.

4.5.2 Gold panning

Gold panning is when people dig the soil or break underground rocks in search of gold. This has become one of the major sources of livelihood for people in the study area. This is very risky because it involves hard work and can lead to arrest when done without a licence. People spend several days or weeks digging and breaking rocks to take to the gold mill to separate the gold from the ore. There is no guarantee to get gold, and some get nothing after the hard work and some are lucky and get gold, which can change their lives. Many get just enough to feed their families. One participant said, "I have tried gold panning, but l have stopped because if you do not have a licence, you risk being arrested. Another thing there is no water to use to separate gold from the ore."

Many who do not have a licence to dig gold, go to those with licences to dig on their claims and share the income. However, this benefits the owner of the claim who gets a bigger share. Figures 4.7 and 4.8 show examples of underground mining and opencast mining.

Figure 4.6: Underground mining

Figure 4.7: Open cast mining

Digging for gold underground is very dangerous. Sometimes big chunks of the ground or rocks fall and injure the people digging underground. This mainly happens during the rainy season. Sometimes, when one panner gets a lot of gold from a claim, others go there and also dig to get gold. This was echoed by one participant who said the following:

> "Gold panning is dangerous because when one person gets a lot of gold from digging in an area, other gold panners want to come there and dig, and then people start fighting, injuring one another badly or even killing each other."

4.5.3 Reduction of meals and meal times

Lack of food is one the biggest challenges that people in the study area faced. People had to make difficult choices to save their food stocks. During a normal year with no drought, people eat three times a day, breakfast, lunch and supper. During the drought, people had to reduce meal times, depending on their assets, income and wealth, the severity of the drought, and the vulnerability of the family. Many said that they ate twice a day, in the morning and in the evening. However some said they ate only once a day in the evening: “We ate once a day in the evening when everyone is at home and there are no visitors”. Some reduced the size of meals and used smaller pots to cook their food. One participant said, “We ate two times a day, and even used small pots to conserve the food that we had”. In some instances they used preferential feeding and fed the kids first, especially in the morning and afternoon, and then the adults only ate in the evening.

4.5.4 Sacrificing other projects

Every person wants progress in life, but this was hard to do for people living in drought prone areas. Enduring eight droughts in 10 years is very hard. People stalled development projects in favour of buying food. This happened to the extent that parents even sacrificed the future of their children and bought food instead of paying school fees and buying stationary. One participant said, “Prices of goods go up during drought, most especially food prices. We end up buying food only instead of doing other projects we intended to do”. This trapped people in the cycle of poverty because all they were able to do is buy food. They were unable to increase asset ownership to help them withstand stresses such as droughts.

4.5.5 Food aid

The government and NGOs distributed food to the needy. This was a relief to more vulnerable people, especially the elderly and handicapped. They were given monthly rations of a 50 kilograms of maize per household. This was a temporary reactive action by the government and NGOs to save lives. Many saw this action

as not enough since it had a timeline of giving people food to the next harvest time. Many of the households do not harvest enough food since they do not have enough inputs such as seeds, fertiliser and implements, such as ox-drawn ploughs. This aid only covered a small fraction of the population. One traditional leader said, “The government and NGOs gave us food during the drought but the selection of beneficiaries was sometimes compromised, and in most cases it catered for the elderly and some deemed underprivileged, leaving out many people”. During the drought, almost no one had food, and those in charge of selecting the beneficiaries had to choose some and leave out many others.

4.5.6 Food from children and relatives abroad

High levels of unemployment in the country has forced many people, especially the youth, out of the country to look for greener pastures. They send money and food to their parents, children and relatives back home. During the drought, they play a very important role in the provision of food. Though this does not happen frequently in some families, but their families back home appreciate it when they are sent money or food because it goes a long way. One participant said, “My children in South Africa send me food and money sometimes. I know it is also difficult for them, but I appreciate that sometimes they think of me and their siblings”. This does not happen in all households who have children, relatives or husbands in the diaspora. Life is also difficult for those in the diaspora and cannot always take care of their families back home.

4.5.7 Selling livestock and assets

In rural areas, livestock is a sign of wealth, and the more livestock a household has the wealthier it is. To cope with the drought, households had to sell their livestock to buy food and stock feed to save the remaining livestock. The challenge was that people sold their livestock very late into the drought when they had already lost a lot of weight, and therefore, they got a fraction for them of what they would have gotten if they had sold at the right time. Some were sold for a quarter

of what their value was at the beginning of the farming season. One traditional leader had this to say:

> "I sold five of my cattle in order to buy food for my family and stock feed to save the remaining cattle. They did not give me much as compared to what I would have got had I sold at the beginning of the year. It was like I was giving away my cattle".

Some sold household assets to supplement their income. They could not sell their livestock with hope that their livestock would survive the drought.

4.6 Solutions to the Problem

Though drought is a natural hazard that cannot be controlled by people, steps can be taken to reduce the vulnerability of people and create sustainable livelihoods. The participants suggested different ways to reduce their vulnerability and create sustainable livelihoods. The greatest challenge was lack of water for use by people and livestock, and the participants recommended that deeper boreholes must be drilled in the communities. The ward councillor said, "If the government could drill more boreholes and build more dams in the community, it would go a long way". One participant said, "If we get more dams and boreholes, we would start gardens in homes, plant vegetables for consumption and for sale".

They also suggested that bigger dams must be constructed to give them more water and allow them to create irrigation schemes. They also suggested that people must be helped to start projects, such as keeping poultry and goats, since these seem able to withstand serious drought conditions, and they do not take as much time to mature as cattle. However an NGO official from Cultivating New Frontiers in Agriculture said, "Communities must be assisted to access improved livestock breeds to improve productivity and production".

Some suggested that a paddocking system be introduced because it will help ensure grass for pasture is conserved and will also help minimise the rate at which cattle are stolen. Thieves do not have boundaries to prevent them from moving cattle, and therefore, paddocks will help track the direction taken by the thieves

since they will have to cut wires to move the stolen cattle. A traditional leader stated that “now there are no boundary lines. Our livestock can go as far as Filabusi. If there are fences, it will stop our cattle from wandering off”.

Growing drought tolerant crops and short seasoned varieties and keeping drought tolerant livestock can help solve the problem of food shortages. These can withstand the harsh conditions presented by the drought. The ward Agritex official suggested the following:

> “People must move away from growing drought sensitive crops such as maize and grow drought tolerant crops such as sorghum, pearl millet, finger millet, groundnuts and cowpeas. They must also grow fodder crops to supplement animal feed”.

4.7 Conclusion

The household heads, village leaders and ward councillor interviewed described the challenges they faced because of drought. They also gave possible solutions to avoid heavy losses during the drought. Different livelihood sources, sources of water in a normal year and a drought year and crops grown in the study area were identified. The Agritex official and the NGO official gave their professional perspective of the drought effects as well as the possible solutions to create sustainable livelihoods in a drought area.

CHAPTER 5: DISCUSSION OF FINDINGS

5.1 Introduction

This chapter discusses the results presented in the previous chapter. The results are discussed under themes formulated from the responses given by the participants. Firstly, the characteristics of the participants are discussed and how these make them vulnerable to shocks such as drought. Sources of livelihood are discussed thereafter. The different effects of drought that were identified are discussed as laid out in the presentation of results in the previous chapter. Coping mechanisms employed by the participants are also be discussed as presented in Chapter 4. Lastly, the solutions suggested by the research participants are discussed.

5.2 Characteristics of Research Participants

The study area had both male and female-headed households. There are more male-headed households than female-headed households. Female-headed households are women who have never been married living as single mothers with their children, widows, or women who were left by their husbands who went to search for employment in cities and neighbouring countries and who never returned or supported their families. A household head is a determinant factor to asset ownership, method of farming, and vulnerability to droughts. From the results, it is clear that female-headed households own less assets in terms of livestock and other household assets such as farming implements and tools compared to male-headed households, and they also use hands hoes or hire people to plough for them. People with less assets are more vulnerable to internal and external shocks (Oxfam 2013:7). Assets are very important in difficult times as they can be sold to cushion households from the effects of drought.

Livestock, especially big livestock like cattle and donkeys, are not only a form of wealth, they are also used as draught power. Draught power is very important to subsistence farmers as it determines how much land a household can till. More

livestock also means the household can make their land productive by adding manure from animal droppings. A productive land means bigger harvests when there is enough rainfall.

The educational level of the research participants ranged from Grade 7 to a bachelor's degree. Of the 15 research participants interviewed, three participants had professional qualifications. Others reached Zimbabwe Junior Certificate and O'Level and did not go to college or university because they did not meet the entry requirements. Some did not proceed with schooling after Grade 7 for financial reasons and others did not proceed to secondary school because of the long distance between home and school. The nearest secondary school is 10 kilometres away from the study area. This distance is too much for a 13 or 14 year old who is starting Form One. Level of education has an effect on asset ownership and the vulnerability of households to shocks such as drought. Those who exited school at Grade 7 had few assets and are more vulnerable to drought compared to those with higher levels of education. Some, especially the participant with a bachelor's degree, accumulated their assets when they were still working since they had a better and stable income. This puts them at an advantage to survive the effects of droughts. The participants with diplomas quit their jobs from the government during the period of hyperinflation in 2008, and they are doing much better than the unskilled participants because they also accumulated some assets before the hyperinflation period.

How a household till their land determines their harvest. Those who use cattle or donkeys till more land and have a better harvest than those who use hand hoes or hire people who use cattle or donkeys as draught power. Poor harvests are an indication of vulnerability by a household. Even in a normal year these households have a deficit in food stocks, which exacerbates their situation during droughts.

According to the participants, the crops grown are maize, cowpeas, groundnuts, roundnuts and sorghum. Everyone grows maize because it is the staple food. Ainembabazi (2018:3) states that maize is a staple food in Southern Africa and it provides more than 50% of calories in the diet. Only one person from those

interviewed grows sorghum, showing that very few people in the study area grow it. Even though the participant grows sorghum, she also grows maize, and maize is allocated a bigger portion in the field. A small portion in the fields is used to grow other crops (groundnuts, roundnuts and cowpeas). These crops are grown as supplementary crops since maize is grown as the main crop and is allocated a big area in the field. The other crops are used as a source of protein. The groundnuts are roasted and eaten when drinking tea or are ground to make peanut butter. The peanut butter is mixed with the dried leaves of the cow pea plant and used as a relish. The cow peas are a very important crop for the people in the study area because people pick their leaves, boil them, and dry them to eat as a relish. The seeds are boiled and eaten with a thick porridge called *isitshwala* or they are mixed with peanuts, roundnuts and boiled then eaten; locally this dish is called *inkobe.* All these crops are grown for family consumption. Very few people in the study area have a surplus for sale.

5.3 Sources of Livelihood

As stated in the previous chapter, the main source of livelihood in Ward 6 is farming. People practise mixed farming and grow crops and keep domesticated animals. With the erratic rains received in recent years, farming has become a risky source of livelihood since there are successive years with little rainfall during which people harvest little or nothing from their fields and lose livestock. This has forced some to diversify their livelihoods to small-scale mining (gold panning), locally known as *ukutsheketsha.* Some are now involved in informal trading where they buy clothes and vegetables for resale in the community and neighbouring communities and nearby mines (Blanket Mine and Vumbachikwe Mine). Shiferaw et al (2014:166) postulate that managing droughts effectively in vulnerable areas requires people to diversify their livelihood strategies and start income generating options outside agriculture. Though this sounds like a good idea, it is very difficult because most people in the area are unemployed, and therefore, informal trade does not generate much income. The study area has a lot of mopane trees, and during the rainy season there are sometimes a lot of mopane worms (caterpillars)

that people catch, dry and sell to people from other areas. Seeking employment elsewhere is the solution for some, especially the youth. Some have moved to local cities locally and others have moved to neighbouring countries (South Africa and Botswana) to seek employment. The elderly and disabled get help from the government and NGOs; this is further discussed section 5.5.

5.4 Effects of Drought

Droughts are a major threat to the livelihoods of the people in the study area. Droughts affect people in many ways, such as loss of life, shortage of food, malnutrition, crop failures, death of livestock, water shortages, and migration (Masih et al 2014:3635). The problem is that droughts in the study area are now a permanent feature that happens in successive years. This makes it very difficult for people to recover. From 2010 to 2020, the participants claim they experienced about eight droughts. The drought effects differ from year to year and from one household to another, and it depends on the rainfall pattern of the particular year. The effects of drought in the study area include poor harvests, loss of livestock, lack of water, hunger, school dropouts, increase in prices of basic commodities, soil degradation, siltation of dams and rivers, and migration.

5.4.1 Drought and poor harvests

Since households in the study area are subsistence farmers who depend on rainfed agriculture, the amount of rainfall received determines the type of harvest in a year. The rain season starts mid-November and ends in March. In recent years, the rainfall pattern has been erratic, making it very difficult for households to make a meaningful harvest, and in some years they harvest nothing. In some years there is no rainfall until the end of December. Droughts cause crop failures for subsistence farmers, who rely on rainfall for agriculture activities (Ainembabazi 2018:2). Erratic rainfall patterns have been a major contributor to crop failure. The amount of rainfall received in a year can be enough for plants to grow to maturity but its distribution may be wrong. Sometimes it rains early and then farmers plant their crops, but after germination it does not rain for months and the plants wilt and

die, and then the rain returns when it is too late to replant. In some cases it rains too late to plant crops and for the grass and plants to grow to feed the animals until the next season.

In some years only a few households have a harvest, depending on planting time and the pattern of the rainfall. In other years, some households make a meaningful harvest even though the amount of rainfall is below average because their fields have good soil that keep moisture for a long time, for example swamps, and the distribution of rainfall was good from the start to the end of the farming season. Maize is a sensitive crop that requires rain at different stages of its growth, and therefore, the erratic rainfall pattern makes it a challenge to grow maize. Ainembabazi (2018:3) points out that low yields of maize, a staple food, are often realised in Southern African countries because smallholder farmers depend on rainfed agriculture. Maize is allocated more land because growing maize is a livelihood, and therefore, harvesting more maize translates into a stable livelihood and food security.

5.4.2 Loss of livestock

Droughts result in the death of livestock because of lack of feed and water (Nhamo et al 2019:75). Households in the study area have lost a significant number of livestock because of the droughts. In drought years, the grass and plants did not grow, leaving livestock with no food. Farmers only realised that it was a drought when their livestock had already lost a lot of weight. Many households have lost their livestock because they reacted too late to give supplementary feed. More cattle died than goats, chickens and donkeys. Cattle require more feed than other livestock, and they are very selective in what they eat, which made them more vulnerable to the droughts. Goats can survive on poor quality pastures and they can eat a variety of plants. Households have sold many livestock to buy feed to save a few livestock. The challenge was that the livestock sold fetched lower prices because they had already lost a lot of weight, which makes animals less valuable (Neumann, Trostle, Baksh, Ngare & Bwibo 1989:13).

Another challenge was lack of water because in drought years, water sources were very far and livestock had to travel long distances to access water. The time livestock travelled to and from water sources could have been used for grazing, which also contributed to weight loss. Water were also poor quality, which caused some livestock to miscarry and get worms from the water. These worms caused diseases that led to more livestock dying. Vaccinating livestock kills worms that cause diseases and if households had enough knowledge, they would have vaccinated their livestock, which would have saved them from premature death. Many households could have saved their livestock if they had reacted earlier. A few livestock would have been sold and the income would have bought enough feed for the remaining herd.

5.4.3 Lack of water for household use and animals

Droughts causes a lack of water for household use and watering animals and affects the quality of the water (Fewsnet 2019:1). There have been many successive droughts in the study area that has lowered the water table. Households travelled long distances in search of water, and some had to use water from dams, which is poor quality. The available boreholes were overwhelmed by the number of people getting water from them, and some broke down because there were being overworked. During the dry period, the water table lowered, and some boreholes dried up and others had to pump for several minutes before water would come out. This put pressure on the boreholes, which were not being services, leading to breakdowns. Access to water became a challenge because the distance to access water increased. In most households women fetch water by carrying 20 litre buckets or pushing wheelbarrows. This put pressure to women as they also have other household chores, like cooking, washing clothes, and fetching firewood.

5.4.4 Lack of food

According to Wilhite (2000:1), “throughout human existence, drought has been a threat to the survival of societies”. The survival of a society depends on the

availability of food and water. As stated earlier, the biggest source of livelihood for the people in the study area is subsistence farming, which depends on rainfed agriculture. Food availability depends on the amount of rainfall received in a particular farming season. Poor rains affect the availability of food when little or nothing is harvested from the fields, leading to food stocks being depleted before the next harvest season and leaving households with nothing to eat. Shiferaw (2014:68) postulates that crop failure among subsistence farmers leads to the exploitation of natural resources because households have few or no alternatives to provide for their families. It has also led to informal trade and gold panning by some households to try to provide food for their families. Other measures were also used to conserve available food stocks, such as reducing the amount of food and meal times and preferential feeding, where children were fed before adults.

5.4.5 School drop outs

Since the livelihood of households in the study area is subsistence farming, during droughts they had to buy food from the shops. Households used most of their income to buy food instead of doing other things to improve their lives. Parents have to pay school fees and buy stationary for their children, and fees for secondary school children are higher and schools are strict with non-paying parents. The requirements (uniforms, textbooks, notebooks and levies) are also more for secondary children. Parents found themselves in a difficult positions where they had to choose between buying food or paying school fees and buying uniforms and stationary for their children.

Keshavarz et al (2017:224) assert that a loss of on-farm income influences the expenditure on education, which affects younger members of the family. Many children from the study area are not at school, especially those of secondary school going age. This is a problem because it minimises their employment opportunities, especially in a country with a high unemployment rate. However, some parents sacrificed assets in order for their children to go to school, and sold all their livestock to ensure their children could go to school. They believed that educating their children is creating a better tomorrow for them. The researcher

noticed that the level of education and asset ownership is a factor in choosing to educate children or not. The households who exited school at lower levels believed that whether you are educated or not it is the same because employment opportunities are very slim. Those households who exited school at higher levels were optimistic that things will get better in the future and educating their children is very important and will enhance their children's chances of success.

5.4.6 Increase in prices of basic commodities

The research participants highlighted an increase in the prices of basic commodities during the drought. This was a big problem for households whose income is mostly agriculture related. An increase in the prices of basic commodities, such as maize meal, cooking oil and sugar, reduces the buying power of households' income. Neumann et al (1989:13) postulate that an increase in the prices of staple foods worsen the financial burden of farmers who have to depend on purchased foods during droughts. This was made more difficult by many shops not accepting the local currency as they said it is worthless. People were forced to change local currency to forex (South African Rand or United States Dollar) on the black market, which eroded the value of the local currency. Furthermore, the prices in the local shops were much higher than those in towns. People were forced to travel to Gwanda Town to buy their groceries and maize meal. To transport a 50 kilogram of maize meal was equal to the transport fare for one person, and therefore, though the prices were a bit lower in town, the transport cost raised the expenditure to almost equal to the prices in the local shops.

The researcher also noted that the prices of agricultural inputs went up at the beginning of the farming season. This is a challenge because to get a good harvest, agricultural inputs play an important role, especially seeds and fertilisers. However, subsistence farmers used to use local varieties kept from their harvests, and they had their own way of selecting quality seeds that would be treated in traditional ways, such as mixing seeds with the ashes of a local tree, called *umtswiri*, to prevent burrowing by worms. These local varieties, especially a maize locally called *umumbu weziqu ezibomvu*, used to give better produce and were

able to withstand drought conditions to some extent. These local varieties are no longer available because of successive droughts. At first people kept the seeds to plant, but when the plants did not grow to maturity, the seeds were lost.

5.4.7 Soil degradation and siltation of dams and rivers

Droughts contribute immensely to land degradation and the siltation of rivers and dams. The death of plants and grass leaves the soil bare, exposing it to wind and water erosion. Masih et al (2014:3635) assert that droughts are a major contributor to environmental damage, land degradation, aridity, and desertification. The participants stated that some of the dams in the area have silted and rivers and streams no longer hold as much water as before. When the soil is degraded, plants and grass cannot grow well on it, which reduces the quality of pasture for the animals. Silted dams have reduced the number of water sources in the area, which was already water scarce. However, the claim that the rivers and streams no longer hold water for a longer period might be caused by a lowered table. A river cannot be silted completely like a dam, but areas where there used be pools that could hold water for longer periods did get silted. These pools and dams used to provide water to animals, but now that they have silted, the animals have to travel longer distances in search of water. People who dig gold in the rivers or in other areas and wash there ore in the rivers and dams to separate the gold have also influenced the rivers and dams.

5.4.8 Migration

Droughts are a threat to the sustainability of agriculture-based livelihoods and cause farmers to lose their income and livelihood. In the study area, many people have migrated to the cities and neighbouring countries in search of employment to earn an income and to be able to feed their families because of the droughts (Mishra 2012:79). The youths are the ones who migrate the most, and most of them go to other countries. Some people who migrated have young families whom they left behind. This has affected many families because the migrants often do not get employment soon enough to be able to send money or groceries back

home. This has left wives behind who suffer alone with their children. In addition, if the family had been fortunate enough to acquire livestock, their livestock becomes vulnerable to thieves who target them knowing the woman does not have the stamina to track their lost herd or flock. Many people have been made to be poorer than they were before the husband migrated. This has increased the vulnerability of such families. Most of these youths are unskilled, and therefore, get low paying jobs, which makes it difficult for them to survive and to send money back home. This has placed a strain on the family as the wife waits for the husband to send money every month, and when this does not happen, the wife starts thinking that the husband is having an extra marital affair.

5.5 Coping Mechanisms Employed by Households

Droughts take away the livelihood of the people and force them to employ different means to survive (Keshavarz et al 2012:121). There is a shift from agriculture to non-farm activities as sources of livelihood. Mishra (2012:79) points out that the failure of agriculture activities due to extreme climate situations in an agriculture livelihood-based society leads to the diversification of livelihood. The following strategies were employed by the people to cope with the effects of drought: informal trade, gold panning, reduction of meals and meal times, scarifying projects, food aid, food from relatives and children abroad; and selling household assets and livestock.

5.5.1 Informal trade

Since there are no prospects of formal employment in rural areas except doing menial jobs in people's homes, many people, especially women, started an informal trade. Some travel as far as 10 kilometres to buy vegetables for resale in the community and neighbouring communities. Though the profit is very low, the circumstances forced them to do it. In some cases, people bought on credit and failed to pay it back, which further reduced the income from this kind of business. Some travel to Musina in South Africa to buy clothes, groceries, phones and small household assets for resale to the people in the community. This type of business

makes better profits than selling vegetables because they almost double the buying price when they sell their wares. Those who are involved in this business target gold panners because gold is sold in foreign currency (United States Dollars), so they are assured their wares will be paid for foreign currency. The people involved in this business live a better life than those not involved in any business or involved in other income generating activities. These people also always have orders from their customers, and so they already have customers for what they buy. However, this business has its own challenges; for example, they have to pay import duties on some of their products; they have to pay for the transport of the products; and they have to travel far distances and often at night, which makes the women vulnerable to abuse by men and criminals.

5.5.2 Gold panning

There are gold deposits in most parts of the province of Matabeleland South, including the study area. A licence is necessary to dig gold, and digging without a licence can be punished with up to five years in jail. Many people do not have licence because of the requirements to get one and lack of information on how to get one. Many people in the study area are involved in gold panning, but very few have claims (an area allocated a person to dig gold) and some practise gold panning without a permit. Those who have claims hire people to dig in their claims and share the proceeds after selling the gold. The owner of the claim gets the lion's share. Gold panning has changed the lives of many people in the study area. Some have built beautiful solar powered homes, bought furniture, household assets, livestock and even cars. It has allowed them to provide for their family and send their children to school. Most of the gold panners, especially those who own claims, lived better lives than many others in the community.

However, gold panning has its own challenges, and besides risking going to jail for digging without a licence, it is a hard activity. People dig several metres deep into the soil until they get to the gravel or rocks that have traces of gold. Some go into disused mines that are very deep, as deep as 100 metres, burrow holes in rocks and put dynamite in to blast the rocks into small pieces. They carry the load

in sacks out of the mine and transport it to a gold mill in trucks for crushing and separating the gold from the ore. It is very hard work to fill the trucks with rocks. Fights are common when people dig for gold, especially among those that have more gold, and some are permanently injured or killed in the fights. Another challenge is that there is no guarantee that one will find gold after all the hard work. Some are unlucky and get nothing after a truck load and then they still have to pay the transporter and the gold mill, which may leave them in debt with the sponsor. The sponsors buy food and dynamite, pay transport and the bill at the mill, and get paid a large percentage of the profit.

5.5.3 Reduction of meals and meal times

It was noted that people reduced the size of meals and number of meal times during the drought to save the available food stocks. Many people chose this as a coping strategy because during the drought food was mainly bought from the shops because nothing or little was harvested. Access to food was a challenge because most people do not have a stable income. This was worsened because of the high prices of commodities and because food can only be bought using foreign currency. Even though the government does not allow pricing in foreign currency, shops do it anyway because of the instability of the local currency. Participants stated that they ate in the mornings and evenings and skipped lunch. In some cases when the food stocks were very low, adults would eat once a day in the evening and children would eat breakfast and supper. Preferential feeding were applied in worst cases where children, lactating mothers and the sick were fed before everyone else. This led to malnutrition in children, especially those under the age of five.

5.5.4 Sacrificing other projects

Food is a basic need that no one can live without. An increase in the prices of basic commodities, such as maize meal, sugar, cooking oil and soap, prevented many people from embarking on developmental projects. People sacrificed projects like building their homes, buying fences for their fields or buying property

in favour of buying food. Some even sacrificed the future of their children by withdrawing them from school, especially those in secondary school. It was noted that those with children at tertiary institutions would go the extra mile so that their children could complete their courses with hope that they would get a job and help the family financially. Stalling or abandoning projects is a problem because some are developmental and improve people's status. Social status is valued in rural areas because those with a high status are more respected in the community than those with a low status.

5.5.5 Food aid

During the drought people harvested very little or nothing and had to rely on buying food from the shops, but in the study area, the unemployment rate is very high and many found it very difficult to access food though shops. The government and some NGOs were involved in helping people with food. The government distributed maize to the elderly and the disabled. NGOs helped by distributing maize meal, cooking oil and beans to a few selected households. The people were selected according to their wealth and potential. The elderly, the disabled, lactating mothers and child headed households were prioritised, followed by the unemployed and those who did not own livestock such as cattle.

Aid was also offered in stock feed by one NGO called Cultivating New Frontiers in Agriculture. This stock feed was offered at a subsidised price. They also used a criteria to select people eligible to buy this stock feed, and only people who had less than five cows were allowed to buy this stock feed. The reason was that households who owned more than five cattle could at least sell a few cattle to buy stock feed and save the rest, but those who own less than five cattle would not get enough money for their one or two cows to feed the others.

Some of the responses from the research participants stated that the help from the government was not enough. The young families slammed the process of excluding them from aid beneficiaries lists, claiming that they are not employed and have no source of income. To some extent this is true because not everyone

can be a gold panner or be involved in informal trade. The claim from research participants was that very few people in the village got help because the criteria were used to exclude many people. Those who were identified as getting help from their children and relatives were excluded from the list. Some claimed that selection of beneficiaries was biased towards those who were members of or aligned with the ruling party (ZANU-PF), especially when it came to help from the government.

5.5.6 Help from children and relatives in the diaspora

A large number of people from the study area are in the diaspora, and most of them are in South Africa. Most of these are youth who could not get employment at home and decided to leave the country in search of greener pastures. The diaspora has played a huge role in the provision of food to the people in the study area. These form the social assets of the community because people draw from relations in times of need, like during the drought.

Some migrants sent food to their friends and relatives almost every month through cross-border couriers known as *omalayitsha*. The couriers carry goods for people, mostly from Johannesburg, at a charge using their vans and taxis and towing trailers full of goods. Though this is expensive, it is sometimes cheaper than sending money to people back home to buy food because registered companies such as Mukuru charge 10% of the amount sent. Recently, an online service provider called Malaicha.com opened that allows people in the diaspora to order groceries and building materials online and pay at selected retail outlets in South Africa, and then the goods can be collected from selected retail outlets in Zimbabwe. This is faster and cheaper than sending goods home using cross-border couriers.

However, not everyone who has a child or a relative in the diaspora receives help. Some have been in the diaspora for years and have never sent a single cent home because they work in low paying jobs or they have poor relationships with their

families back home. Overall, the diaspora played a huge role in the provision of food to people during the drought.

5.5.7 Sale of livestock and assets

One of the coping mechanisms employed by people in the community was to sell livestock and household assets to buy food and stock feed to supplement food for livestock. According to the participants, this was the last option used by many households because livestock is the pillar of any household. People sell livestock during difficult times and use the money to pay for expenses; for example, some sell their livestock to pay school fees for their children and to build or improve their homes. However, the sale of livestock is always the last option because livestock determine the standing and dignity of a household in the community. The larger the herd a household has, the better their standing and the respect they get from the community.

The droughts have reduced the herd sizes in the community because of lack of food for the animals. People react very late during droughts and only start selling their livestock when their livestock starts dying. Under normal circumstances a cow fetches US$ 500, but during the drought they fetched as little as US$ 150. If livestock owners reacted early enough, the sale of livestock would have gone a long way to feed the family and the remaining livestock. Households had to sell many livestock to save others: A 50 kg bag of stock feed cost US$ 10, meaning that selling one cow bought 50 bags of stock feed. The other challenge was that households started supplementary feeding very late, which cost more since the cattle had already lost a lot of weight. Households that do not have livestock sell household assets such as furniture or anything of value. The sale of livestock and household assets makes households more vulnerable. As stated above, during droughts cattle fetch as little as a third of the normal price, but selling cattle at the right time brings in enough income that can be used for self-development, such as starting other income generating projects like poultry or goat farming.

5.6 Participants' Suggestions to Create Sustainable Livelihoods

People need to be self-sufficient and not depend too much on the government and NGOs for help during drought episodes. The participants were asked what they need to create sustainable livelihoods. They suggested many activities that could help them lead sustainable livelihoods, including drilling deeper boreholes, building big new dams, rehabilitating existing and silted dams, helping with start-up projects like poultry rearing, keeping goats, irrigation schemes, and training on practical work like building, carpentry and welding.

5.6.1 Drilling deeper boreholes and protected wells

The government drilled boreholes and dug protected wells in the few past years. These boreholes and wells were working for some time, but they dried up over time. Some wells have water during the rainy season but dry up around August. This creates a challenge to those who rely on them for water. They dry up because the water table has lowered because of the successive droughts, which means that deeper boreholes must be drilled and the protected wells must be deepened. If deeper boreholes are drilled, the problem of water scarcity during droughts will be solved. Some households have drilled boreholes and installed solar powered pumps that pump water into tanks for use at their homes. Therefore, it is necessary to drill deeper boreholes with solar pumps to pump water into tanks, and then people can get water from these tanks.

5.6.2 Rehabilitation of dams

The government built dams in the community. One of the dams (Mpalawane Dam) is completely silted and no longer holds any water at all. Two other dams (Gonkwe Dam and Gwakwe Earth Dam) no longer hold much water because of siltation. When it rains, these dams quickly fill up, but there is little water later in the year. The water that is left is of too poor quality for people and animals. In some cases cattle get stuck in the mud and dies if not retrieved in time. These dams must be rehabilitated so they can hold more water to last people to the next rainy season.

The suggestion is that Mpalawane Dam must be rehabilitated and its wall must be raised so that it can hold more water. Work to raise the wall started, and villagers had collected stones for the work, but it stalled. No clear answers were given as to why the proposed work stalled.

5.6.3 Construction of a bigger dam

The existing dams can hold enough water for household use if rehabilitated but are not big enough for irrigation. The participants suggested that at least one big dam must be built in one of the rivers in the area so that an irrigation scheme can be started so that people would not only rely on rainfall for agriculture but would be able to water their crops. This will create a sustainable livelihood for the people and cut the dependence on aid and donations to get food. A bigger dam would also mean livestock will get good quality water throughout the year. Livestock water-borne diseases would be reduced, which will increase the productivity of livestock. Some livestock die because of the diseases they get from water and some have stillborn births.

5.6.4 Irrigation schemes

The idea of an irrigation scheme was very popular among the participants. The ward councillor mentioned that there is a ward irrigation scheme being started; however, its position prevents many people from the study area from joining it. It is situated more than five kilometres away from most people in the study area. Only a handful of households are part of this irrigation scheme. Most of the participants suggested that an accessible irrigation scheme must be started. An irrigation scheme is determined by water availability, which is a problem in the study area, and therefore, the water issue must first be resolved. An irrigation scheme can go a long way in helping the people in the study area lead sustainable livelihoods, and it can also be a feeder to other projects, such as poultry farming. Crops such as sunflower can be grown and used as poultry feed.

5.6.5 Poultry farming and keeping goats

Many participants suggested that poultry farming and keeping goats would help them attain sustainable livelihoods. Poultry and goats reproduce in a short time, allowing farmers to realise a profit in a shorter time than with cattle. There is also less start-up capital needed than with cattle. Goats can survive on poor pastures, which can be beneficial to the farmers as they are likely to survive droughts. The Agritex official suggested that farmers must keep drought tolerant livestock. Goats are not that affected by droughts, and although droughts may affect their productivity, their mortality rate is very low. The participants stated that some projects by the government and NGOs require people to pay a certain amount to be part of a project, and many felt that they were excluded because they could not raise the required amount.

5.6.6 Training in practical skills

Some research participants suggested that the youth must be trained with practical skills, such as building, carpentry and welding that are relevant to the people in the study area. Many youths completed O'Level but could not study further because they did not meet the college requirements of passing five subjects at O'Level. They are now part of the community but have no skills, which makes them vulnerable to drought effects, especially when they start their own families. The skills mentioned above are marketable in the study area as people always build or improve their homes, and need furniture and metal household assets such as axes, wheelbarrows, ploughs and scotch carts repaired. Skills training would create local employment since a builder cannot work alone, and in the process, the skills are transferred from one person to the other.

5.6.7 Growing drought tolerant crops

Last but not least, the Agritex official advised that people in the area must start growing drought tolerant crops such as sorghum, pearl millet, finger millet, and groundnuts. Furthermore, the Agritex official suggested that farmers must grow

fodder crops, such as velvet beans and lablab, for supplementary feeding. Growing drought tolerant crops will help alleviate the problem of poor harvests during drought and bring food security to households. Maize is a drought sensitive crop, and sometimes the area receives enough rain for drought tolerant crops but not for maize production. Crops such as sorghum dry their leaves because of lack of rainfall, but when it rains it quickly grows back and grow to maturity, which is not the case with maize. These crops do not require much rain to grow to maturity. Fodder crops will be beneficial to farmers as they will provide feed for the livestock. Stock feed is very expensive, and farmers lose many cattle because they cannot afford to feed all their livestock. Growing their own stock feed will bring more income to the farmers since the money that would have been used to buy stock feed would be used for other household needs.

5.7 Conclusion

This chapter discussed the results presented in Chapter 4 based on the interviews conducted with the participants. The characteristics of the research participants were discussed, followed by the effects of droughts, which include poor harvests, loss of livestock, lack of water for household use and animals, lack of food, school dropout, increased prices of basic commodities and agricultural inputs, soil degradation and siltation of dams and rivers, and migration. These effects culminated in coping mechanisms employed by people to survive the effects of droughts. The coping mechanisms include informal trade, gold panning, reduction of meals and meal times, sacrificing other projects, food aid, help from children and relatives in the diaspora, and sale of livestock and assets. The chapter also discussed the suggestions made by research participants for a sustainable livelihood. These suggestions include drilling boreholes, digging deeper wells, rehabilitating dams, constructing a bigger dam, irrigation schemes, poultry farming, keeping goats, training in practical skills, and growing drought tolerant crops.

CHAPTER 6: SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter outlines the summary, conclusion and recommendations. The summary gives the key points of the study and briefly outlines the background of the study, the problem statement, the concept of drought, the definition of drought, the theoretical framework used, the types of drought, drought impacts, and coping mechanisms for and responses to drought. The conclusion of the study is outlined using the study objectives and stating whether the objectives were met based on the collected data. The chapter ends with recommendations to the national government, Agritex, the rural district council, households and for further research.

6.2 Summary

Matabeleland South province is in Region V, an area that receives an average of less than 600 mm of rainfall a year. The people in the area practise rainfed agriculture as their major source of livelihood. Most of the food in Southern Africa is produced by smallholder farmers who produce food for family consumption. About 90% of food in sub-Saharan Africa comes from rainfed agriculture, which is a source of livelihood for about 70% of the total population in the region (Jiri et al 2017:778).. They plant crops, mainly maize, a staple food, and keep domesticated animals. The type of agriculture practised makes them vulnerable to droughts due to erratic and poor rainfall. People in the study area are now food insecure because of successive droughts in the area over the last 10 years. Climate change has increased the severity and frequency of droughts. The direct impacts of droughts are loss of income and livelihood (poor harvest and animal mortality), and the indirect impacts are increases in food prices due to local shortages requiring imports. Women and children are the most severely affected by droughts.

The literature review conducted for this study looked at the concept of drought. Drought can occur in areas that receive little rainfall and areas that receive a lot of

rainfall. Drought is differentiated from aridity in the sense that drought is a temporary episode and aridity is a permanent feature. In Chapter 2, drought was defined using the operational definition, which is used to identify the onset and severity of the droughts, and the conceptual definition, which is used to formulate drought policies. Drought is a result of reduced precipitation for a period of time that amounts to less than average rainfall received in an area. Pereira (2006:38) define drought as a natural but temporary imbalance of water resulting from persistent below average rainfall that is unpredictable and leads to reduced availability of water from water sources. There are four types of drought, namely meteorological, agricultural, hydrological and socioeconomic. The impacts of droughts can be economic, such as loss of jobs, increase in food and agriculture inputs, and loss of livelihoods; social, such as malnutrition and diseases; and environmental, such as land degradation, poor pasture for animals, and siltation of dams and rivers.

The people in the study area use different mechanisms to cope with the droughts, such as selling livestock and household assets, informal trade, gold panning, migration, and reducing meals and meal times. The government and NGOs helped people by giving food aid to the elderly, and disabled, and NGOs helped by selling subsidised stock feed to households that had few livestock. Some of the coping mechanism, such as selling livestock and assets, left people more vulnerable to future droughts. Successive droughts made it very difficult for households to recover. Chapter 2 also looked at case studies from different countries with a similar climate, namely Baringo County in Kenya and the Oraon tribe in the Sundragarh District of Orissa in India. The communities in these two case studies employed similar coping mechanism as those in the study area.

The response to drought in Zimbabwe has been reactive and aimed at reducing the effects of drought on the people and has been done by the government and NGOs distributing food aid. These reactive solutions are short-term measures meant to reduce drought effects for a particular time (Ainembabazi 2018:2). This has not been enough and the majority of the population has been left to fend for themselves. The Department of Civil Protection is responsible for coordinating and

managing all disasters in the country and is guided by the Civil Protection Act under the Ministry of Local Government, Public Works and National Housing. Currently Zimbabwe has no drought policy, but it has mitigation strategies to minimise the effects of droughts.

Zimbabwe assesses its food security through the Zimbabwe Rural Livelihoods Assessment and the Crop and Livestock Assessment. The Rural Livelihood Assessments are done yearly by the ZimVAC after the harvesting period, and are funded by the government, the United Nations, and some NGOs.

The study used the sustainable livelihoods approach as its theoretical framework because droughts affect the livelihoods of people. Krantz (2001:7) says a livelihood comprises capabilities, assets and activities that people need for their day-to-day living. A sustainable livelihood is key for human survival, and people must be helped to achieve a sustainable livelihoods using the resources and assets available to them. This study sought to help people identify the assets and resources available to them to lead sustainable livelihoods. Though the area is drought prone, specific measures and activities can be used to help people have sustainable livelihoods.

The aim of the study was to evaluate the effects of the 2018/2019 drought in Ward 6 in the Gwanda District. A qualitative method was employed, and purposive sampling was used to select the research participants. The research participants were interviewed using semi-structured and unstructured interviews. The semi-structured interviews were used to collect data from households, village heads and the councillor, and the unstructured interviews were used to collect data from the Agritex official and NGO official. A questionnaire was used to collect the participants' biographical data. Data was collected from primary (interviews, questionnaire, and focus groups) and secondary sources (documents from the rural district council, Agritex and an NGO). Thematic analysis was used to analyse the data collected from the participants, and the data was put in themes to reflect the responses of the research participants.

Ethical considerations were observed to ensure that the participants took part voluntarily and were aware that they could withdraw from the study at any time without giving reasons. Consent was obtained from the participants before they took part in the study. The participants were informed that the information they shared would be kept confidential, and they were interviewed at times convenient to them and were reimbursed for costs incurred to attend the interviews.

The limitations of the study included the researcher struggling to get hold of some participants due to poor network coverage, and struggling to get the permission letter to conduct the research from various government departments.

6.3 Conclusion

The objectives of the study were to identify the main source of livelihood for the people of Ward 6; evaluate the effects of the 2018/2019 drought on the livelihoods of the people of Ward 6; establish the coping strategies used by people to survive the effects of the 2018/2019 drought; and provide possible ways which the people of Ward 6 could reduce losses during droughts in the future. These objectives were achieved in the study.

The researcher selected participants who were relevant to the study and to represent different types of households in the community. Therefore, both male- and female-headed households were represented as well as households headed by young people and old people. The data collected from the households was triangulated by village heads, the ward councillor, the Agritex official and an NGO official as well as the information obtained from the literature review. The following subsections discuss the main sources of livelihood in Ward 6, the effects of droughts on livelihoods, coping strategies used by people living in Ward 6, and ways to attain sustainable livelihoods in Ward 6.

6.3.1 The main source of livelihood for the people of Ward 6

The study found that the people of Ward 6 have more than one source of livelihood, including agriculture activities, informal trade, gold panning and menial

jobs. The major source of livelihood is rainfed agriculture, but this has become more unreliable due to the poor and erratic rainfall received in recent years. Since rainfall has been erratic and households have not been harvesting enough for their food needs, many have diversified to other forms of livelihoods, and some are now informal traders who buy goods and vegetables for resale. Those households that sell vegetables are not making enough income to cater for their family needs. Informal traders who buy goods for resale are making much better incomes and can cater for their family needs and even do other developmental projects. Households who have diversified into gold panning are also making a better income. The youth are mostly the ones involved in gold panning although some women have joined them. However, women are more involved in open cast mining whereas men are involved in underground mining in disused mines. However, this is dangerous and a person can be jailed for gold panning without a licence. Other households do menial jobs such as building.

6.3.2 The effects of the drought on the livelihoods of people

Droughts have affected people in Ward 6 greatly and many have lost their livelihood sources. Since the people in the study area practice rainfed agriculture, the effects of the drought included yield loss and death of livestock. During the drought years, households harvested very little or nothing from their fields, and many households lost livestock. Water availability became a challenge to many households for domestic use, livestock watering and other livelihood uses (Fewsnet 2019:7). Households and animals had to walk long distances in search of water, and livestock wandered off into the bush in search of water and pastures, which made them vulnerable to thieves. Some households had to withdraw their children from school because they could not afford school fees and buying stationary.

The drought led to an increase in the prices of basic commodities such as mealie-meal, cooking oil and sugar because the poor harvest forced imports, which led to higher prices. This was a challenge for people who had no source of income and were forced by the drought to buy from shops. The drought caused food insecurity

in the study area. Though the local shops were always fully stocked with basic commodities, the prices prevented many people from accessing the basic commodities. People had to travel to Gwanda Town where prices were a bit cheaper than the local shops and some even travelled to Musina in South Africa to do their shopping because the prices are far cheaper there. However, transport was a challenge because it added to the prices of the products, it cost almost the same as the products in the local shops.

The drought caused the degradation of the soil, which made it too poor to grow grass and trees. This has left the soil vulnerable to erosion, which has led to the siltation of dams and rivers. The dams no longer hold enough water to last households to the next rainfall season.

The drought also caused the migration of people in the community. Lack of opportunities forced people to move to towns and abroad in search of better opportunities. Many of the people who migrate are unskilled and find it difficult to find employment in their new location, exposing them to exploitation by their employers.

6.3.3 Coping strategies to survive the effects of the drought

People employed different strategies to survive the effects of the drought, including reducing meals and meal times to conserve the little food stocks available. In severe cases people ate only once a day. In severe droughts, people even practised preferential feeding where children, pregnant women and the sick are fed first. The country has a high unemployment rate, and there are almost no job opportunities in the study area, forcing many to take up informal trading and gold panning. Poor rains force people to live from shops, and a big portion of, if not all, their income was spent on food during the drought. This forced people to abandon development projects. During the drought, the government and NGOs provided people with food aid; however, not everyone received food aid and most were excluded because of the selection criteria. The elderly, orphans and the disabled received most of the food aid. Many households have children and relatives in the

diaspora, and they provided a lifeline during the drought by sending money or food. Some households sold their livestock or assets to get money to buy food and stock feed. However, the assets or livestock were sold at low prices because of desperation or the poor condition of livestock. Many households sold their livestock very late when they had already lost a lot of weight, which made them less valuable.

6.3.4 Possible ways to reduce losses during future droughts

The availability of water was a challenge to the people in the study area during the drought when rainfed agriculture was not viable. The participants suggested that the government must drill deeper boreholes and build new dams. There is a need for irrigation schemes so that people can farm during droughts. Self-help projects, such as keeping goats and chickens could play a big role in sustainable livelihoods. The participants also identified lack of skills a problem, and therefore, people must be trained in practical skills relevant to the study area.

6.4 Recommendations

The increased frequency and severity of droughts requires action from the national, provincial, district, and local government, households as well as academics, Agritex and NGOs. The effects of drought have increased the vulnerability of households to stresses and shocks related to climate. The study unearthed some strategies that can be used to create sustainable livelihoods. Robust and sustainable resilient solutions are needed to prepare households, communities and nations to withstand drought impacts (Ainembabazi 2018:3). If implemented, these would go a long way to create sustainable livelihoods that will cut the dependence on food aid from the government and NGOs. The following recommendations are based on the data obtained from the participants and the literature review.

6.4.1 Recommendations to the national government

Firstly, it is necessary to create a drought policy that follows a bottom-up approach. According to Wilhite and Vanyarkho (2000:14), “developing a drought policy and contingency plan is one way that governments can do to reduce the impacts of future droughts and improve the effectiveness and efficiency of future response efforts”. This kind of a policy will cater for the specific needs of the people on the ground based on facts and not assumptions or case studies from other areas. The drought policy must have pre-drought mitigation programmes that can prepare people for droughts before they happen. Early warning systems must be prioritised to prepare different institutions and stakeholders to deal effectively with droughts in order to reduce its effects. The current study found that households reacted late to the drought and sold their livestock when they had already lost a lot weight, thereby losing more than half the income they could have got if the livestock was sold in time. Post-drought programmes are necessary to provide assistance to affected households in time. Institutions must be capacitated with efficient programmes and staff that can timely and effectively deal with drought effects. The current study found that the help from the government were often late, and therefore, timely intervention is necessary to avoid loss of income and lives. It is also necessary to create a policy on artisanal mining that will certify people to do mining under supervision to protect the degradation of the natural environment, and people should be encourage to form groups and cooperatives for mining instead of giving mining licences to individuals.

6.4.2 Recommendations to Agritex

The department of Agritex is essential because it gives agricultural support to farmers, and therefore, the Agricultural Extension Officers must engage more with local leadership and households to provide agricultural support. Agriculture is the major source of livelihood in the study area, and the right information on crop and animal husbandry will help reduce losses due to droughts. Households need the information on crop and animal varieties that are drought tolerant to avoid losses.

Some farmers lose livestock to diseases that can be prevented through vaccination. Farmers also need information about producing their own stockfeed because farmers with enough land can grow fodder crops for supplementary feeding. Supplementary feeding will reduce the mortality and increase productivity of livestock, thereby increasing the asset base of households. The Agriculture Extension Officer suggested that households must plant drought tolerant crops and shorter seasoned varieties, such as sorghum, pearl millet, groundnuts and cow peas and also grow fodder crops such as lablab mucuna and velvet beans.

6.4.3 Recommendations to the rural district council

Water scarcity was identified as a major challenge to households in Ward 6. The rural district council must initiate the drilling of deeper boreholes, and these boreholes must use solar powered pumps to pump water into tanks for easy access. These boreholes can also be an asset for small irrigation schemes that can improve the food and nutrition for households. It is also necessary to build a bigger dam and rehabilitate the silted dams. This will improve the availability of water for households, livestock and irrigation schemes. The council must initiate Food for Work programmes that create safety nets for youths and young families instead of only focusing on the elderly, disabled and orphans. Households must be helped with material for water harvesting infrastructure, such as protected wells and water tanks to store water runoff from roofs during the rainy season.

6.4.4 Recommendations to NGOs

The NGOs must remain apolitical in their activities since they are dealing with a humanitarian crisis. There is a need to increase their coverage giving more people food aid looking at the situation of food insecurity. Instead of giving food aid, they must create proactive programmes to help households withstand droughts. These programmes can include training in locally marketable skills, providing assets such as farming inputs and implements, and providing livestock in areas that experienced high livestock mortality. Skills training and assets provision will increase the adaptive capacity of households, especially non-labour constrained

households, and equipping households with skills removes the dependency syndrome. They must always use a bottom-up approach to help households in order to deal with real issues on the ground.

6.4.5 Recommendations to households

Many households are vulnerable to shocks such as droughts, and therefore, households must be capacitated to withstand these shocks and have sustainable livelihoods. Poor harvests have been a challenge to many households even when the rains are good, and therefore, households must plant drought tolerant crops, such as sorghum, millet, cow peas and groundnuts, and short season varieties that will mature quickly to use the available moisture in the soil. Growing fodder crops such as lablab, mucuna and velvet beans will help create supplementary livestock feed, which will reduce the cost of buying animal feed, improve the productivity of animals, and reduce livestock mortality. Households must practise conservation agriculture to improve the productivity of the land and increase yield. Conservation agriculture will also protect the soil from degradation through erosion. Investing more in small livestock, such as goats and poultry, will be beneficial since these animals can live on poor pasture and take less time to reproduce and grow to maturity. Shiferaw et al (2014:166) postulate that managing droughts effectively in vulnerable areas requires people to diversify their livelihood strategies and start income generating options outside agriculture. Households must diversify to other agriculture activities such as fish farming because this will require rain once to fill up ponds, and after harvesting the fish water can be used for watering small household vegetable gardens.

6.4.6 Recommendations for further research

Research plays a very important role in discovering new methods to improve the livelihoods of people, and therefore, further research on drought management strategies to reduce the risk of losing productive assets such as livestock is necessary. Research on improved vulnerability assessments will help to quickly identify high risk individuals, groups and communities during droughts and to

provide suitable help. More research on drought tolerant crops and livestock will directly increase the yield output of crops and reduce the mortality of livestock. Improved crop yields and reduced mortality will increase the asset base of households and food security, and reduce their vulnerability to droughts.

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APPENDIX A: ETHICS APPROVAL

UNISA university of south africa

COLLEGE OF HUMAN SCIENCES RESEARCH ETHICS REVIEW COMMITTEE

21 July 2021

Dear Mr Sidney Moyo

Decision:
Ethics Approval from 21 July 2021 to 21 July 2024

NHREC Registration #:
Rec-240816-052
CREC Reference #:
56531338_ 21

Researcher(s): **Name: Mr Sidney Moyo**
Contact details: 56531338@mylife.unisa.ac.za
Supervisor(s): **Name: Dr P. Mthembu**
Contact details: 062 165 8014

Title: Evaluating the effects of the 2018/2019 drought in Zimbabwe. A case study of Gwakwe Village, Ward 6 in Gwanda District.

Degree Purpose: Masters

Thank you for the application for research ethics clearance by the Unisa College of Human Science Ethics Committee. Ethics approval is granted for three year.

The ***low risk application*** *was reviewed by* College of Human Sciences Research Ethics Committee, in compliance with the Unisa Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment.

The proposed research may now commence with the provisions that:

1. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.
2. Any adverse circumstance arising in the undertaking of the research project that isrelevant to the ethicality of the studyshould be communicated in writing to theCollege Ethics Review Committee.
3. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
4. Any changes that can affect thestudy-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the

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confidentiality of the data, should be reported to the Committee in writing, accompanied by a progress report.

5. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.
6. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data require additional ethics clearance.
7. No fieldwork activities may continue after the expiry date **(21 July 2024).** Submission of a completed research ethics pro gress report will constitute an application for renewal of Ethics Research Committee approval.

Note:

*The reference number **56531338_CREC_CHS_2021** should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.*

Yours sincerely,

Signature :

Prof. KB Khan
CHS Research Ethics Committee Chairperson
Email: khankb@unisa.ac.za
Tel: (012) 429 8210

Signature : PP

Prof K. Masemola
Exécutive Dean : CHS
E-mail: masemk@unisa.ac.za
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APPENDIX B: CONSENT FORM

CONSENT TO PARTICIPATE IN THIS STUDY

I, _____ (participant name), confirm that the person asking my consent to take part in this research has told me about the nature, procedure, potential benefits and anticipated inconvenience of participation.

I have read (or had explained to me) and understood the study as explained in the information sheet.

I have had sufficient opportunity to ask questions and am prepared to participate in the study.

I understand that my participation is voluntary and that I am free to withdraw at any time without penalty.

I am aware that the findings of this study will be processed into a research report, journal publications and/or conference proceedings, but that my participation will be kept confidential unless otherwise specified.

I agree to the recording of the interview/ focus group discussion.

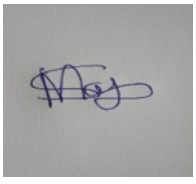
I have received a signed copy of the informed consent agreement.

Participant Name & Surname _____ (please print)

Participant Signature _____

Date: _____

Researcher's Name & Surname: Sidney Moyo



Researcher's signature Date: 15 October 2020

APPENDIX C: QUESTIONNAIRE

Biographical details of participants (Tick in appropriate boxes)

Male		Female	

Gender:

Age:

18-30		31-40		41-50		51-60		61-70	

Education:

Grade 1 to 7		ZJC		O'Level		Diploma/ Certificate		Degree	

Main source of livelihood:

Subsistence farming		Small-scale mining		Other (Specify below)

Number of people in household:

1		2		3		4		5		More than 5	

Number of livestock owned:

Poultry		Goats		Sheep		Cattle		Donkeys	

Method of farming:

Use hands and hoes		Ox-drawn plough		Tractor	

Crops grown:

Maize		Groundnuts		Roundnuts		Sorghum/ millet		Cow peas	

APPENDIX D: COMMUNITY FOCUS GROUP QUESTIONS

1. How much rain did u receive in 2018/19 farming season?
    - -Enough for farming activities, watering animals and household use.
    - -Less for farming activities, watering animals and household use.
2. How many droughts have occurred in the past 10 years?
3. What is the main source of livelihood in Ward 6 most particularly Gwakwe Village?
4. What losses (livestock and projected income) have you incurred from the past droughts?
5. Apart from livestock loss and not harvesting food in the fields how else did the drought affect you?
6. How many meals do you have a day when there is no drought?
7. During a drought how many meals do you have a day?
8. Since farming is your main source of livelihood, in times of drought how do you get food to feed your family?
9. This area has a number of people who are now practising small-scale mining as their source of livelihood. Have you considered diversifying to small-scale mining? Support your answer, why or why not.
10. What are the sources of water in your village when there is no drought and who fetches water for your household?
11. What are the sources of water when there is a drought and who fetches water for your household?
12. If your answer in 11 is different from 10. How far do you travel to get water during drought and who fetches water for your household?
13. Have you got any help from the government or non-governmental organisations?
    - Is this help enough?
    - If not, what more can be done for you to be less vulnerable to drought episodes?

14. From your perspective as a resident of Gwakwe Village in Ward 6 an area vulnerable from droughts. What kind of help do you need to mitigate major losses from droughts?

Thank you for participation.

APPENDIX E: INTERVIEW QUESTIONS FOR WARD COUNCILLOR AND VILLAGE HEADS

1. What is your role as a village leader?
2. How can you define drought in your own terms?
3. Approximately how many droughts have you experienced in the last 10 years (2010 to 2020)?
4. Do you think the frequency of droughts is increasing in recent years?
5. During droughts how are people of this community helped by the government and non-governmental organisations?
6. What kind of help (material or non-material) is given to people by the government and non-governmental organisations?
7. Do you think the help is enough for the villagers?
8. If your answer to the above question is No. What kind of help do you think must be given to community members that can create sustainable livelihoods (A livelihood that can withstand stresses and shocks such a drought?
9. What criteria is used to choose people that must benefit from the government and non-governmental organisations programs?
10. In your opinion, for people who do not get help from the government and non-governmental organisations how do they survive drought?

Thank you for participation.

APPENDIX F: LANGUAGE EDITING CERTIFICATE

WORDPLAY EDITING
Copy Editor and Proofreader
Email: karien.hurter@gmail.com
Tel: 071 104 9484

20 October 2022

To Whom It May Concern:

This letter is to confirm that *Evaluating the Effects of the 2018/2019 Drought in Zimbabwe. A Case Study of Gwakwe Village, Ward 6 in Gwanda District* by Sidney Moyo was edited by a professional language practitioner. It requires further work by the author in response to my suggested edits. I cannot be held responsible for what the author does from this point onward.

Regards,

Karien Hurter