

Women's perspectives and experiences of climate change with specific
focus on drought in Kwa-Ngwanase, KwaZulu- Natal, South Africa

by

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DECLARATION - PLAGIARISM

I, Fanele Masinga declare that:

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6. This degree is being submitted in the fulfilment of the degree of Master's in Development Studies in the Faculty of Humanities, School of Built Environment and Development Studies, University of Kwa-Zulu Natal, Durban, South Africa for examination in consideration of the award of a higher degree in Development Studies

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Abstract

Climate change and drought are increasingly being discussed in South Africa, with many places being affected by the lack of seasonal rainfall. South Africa has some of most progressive policies in the world, yet most of these policies continue to exclude women. This is the case for women in rural Kwa-Ngwanase KwaZulu-Natal, South Africa, a traditional subsistence farming area that has been affected by drought impacts for the past few years. The aim of the study was to understand the different experiences women lived under during drought impacts. The findings suggest that local government interventions have not benefited the lives of the vulnerable under drought conditions, with women indicating that more needs to be done to enable them to cope and adapt during drought hazards. The participants indicated that they used various coping mechanisms but continue to struggle under the impact of the harsh drought. Looking at their current situation, women feared the prospects of an unsustainable future. Women indicated that drought had made it difficult for them to access rainfall and water from the riverbeds due to the dryness of the climate. Furthermore, women indicated to have survived over minimal assistance provided by neighbours which was proved unsustainable. Ideally, women-centred government interventions should be made available to ensure that households are resilient, and able to cope and adapt to climate induced negative impacts.

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Acronyms and Abbreviations

CRED EM-DAT	Centre for Research on the Epidemiology of Disasters
DCCEE	Department of Climate Change Energy and Efficiency
EPWP	Expanded Public Works Program
FAO	Food and Agriculture Organization
GHG	Greenhouse gas
HSRC	Human Science Research Council
IDP	Integrated Development Plan
IPCC	International Panel on Climate Change
MDG	Millennium Development Goal
NDP	National Development Plan
UNDP	United Nations Development Plan
UNEP	United Nations Environmental Programme
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
WHO	World Health Organisation

Chapter 1

Introduction

1.1 Background of the Study

The global need for agrarian produce has heightened the levels of deforestation across the world (Rodrigues and Russel, 2006). There has been a resulting increase in the negative impact on the environment, as societies and companies ignore the principles of environmental sustainability. According to the Food and Agriculture Organization (FAO, 2009), the international economy's need for wood resources brings pressure on countries to cut-down their forests to produce timber and pulp, which is used to make furniture, materials and paper, amongst other things. This demand has increased logging of tropical forests, which not only contributes to global warming but affects biodiversity and the livelihoods of the rural poor.

Human behavior has caused a significant negative impact on forests without doing much to reduce gas emissions (FAO, 2009). The International Plant Protection Convention (IPPC) also estimated that approximately one-third of human induced carbon dioxide is due to the causes of deforestation (2007). The Anthropogenic Global Warming (AGW) theory argues that human-made carbon dioxide is the reason there are droughts, floods, crop failures, famine, extinct species, diseases are spread-out and other climate change related issues are occurring (Bast, 2010). There is the suggestion that reducing green gas emissions would help reduce the causes of climate change.

In close relation to the global warming ideology and the environment, the 'creative destruction' theory coined by Joseph Schumpeter sets forth the idea that development and capitalism has created an unsustainable future for human survival on earth (Hawkins and Jones, 2013). However, material gains have resulted in the increased risk of drought. Literature has defined drought in various ways, with little consensus about a single meaning of the term (Horion et al., 2012). According to Balint et al (2011), drought is contextualized and described through challenges faced by the greater horn of Africa due to the prevalent drought events that occur throughout the continent.

Balint et al (2011) viewed and described drought in retrospect to what was happening in Africa, thus concluding the understanding of climate change to be of a natural cause, where rainfall shortages results in lack of easy access to water. Similarly, drought has been described as hazardous and dangerous, as it affects the natural system, as the symptoms of drought decreases the rainfall patterns for longer periods of time (United Nations Environmental Programme-UNEP and GOK, 2000). Additionally, Wilhite (2005) concurs that drought happens progressively and slowly overtime, making it hard to discern when the drought started and when it will end. According to Spinoni et al (2014), one needs to know three characteristics of drought in order to understand it, these being: severity, termination and frequency.

According to Wilhite et al (2007), of the many natural disasters that occur, drought is the most destructive causing the shortage of water on which so much of life relies. Drought impact is likely to be detrimental to future generations as it has already started threatening the survival of both humans and animals alike. Vogel and Fennessey (1995) argued that there is adequate information on the causes of drought, but inadequate data on its social-economic impacts on the livelihoods of the rural and vulnerable people. The drought often tends to have a negative impact on poor women living in rural areas, who depend on land, forests and water for their livelihood. Horion et al (2012) indicates that although drought is a hazardous phenomenon that affects the survival of many people, its severity has been disqualified due to the lack of structural impacts it has on core infrastructures, such as roads and facilities.

Droughts are becoming more frequent and severe, with many of those affected living in sub-Saharan Africa. Ongoro (2012) notes that women living in the periphery, are more affected by the issues of drought compared to men. Incidents such as deforestation, floods and droughts around the world have affected women the most, as women have to take care of their family members, particularly children, whereas men leave home to seek better opportunities for their livelihoods elsewhere. The lack of education for women often results in their vulnerability, as they become reliant on natural resources for household survival.

1.2 Climate Change

It is important to start off with a discussion on the definition of climate change to establish the meaning of this concept. The UNDP (2010) describes climate change as a change in the regional or global weather pattern caused by the release of carbon emissions that result in climate change. The IPCC definition of Climate Change includes change due to natural unpredictability alongside human activity (UNFCCC, 2007). The UNFCCC (12, 2007) defined climate change as "*a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere over a period of time*". Human's daily activities, such as driving a car or using electricity that is generated by coal results in the emission of greenhouse gas emissions.

To understand what brings about climate change, the relationship between climate change and Greenhouse gas emissions (GHG) needs to be established. The Australian Government's Department of Climate Change and Energy Efficiency (DCCEE, 10, 2012) observes:

"Our climate is changing, largely due to the observed increases in human produced greenhouse gases. Greenhouse gases absorb heat from the sun in the atmosphere and reduce the amount of heat escaping into space. This extra heat has been found to be the primary cause of observed changes in the climate system over the 20th century".

Greenhouse gas emissions (GHG) consist of the following (IPCC, 2007):

carbon dioxide: Produced primarily through burning fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products. Deforestation and soil degradation add carbon dioxide to the atmosphere, while forest regrowth extracts it from the atmosphere. Carbon dioxide's lifetime in the atmosphere cannot be represented with a single value because the gas is not destroyed over time, but instead moves among different parts of the ocean–atmosphere–land system.

methane: Emitted during the production and transport of oil, coal and natural gas. Methane emissions also result from livestock and agricultural practices and from the anaerobic decay of organic waste in municipal solid waste landfills.

nitrous oxide: Emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.

fluorinated gases: A number of gases that contain fluorine, including hydrofluorocarbons, perfluorocarbons, and sulphur hexafluoride, among other chemicals. These gases are emitted from a variety of industrial processes and commercial and household uses.

The above gases can be trapped in the atmosphere for a number of years before they cause climate change. They lock up heat in the atmosphere and cause the earth to warm up, this being called “global warming” (Bast, 2010), which triggers events such as hurricanes, increased ocean levels, floods and droughts. The more GHG released into the atmosphere, the greater the likelihood that climate change impacts will occur. The greater the changes in ocean levels and weather patterns, the more likely human beings will be affected, whether they would have directly or indirectly contributed to climate change. Therefore, people’s socio-economic and environmental status is likely to change, often negatively affecting their livelihoods and forcing them to adapt to the impacts of climate change (IPPC, 2007)

According to Bast, climate change has a detrimental effect on some individuals (Bast, 2010). Climate change has become problematic and damaging to some social groups such as the women children and the elderly, who are least able to adapt to the associated risks. This study will focus on drought. Drought is a situation where the land is dry and cannot be ploughed, resources’ are depleted and dried out. This situation is better understood through the lens of famine and food insecurity. The land once used to plough becomes infertile, as produce can no longer be grown or harvested. This intensifies the levels of poverty in the affected communities and households, and puts a considerable burden on women who are responsible for feeding household members (Bast, 2010). The effects of climate change in poor rural communities are likely to be particularly harsh, as women depend on farming the land to not only feed their families but to generate a source of income.

It has become common to acknowledge that poverty has a woman's face. Feminization of poverty is the idea that women make up the highest number of the world’s poor (Alber, 2011), and mirrors the functioning’s of patriarchy, where wealth, influence and ownership of assets are reserved for men, not women. Alber, (2011) indicated that statistically, and in terms of their lack of access to resources, services and support, Black rural women comprise the very poorest of the poor in South Africa. Feminization of poverty does not generally mean women do not have disposable cash, but rather the absence of power in leadership positions.

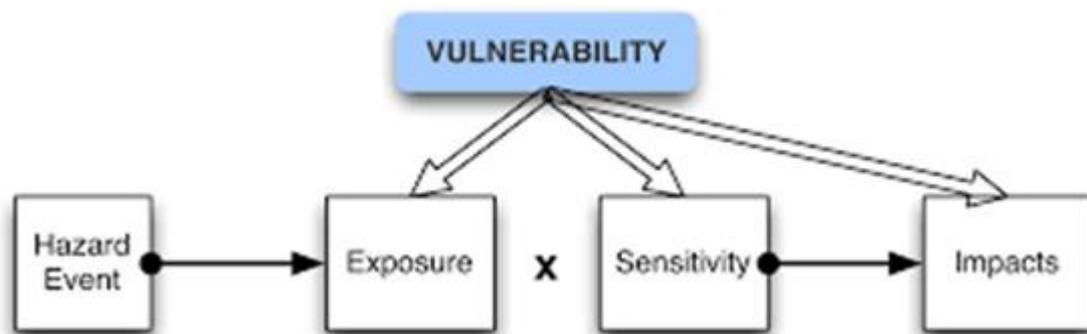
It is often an issue of leadership roles assets not being equally distributed among all groups. Instead most of the resources are given to a select population.

According to Barnett and Adger (2007), over 60% of women-headed rural households have an income below the poverty threshold due to the absence of employment opportunities and lack of mobility and training. Furthermore, according to Alber (2011), in their roles as sole breadwinners and heads of households, women are exposed to health and safety hazards, as the lack of basic services requires many hours a day to be spent walking long distances to fetch firewood and water, which is often not potable. Women often work longer hours in the field and in the household than men. People in South Africa often spend their work time in market related work, generally, men spend 70% of their hours in market related work and 30% in non-market related work, while women spend only 35% of their time in market related work and 65% in non-market work activities, in the household (Bentley, 2004).

What these figures reveal is that women do more work for less pay and are the primary actors outside of the formal economy. What these figures do not reveal is that within the women category there are variations between the income per capita women receive (Bentley, 2004). Likewise, Alber (2011) acknowledges that women's poor financial status is perpetuated by the cultural norms and beliefs that enforce the idea that women are the subordinates of men and are of less value. This unequal treatment of genders creates not only inequality, but also builds up poverty for the marginalized women.

"the problem with the feminization of poverty is not so much the numbers of women who are poorer than men, but rather with the severity of poverty and the greater hardships women endure in lifting themselves and their children out of poverty ... In addition, they are likely to have fewer job opportunities. If they are the heads of households under these conditions, probably without access to land, or if they do, it is user rights that they have no control of, they are more likely to find themselves on the margins of society than men" (Bentleys, 256, 2004).

Figure 1.1: Feminization of Poverty



Source: Bentley (2004)

1.3 Justification of the Study

Studies have shown the growing visibility of women in the development spectrum, their involvement in development practices having been encouraged to improve their position in their communities. Advancing women in development theory and practice has encouraged women visibility; however so, this falls short as it treats women as a homogeneous group. Marxist critique of the above indicates that women have always been included in the development agenda, however, due to different laws and regulations embedded in societies, they remain disadvantaged (UNDP, 2010).

Irrespective of the central role played by women in the household and in their community, they are side-lined and considered secondary to men when it comes to receiving support. Considering women's unique contribution in households and communities, their needs should be addressed through community based adaptation activities (UNDP, 2010). Women's capabilities, experiences and know-how are often neglected during climate change risks, which should not be the case. As women's perspectives on how things should be done should be incorporated into planning and managing climate change.

According to the United Nations Development Programme (UNDP, 2010) its mandate is to ensure and promote gender empowerment, inclusivity, equality and mainstreaming. There is a need for women empowerment platforms to affirm and encourage women's participation in the socio-economic spaces where they can compete equally with men to help sustain their livelihoods, as empowering them will put them at the centre stage of gender mainstreaming.

Empowering the vulnerable of women will give women the willpower to challenge injustices, and empowering them helps them address climate change risks (UNDP, 2010). The one organisation that recognises adaptation to climate change as key to addressing climate change is the United Nations Framework Convention on Climate Change. The global community acknowledges the need to take responsibility to ensure that vulnerable groups which includes mostly females are assisted in adapting to the risks of climate change (UNFCCC, 2007).

According to the Centre for Research on the Epidemiology of Disasters Emergency Events Database from 2003 to 2013, there were approximately 15 droughts that had an impact on almost 36.5 million individuals globally. FAO (2015a) indicated that within the agricultural sector almost 42% of crops were damaged and lost, while livestock production decreased by 36%. The decrease in production has meant that byproducts of farming and livestock decreased considerably due to the various droughts globally, and this directly affected the families that depend on these byproducts to survive. According to UNFCC (2007), it was reported that drought creates a decrease in the availability of crops such as maize, millet and groundnuts. Therefore, when drought affects agricultural households, their vulnerability is heightened, as subsistence farming is the only means they depend on for survival.

Smit and Wandel (2006) reported that vulnerability is not expected to be the same for people experiencing low and high frequency droughts. This may imply that in locations where drought is frequent, most of the people may suffer; hence they require more assistance than areas where the impact of a drought is lower. Adger and Brooks, (2005) highlights that factors that enforce vulnerability to drought in developing countries could be different from those of developed countries or regions. Wilhite, (2016) argue that given the varying forms of vulnerability, drought impacts can vary from location to location, household to household and individual to individual. Eriksen et al. (2008) affirms the notion that a drought has the tendency to affect various locations and people within the same geographical area in different ways. According to Cardona et al. (2012), the physical location of where people live, and their ability to access education, health, science and technology, and the effect of cultural variables are factors that cause vulnerability. The majority of people at risk are the poor, with the projection that the majority of people affected by starvation will be those living in the African continent in 2080.

It has been noted that in the global south, people's livelihoods are more endangered due to the inability to sustain productive systems, well-functioning economies and social structures (Baker, 2008). Developed urban areas have adequate and sufficient infrastructure to aid people in becoming resilient against the impact of the drought, whereas undeveloped rural areas have weak infrastructure systems that disable rural people in becoming resilient to the effect of drought (Cardona et al., 2012). This means that women living in rural communities are worst affected by drought, as their areas lack systems to cope with the impact of drought. Women find it difficult to return to their normal daily lives after a drought and find it extremely hard to be successful in a place where all their natural assets have been destroyed (Goh, 2012). Drought not only affects the livelihoods of the poor which includes females, but also increases government's vulnerability to economic risks, such as food security and the depletion of human capital, as people relocate to another area, or die (Baker et al., 2014).

Stone (2009) indicated that South Africa has water problems as do many countries in the world. Stone further elucidates that water is becoming very limited and is an essential resource base for the needs and survival of South African citizens. Stone (2009) indicates that channeling water from dams to industries, towns and rural villages is becoming hard to accomplish, as some dams are running low on water on an ongoing basis and are often far from the vulnerable communities they serve. The 2011 census indicated that approximately 8.8 million people in South Africa were unable to acquire water from taps. According to the 2011 Census, the number of people reliant on rivers and dams is high for provinces with large rural populations, such as KwaZulu-Natal and the Eastern Cape. Communities within rural areas are often dependent on rivers and dams for water access, their livelihoods are disturbed in the event of dry dams and polluted rivers. Poor households live close to the resources they depend on, such as dams and rivers (Statistics South Africa, 2011).

On World Water Day (22nd March) 2007, Ban Ki-moon, General Secretary of the United Nations stated that "the state of the world waters remains fragile". Middelkoop et al. (2001) indicated that the lack of water for household use may be interconnected to the low flow of water during summer. The summer season usually has high temperatures that are suitable for growing crops, which requires them to be watered frequently, leaving less water available for consumption. Additionally, Eriksen et al (2008) noted that the increasing frequency of droughts occurring in the dry lands of sub-Saharan Africa is unlikely to end in the foreseeable future due to high temperatures and low rainfall forecast. Scarcity of water directly affects the

lives of many people, especially those who are poor, who may be left without food to eat. Temperature increase requires more water for the survival of crops, without water, water dependent crops wither. According to Machete (2011), the lack of water may result to less crop produce, thus leading to starvation, a situation that has considerable consequences for rural communities.

The South African water sector encounters various challenging issues with regards to water shortages in communities across the country. There have been issues with the lack of water, as well as the poor quality where it is available. Additionally, the water sector has challenges with regards to a skilled labor force; the unauthorized use of water; and the mis-use of financial resources by various local government departments (Van Vuuren, 2009). As a result, an investigation by Mainganye, (2006) showed that there were differences and inequalities in the way communities received water. This means that the supply of water was hindered in some communities whereas in other communities there were no disturbances.

The problem in South Africa is that government departments and institutions do not have clear cut roles and responsibilities about how officials should address the issue of water, food and other insecurities in the county. South Africa has adequate food to provide for the entire population, but there's about 13.8 million South Africans do not have adequate food (Ladzani, 2009). Drimie and Ruysenaar (2010) indicated that such departments had contributed to the lack of food availability, specifically nutritious food, for the vulnerable. They further stated that poorly managed and uncoordinated institutions are a threat to the availability of water and nutritious food in the country.

Statistics SA (2013) showed that approximately 13.4% of families encountered starvation while 11.4% were susceptible to starvation in the country. Poverty stricken and food insecure families are characterized as geographically secluded and socio-economically and politically marginalized citizens (Statistics SA, 2013). Additionally, insecure individuals often lack access to multidimensional resources, which further exacerbates their vulnerability, as their livelihoods are generally reliant on singular unsustainable survival strategies. Many families in South Africa lack nutrition due to inadequate food intake, this is the result of their inability to acquire or attain nutritious day-to-day food requirements (Shisanya & Hendriks, 2011).

According to the FAO (2011), land ownership is an important asset that can help sustain women's livelihoods in rural communities. It is a resource that can help women challenge vulnerability, as they can utilize it for productive purposes. Land has the power to restore dignity and empower the disadvantaged and is a symbol that defines a higher status of individuals within society (Nelleman et al., 2014). However, in rural areas, land ownership remains gender biased, with men often being the owners, which exacerbates disparities between women and men (Ali et al., 2014; Schildkrout, 1982).

This practice generally disenfranchises the previously disadvantaged groups in South Africa, particularly women (Nelleman et al., 2011). Despite women being the most dependent on natural resources, they are unable to access land and forests, which are often protected by property rights that make it difficult for women to access (Mwangi et al., 2011). Furthermore, government policies fall short in rectifying past mistakes and injustices, as revised policies continue to discriminate against women as property owners (Deere and Leon, 2001). As a result, women's development is challenged, as women are unable to access resources and markets to uplift themselves, which result in them being sidelined from development prospects.

1.3 Significance of the Study

Ngaka (2012) indicated that drought disasters in South Africa have affected people's livelihoods negatively and contributed to the country's economic downturn. Research studies have been conducted on the socio-economic impacts of drought on the livelihoods of the poor, however, women remain the excluded group in academia, despite their socio-economic contributions (Ali et al., 2011; Schildkrout. 1982). This study will assist in providing the relevant information on how disadvantaged women of Kwa-Ngwanase experience and cope with drought in their society. This study is relevant as previous research conducted in Kwa-Ngwanase has little to no information on how women are affected by drought. Such research can be used as a blueprint to assist policy makers identify appropriate measures that can be implemented at the community level to assist women with drought vulnerability. This study will provide a detailed assessment about how rural women respond to environmental stresses, this being important to inform policy makers and local municipality to modify the existing mechanisms and develop new ones that are more context specific.

1.4 Aims of the Study

The research aims at looking into the experiences of women with regards to drought in the area of Kwa-Ngwanase, KwaZulu-Natal Province. The study provides insights into how the livelihoods of women have been affected due to the impacts of drought. In addition, the study investigates the factors that make women susceptible to drought in Kwa-Ngwanase, KwaZulu-Natal.

The specific objectives of the study

- To identify the impacts of drought from women of Kwa-Ngwanase
- To discover the coping strategies of women affected by drought
- To examine the challenges/constraints experienced by women in relation to sustaining their livelihoods

Key questions of the study.

- What are the impacts of the Drought in Kwa-Ngwanase?
- How are the women of Kwa-Ngwanase dealing with the impacts of a drought?
- Are there measures in place for the women of Kwa-Ngwanase in dealing with the Drought?
- Are women more vulnerable to the impact of the drought?

1.5 Theoretical Framework: Vulnerability Approach

This study draws on the vulnerability approach to understand the experiences of women with regards to drought. Vulnerability has its roots in geography, although it has been expanded to other fields, such as ecology, public health, poverty and development, secure livelihoods, famine, sustainability science, land change, climate impacts and adaptation (Fussel, 2007). The subject has been studied by several authors through the perspective of sustainability, climate change and disaster risk management (Blaikie et al., 1994; Blaikie et al., 2014). It is defined as the ability of a person or group to anticipate, resist, cope with and recover from the adverse impacts of climate change caused by humans (Paavola, 2008).

Lewis and Kelman (2012), notes that vulnerability is a socio-economic condition, which increases the susceptibility to the consequences of disasters. The extent of communities'

vulnerability is dependent on the environmental and social standing of the region, and is assessed by the ability to cope with, resist and recover from drought effects (Knutson et al., 1998). According to Fussel (2010), the differences between the definitions makes the term almost useless unless contextualized. Wolf (2012) contends that the diversity of vulnerability definitions creates confusion, which makes it difficult to focus on the solution to the problem.

According to Berman et al. (2015), drought has the tendency to affect various areas and people within the same geographical area in different ways. It has been stated that in the urban periphery, people's livelihoods are more threatened due to their lack of ability to sustain productive systems, healthy economies and pro-active social structures, and that droughts place governments at economic risks (Baker, 2000). Downing and Baker (2000) argue that, given the varying state of vulnerability within a population, the magnitude of drought vulnerability can be changed from location to location, from household to household and from individual to individual. In addition, Brooks et al. (2005) highlights that factors that enforce vulnerability to drought in a developing country could be different from those of a first world country.

Chambers (2006) observes that vulnerability has two sides: an outer aspect of risk, shocks and stress, to which an individual or household is the focus; and an inner aspect, where an individual is powerless, and lacks the means to cope with a loss. Loss can take many forms, including being physically weak, economically poor, socially reliant, humiliated or psychologically harmed. Furthermore, according to Aysans (cited in Wisner et al., 2004), eight types of vulnerability are identified; economic, social, ecological, educational, attitudinal and motivational, political, cultural, and physical. Perkins et al, (2001) characterized vulnerable persons on the basis of their experiences and stress. Vulnerability is a situation where individuals have food shortages, which lead to starvation; insecurity caused by being unable to secure employment; social insecurity caused by the isolation from power structures, and insecurity in their health caused by illnesses (Azkia, 2014)

Susceptibility is characterized by the socio-economic and environmental dimensions. The reason there are differences in vulnerability exposure is because vulnerability is influenced by individual's socio-economic statuses, such as gender, age, education, social networks, social class, income diversification, ethnicity, access to resources, type of irrigation, access to land, and poor technology (Paavola, 2008). Stanke et al. (2013) agrees that vulnerability is caused

by poor health care, poverty, infrastructure and land-use change. For individuals whose lives are reliant on agrarian production, a stressor, such as a drought, and the successive deterioration of agrarian produce, has the likelihood of resulting in economic pressure that is associated with mental fitness and well-being (De Silva et al., 2005). Stanke et al. (2013) further indicates that vulnerability in health hits hardest on individuals who are under-nourished due to inadequate food access, and those who access polluted water, which causes water borne diseases. Accordingly, it has been noted that although drought is the main but not the exclusive driver of water security, it is rather the mis-handling of natural resources that intensifies vulnerability (Wilhite, 2005). The women of Kwangwanase share the characteristics of the vulnerability approach. These women rely heavily on subsistence farming to produce enough food for their families and the inability to do so puts these women and their families in a vulnerable position. This study attempts to better understand the resilience measures employed by the women of Kwa-Ngwanase during this period of drought.

1.6 Structure of the Thesis

This chapter begins with background information on the study. It also provides the aims and objectives of the study and the theoretical framework. The chapter is followed by chapter two which is an in-depth review of the historical socio-economic challenges that have kept women most vulnerable to climate change and drought. Chapter 3 presents the research methods, including the target population, study sample and the selection process. It presents the methods used to collect the qualitative data and the methods of analysis. It outlines the ethical considerations and the limitations of the study. Chapter 4 presents the study findings of the thematic analysis, and provides quotes from the participants to substantiate the identified themes. The final chapter discusses the study findings with respect to what was found in other studies, both local and international.

Chapter 2

Literature Review

2.1 Introduction

Studies have found women to be the most vulnerable during the course of and after a natural disaster that affects their livelihood, as they do not have the means to support themselves when such an eventuality occurs (Neumayer and Plumper 2007). A review of the literature indicates that gender norms and power inequalities shape the ability of men and women to adapt to climate risks (Rossi and Lambrou, 2008). These inequalities include: participating in decision-making; differences in access to and control of resources, and knowledge (Rossi and Lambrou, 2008). The aim of the chapter is to review studies on the socio-economic, cultural and environmental factors influencing the vulnerability of women to drought.

2.2 Women's Socio-Economic Issues

According to Mitchel et al. (2007), women and girls make up the highest category of people living in poverty. What is often overlooked is that men can also experience injustices similar to women in society. However, it should be noted that women and men may experience similar disadvantages in different ways. Cuomo (2011) indicates that the existing inequalities and systematic oppression faced by women intensifies their vulnerability to climate change harms, while the position men hold puts them at a greater advantage than women. Culture and knowledge systems shape norms, influencing what is deemed appropriate in a particular society and what is not (Long and Long, 1992). Studies have shown that the higher death rates for women are due to their low socio-economic status in communities, and that “*there is a socially constructed gender-specific vulnerability of females built into everyday socio-economic patterns that exist in every society*” (Neumayer and Plümper, 2007:551). Research has identified that discrimination can manifest in different ways, and is often influenced by socio-economic status, social standards, caste, norms, ethnicity, culture and type of employment, and is generic in a sense, as it evolves over time (O'Brien et al., 2007).

Therefore, specific forms of vulnerability that particular groups or individuals face need to be examined and analyzed in order to effectively provide relevant solutions.

2.3 Family Stability

According to the Hausmann, (2009) women encounter vulnerabilities in different ways to men, one of the reasons being that they are socially and/or economically excluded in society, with approximately 70% of those who live below one US dollar a day being women (2009). Poverty is linked to vulnerability, and normally results in vulnerability outcomes, which are especially susceptibility to climate change. However, Chant (2010) disputes that women make up 70% of the poor, and highlights that there is no empirical evidence to support this claim, or that women are the poorest members of society. Kabeer (2008) agrees with the latter, by highlighting that there is no correlation between female household headship and poverty. According to O'Brien et al. (2007), there is often a generalization that all women are poor, this further leads to the assumption that the poor women are almost always vulnerable. Kabeer (2008) asserts that poverty should not be generalized, until the household income and contributions have been accounted for. This body of work does not take cognizance of the South African context of women's vulnerability and the traditional roles that they are subjected to.

Women are vulnerable to climate change due to the various circumstances of deprivation they encounter, they are not poor because they were born that way, they are poor because they have lived and survived in circumstances that have been depriving them of their own socio-economic development (Arora-Jonsson, 2011). Although many poor women do not own assets, they are compelled to take up the bulk of responsibility, such as child-rearing, that men are seldom tasked with. In addition, women traditionally care for more dependents than men, which imply that they have more responsibility to take care of family members during drought events (McDowell, 2018). Furthermore, women are often solely responsible for child care, often having to manage work and family, which poses a triple burden to them, as they have to work, manage household responsibilities and rear children. Women have many responsibilities, as they have little time to improve their capabilities through means of self-investment and participating in economically profitable initiatives to help improve their overall well-being (Chitiga-Mabugu et al., 2014).

Omolo (2010) indicated that women are increasingly becoming household heads due to reasons of divorce between partners, husband death and remaining single, as some men are unable, or unwilling, to pay the bride wealth due to financial constraints. The findings highlighted that female-headed households increased. The percentage increase for women was of concern, considering that the study population was traditionally a patriarchal community, where the majority of households had previously been headed by male figures and not women. Omolo (2010) further adds that the women found themselves particularly susceptible to stresses and poverty, as they did not have customary rights to land, wells and livestock, on which their livelihoods depended. Amongst women there are also differences in poverty, the study indicated that in female-headed households, they were more prone to poverty susceptibility relative to those who are married. Women who are not married and are single breadwinners are often unable to own livestock. If they do not have a son or cannot afford to employ a cattle herder, they become more vulnerable (Omolo, 2010).

The gendered roles played by women have a considerable impact for both their own and their children's safety in terms of their livelihoods. This uneven division of labor, rights and assets leaves women more vulnerable and susceptible to cope with the additional stress and deprivation brought about by climate change. The women who make up the 70% of 1.3 billion people living in the global south live below the poverty line (Rohr, 2006). Glazebrook (2011) notes that women who are farmers are often susceptible to numerous climatic impacts, their susceptibility being intertwined with women's socio-economic and marital status, this statement being upheld by both McDowell (2018) and Arora-Jonsson, (2011). Households that are formed by female heads are more susceptible to risk, as they do not have a male figure to provide support, and they normally have to fend for themselves without any assistance, and their status in society further exacerbates their vulnerability. The majority of disadvantaged women often lack security from both their household and society, which results in them experiencing associated hardship when they request their partners to provide food and other necessities (Chitiga-Mabugu et al., 2014). This has a detrimental effect on the well-being of not only the women but also other household members, such as their children.

According to a World Bank study conducted by Johnsson-Lantham (2007), gender differences are highest in poor households, where women normally eat last and consume less food than their male counterparts. Women in developing countries are often the key care

givers of their family members, and are the primary users and managers of the water they collect from the rivers (Engelman, 2009). According to Araujo et al. (2007), women and girls become restricted from engaging in income generating activities because of the gendered societal norm of having to take care of household responsibilities, such as nurturing children, providing food, particularly during disasters and environmentally stressful times, while at the same time having to carry out domestic activities, such as collecting water and wood. Therefore, the lack of water availability creates unstable livelihoods not only for household members, but the women who collect it, as their workloads increases due to having to collect it from far away, hence, hindering them from attending school or attending to other duties (Engelman, 2009).

2.4 Vulnerability and Health Status

Cannon (2000) argues that disaster vulnerability can be understood in different ways. She indicates that the initial conditions that a person goes through on a daily basis, including whether or not they eat or not, their health prospects, physical and mental impairments as well as their constraints to move from one place to the other, contributes to their vulnerabilities to disaster. According to del Ninno et al. (2001), women are more calorie-deficient than men, their nutrition is often much lower as they may not have the power to purchase healthy foods. The domestic burdens faced by women, combined with their adverse circumstances, often hinders their ability to fulfill their capabilities for the betterment of their households. Women carry 20 to 40 litres of water, often with a baby on their backs, over hills, muddy paths and stony long roads. This weight of the often-arduous task puts further stress on women's physical health and well-being (Yitamben, 2008), and in the event of health problems manifesting they are unlikely to be able to pay for their medical treatment. Women experience unfair labour treatment and are paid less for their labour, with Hakim (2008) noting this trend and highlighting that they earn on average less than men in the same position in a corporate environment. Brajdić-Vuković, Birkelund and Štulhofer (2007) echo the sentiments expressed by Hakim (2008), and acknowledges that gender equality laws continually fail in traditionally patriarchic societies, because women remain excluded from many sectors of the economy.

2.5 Access to Health and Social Services

According to the Hausmann (2009), women lack the means to access medical healthcare due to often living far from health facilities. This becomes a problem when they have to take care of sick members of the family who need to access health care facilities, which often increases their workload. As a result, women must organize their workloads carefully to accommodate caring for the sick person in addition of other chores, such as cleaning the home or collecting water. In drought ridden communities' people often live in secluded rural areas where health institutions' often lack the capacity to provide appropriate services, this is often due to lack of resources and funds available to these health institutions (Engelman, 2009).

Climate change health consequences could result in an increase in malnutrition in households, which could be due to lack of food as a result of crop failure, and an increase in water borne diseases caused by the low quality of water consumed. Climate change also compounds respiratory diseases that result in people having difficulties breathing, which is exacerbated with polluted or dust-ridden air (Confalonieri et al., 2007). Confalonieri et al. (2007) further notes that climate change and gender discrimination also impacts on the type of medicines and nutritional foods women can consume, as they encounter difficulties in accessing health services and paying for treatment due to their limited means. Cultural and religious restrictions also hinder women from free mobility in accessing health services, as they are often required to be accompanied by their husbands or they must be granted permission from their male relatives when going to health facilities. Andersson and Togelius (2011) highlighted the restrictive manner that women in Saudi Arabia face, where they are considered minors that require the consent of their partners or male family members to access government institutions, including health care services.

According to Demetriades et al. (2008), elderly women are more susceptible to vulnerability, especially to environmental disasters related to health impacts, such as heat waves and malnutrition, and may have limited information on how to access health services, both public and private. Furthermore, elderly women are more susceptible to socio-economic vulnerabilities due to the cumulative effect of not being able to access education and employment opportunities throughout the course of their lives. Hence, elderly women are often limited in their ability to access certain services, such as clinics or buying medication

for their illness, this being due to not having the financial means. As a result, relevant programmers are required to improve access to health services, especially for elderly women. Furthermore, initiatives, such as providing mobile health services, cash transfers and free health checks, would prove useful and convenient for elderly women. Buechler (2009) writes that people's 'social location' has an important influence on their vulnerability. Rural women are largely confined to the villages, while men travel to peri-urban areas to work, which influences the kinds of information that women and men are able to access. People living in rural areas are drawn by the agricultural landscape, from which they acquire their resources, with some negative impacts due to their location, such as problems accessing services. When climate change affects their lives, it can become difficult to help these communities deal with or escape from the adverse impacts (Buechler, 2009).

2.6 Women and Unemployment Challenges

Women have been discriminated against in their households as well as in the labour market, this being supported by the fact that their unequal access to economic resources, such as property and land, has had a large impact on their vulnerability. Women are increasingly entering the labour market in a number of countries globally (Kabeer, 2008), but in some instances they continue to suffer the consequences of being restricted to mostly low status and poorly paid jobs, and often having to earn a living in the informal employment sector. Additionally, Pearson (2007) notes that women are most visible in the informal sector than they are in the formal. Glazebrook (2011) notes women's unpaid labour contributes to the larger economy. In the context of the Ghanaian economy, one woman said "*I farm to help the country as a whole*". This statement indicates that women make a contribution to the informal economy. In countries such as India, women carry more workloads in the agrarian sector than men, such as ploughing and collecting water, while in South Asia, women's work is often not recorded as it is categorized as informal or within the black market (Nelleman et al., 2011, 25). Terry (2009) further emphasized that the division of labour combined with gender dynamics adds to the vulnerability of women. The author states that approximately 65% of the women in Asia are responsible for their household food production, 75% in sub-Saharan Africa and 45% in Latin America (Nelleman et al., 2011, 24). Browning-Aiken, et al. (2007) indicated that very few women are employed in the formal sector due to their limited educational background, while other 'hard' job opportunities, such as mining, are reserved for

men. The above case study indicates that women remain in the bottom hierarchy of not only the socio-economic structure in developing countries, but also the labour system. According to Patel (2002), these women experience unequal treatment to men, in particular with regard to education, with many not having had the opportunity to attend school, which results in them being unable to secure the same employment opportunities as men.

According to Terry (2009), the lives of many women are bound to be affected by issues of climate change due to the various constraints that keep them bound to vulnerability. Lambrou and Piana, (2006) highlighted that women living in largely agrarian environments earn low-incomes. According to the International Labour Organization, women's salaries across the spectrum are usually lower than their male counterparts, this includes informal employment and self-employment (ILO, 2008). The ILO reported that about 35% of women in the labour force in sub-Saharan Africa work as contributing family workers compared to only 18% of men (ILO, 2008 Cited in Nelleman et al., 2011, 29). Elderly women are often compelled to use their pension grant to benefit or support a large number of household members, as is the case in South Africa (Burns et al., 2004; Pauw and Mncube, 2007; Gutura and Tanga, 2014). In rural households, pensioners contribute to the lives of their dependents, ranging from their immediate children to their great grandchildren and other relatives, by making their pension money available to support the home (Pauw and Mncube, 2007).

This neglect of women's unpaid labour is a violation of their rights, as they do similar work done by health care workers; the lack of compensation for their care work further impoverishes women (Chitiga-Mabugu et al., 2014). According to an investigation conducted on income poverty in South Africa, Posel and Rogan (2009) indicated that women were more likely to live in poor households relative to their male counterparts. However, poverty significantly declined when the state provided pensions and other social grants to South African deserving poor (Posel and Rogan, 2009). Furthermore, Posel and Rogan (2009) indicated that female-household heads were more likely to be at higher risk of income poverty relative to male-headed households. According to a study conducted by Chitiga-Mabugu et al. (2014), households with more unemployed members suffered adversely from poverty impacts than household with employed members. Women spend much of their time fulfilling their child rearing responsibility, their other responsibilities, such as saving, and decreasing insecurity in the family, becomes burdensome, especially when there is an increase in male unemployment or underemployment. According to Silberschmidt (2004),

men's unemployment affects women's resilience towards the environmental impact, because when the men in a home are unemployed, women have no one else to depend on for an income.

2.7 Land Ownership

According to the FAO (2011), land ownership is an important asset that can help sustain women's livelihoods in rural communities. It is a resource that can help women challenge vulnerability as they can utilize the land for productive purposes. Land has the power to restore dignity and empower the disadvantaged, and is a symbol that defines a higher status of individuals within society (FAO, 2011 cited in Nelleman et al., 2011). In many developing countries, men still own most of the agrarian land; this is supported by systems of patrilineal and patriarchal ownership that remains relevant in some communities. Buechler (2009) indicated that the patriarchal system in rural areas gives power and privilege to men, hence, preventing women from owning land but supporting men to acquire land ownership.

According to Rossi and Lambrou (2008), men and women experience climate change risks differently due to the uneven opportunities they are exposed to. According to a 2011 report, closing the gender gap between the haves and the have nots would play an important role in the agricultural sector within poor communities (FAO, 2011). Such inequality trends are also amplified by big conglomerates acquiring land unethically. This practice mostly disenfranchises poor communities, in particular women (Delay 2007 Cited in Nelleman et al., 2011). Despite women being the most dependent on natural resources they have limited access to land, forest, and tree resources, as they are protected by property rights that make it difficult for women to acquire (Mwangi et al., 2011).

According to Yitamben, (2008), Kugwe in north-west Cameroon is a village known for its palm oil cash crop. Women in this community have been mainly employed to work in the plantation, which provides little remuneration to them. They are responsible for growing the crops, harvesting it and selling it to the market on behalf of the owners of the crop, which are men. The above study highlights that despite women performing most of the manual work, and spending most of their days in the field, they are not well compensated for the job and

men maintain the power through not only harvesting the crops but by keeping the profit. The anti-poverty approach seeks to encourage the development of earning a living through means of self-employment for lower income earners, such as women. The approach highlights that the low standard of women's position in society is not because of being subjugated, but rather due to lack of economic opportunities that curtails their development. The anti-poverty approach suggests women should improve the quality of their livelihoods through economic self-developments. However, in instances where women do acquire income in developing countries, they usually do not have control over the land and their income, as the money they earn is paid to the head of the household or title deed owner of the land (Nelleman et al., 2011).

2.8 Poor Agricultural Produce

According to Glazebrook (2011), rural women in developing countries farm subsistence agriculture to feed their immediate family members, rather than to sell the produce. Diminishing crops or crop failure can have a negative impact on nutrition and results in the malnourishment of family members. According to Gurung et al. (2006), environmental stresses on women are amplified due to gender imbalances, rules and norms imposed by institutions that recognize the men as farmers. Women living in the rural areas are responsible for the majority of the food produced globally, and produce approximately 60-80% in third world countries (Hausmann, 2009).

Agricultural services are seldom available to women who are engaged in farming (Lambrou and Piana, 2006). For family households that live on agricultural produce for survival, land is their most essential asset (World Bank, 2007). However, laws and regulations prevent women from accessing or using land, furthermore, they also encounter challenges when trying to access credit. According to Randriamaro (2006), women only receive 10% of the total received by small farmers in credit grants, which affects their ability to purchase products required to adapt to environmental stresses, such as a variety of plant types and animal breeds needed for resilience in times of higher drought or extreme heat.

Women headed households are often overlooked, which is challenging for a household that relies on women in the absence of men to retain control over land and other resources due to

restrictions on their mobility, as well as limitations in accessing property and land. This intensifies women's susceptibility when their responsibilities increase (Laudazi, 2003). In addition, women's inability to challenge their circumstances and respond to the effects by engaging in activities that provide income may furthermore exacerbate their vulnerability (Cannon, 2000). A study on drought in Tanzania and Kenya identified strategies women and men use within the same context (Eriksen et al., 2005), this study found that individuals who were not part of the agricultural sector were better able to adapt to the risks of climate change.

In the event of a drought, women often depend on crop diversification to sustain their livelihoods, with permanent weather changes reducing the availability of agricultural biodiversity (Hausmann, 2009) According to Glazebrook (2011), women who are susceptible to climate change are often not physically strong enough to grow their own produce such as rice and sorghum, as they are labour intensive. According to Glazebrook (2011), women could not afford to hire assets that would assist them in ploughing their fields, and they did not have enough money to hire plowmen. Lambrou and Piana (2006) further indicate that women face a bigger challenge in terms of diversifying into alternative livelihoods when they are unable to acquire land, agricultural technology and credit.

Women who are unable to access credit can be highly affected by drought, especially those who are household heads, as they do not depend on men to provide their household needs. When there are challenges, such as environmental stresses, men may leave their homes to look for employment elsewhere, which results in women becoming de facto heads of households and taking on men's farming roles in addition to their agricultural and domestic responsibilities (Laudazi, 2003). Chitiga-Mabugu et al. (2014) documented that of the four million South Africans who participated in agriculture, 61% were women. The proportion of women who engaged in agriculture to provide the main and extra source of food for their households exceeded that of men by 37% and 65% respectively. This highlights the need for rural women to access land, productive resources, and markets in order to improve household food security in the country. According to Rohr (2008), climate change has been understood as an environmental phenomenon that threatens human survival, resulting in the growing scarcity of natural resources, such as land and water, with gender inequalities and conflict over resources being set to increase due to climate change.

2.9 Adaptation Strategies

Social protection is defined as a set of policies and programs designed to reduce poverty and vulnerability by promoting efficient labor markets, thereby diminishing people's exposure to risks and enhancing their capacity to protect themselves against hazards and interruption/loss of income (Barrientos & Hulme, 2009). Social protection is important in a drought ridden community, as it will assist the members to be resilient against climate change problems. It is important for the preparedness processes to be implemented to avoid extreme vulnerabilities, especially for the already disadvantaged, including women. Social safety nets and systems should be implemented to avoid unwanted casualties through promoting financial liberty (Twigg, 2007). Deere and León (2001) note that the reason there are socio-economic inequalities is because government has failed to develop policies that seek to support women as land owners and farmers.

The different adaptation programmers or approaches set out by the government to solve the various challenges in the communities have not sought to address fundamental issues, such as gender imbalances. According to Chitiga-Mabugu et al. (2014) the South African government devised a plan called the National Development Plan (NDP) Vision 2030, which maintains that public employment opportunities should be expanded to cater for the unemployed, with women and the youth as the main focus. This provides a possible correlation between the NDP and the Expanded Public Works Programme (EPWP), although the adaptation approaches do not outline clearly how the EPWP should be gender inclusive, and how its objectives and aims should be met. The NDP is gender-neutral, it does not outline how human capital should be supported or empowered. Focusing on human capital and growth can have a positive effect on mitigating poverty in poor women and their immediate households (Chitiga-Mabugu et al., 2014). Similarly, poverty alleviation programmes in South Africa aim to economically empower women living in the rural areas. Needless to say, the reality on the ground depicts that their male counterparts still benefit at a higher level and are often beneficiaries of programmes such as the EPWP (Meth, 2011). Collectively the above initiatives would suggest that the approaches adopted by the state to promote resilience to climate change are nuanced and insensitive to disadvantaged women's needs. As illustrated by Walker et al. (2006) those with least resources and power are the least likely to be able to adapt rapidly to change their livelihoods, therefore programs need to be designed in a clear and concise way to how the disadvantaged. In the quest to understand programs adopted in the local Umhlabuyalingana municipality, the only programme mentioned in the IDP is the

EPWP; however the IDP does not highlight how the program has impacted on the lives of women if any. The IDP indicates that the municipality has failed to transfer knowledge and skills (Umhlabuyalinga IDP, 2015/16). This is also highlighted in the (UKDM-2016/2017) which states that between 2015 and 2016 only 95 members of the community members were employed in the EPWP programme. This speaks to the study findings that even though EPWP programme is present in the communities the majority of the disadvantaged women remain excluded from acquiring job opportunities in order to help sustain their livelihoods. The IDP further focuses more on the need to upscale other developments such as, infrastructural development, clinics and hospitals, schools and crèches. However, not much detail or information is shared on the sustainable livelihoods of community members living in this municipality at least not in much clear precise detail. It is not clear how the municipality plans to develop or advance women empowerment during and after drought impacts.

Resilience is the ability of a system to absorb disturbance (e.g. market changes, fires, conflict) and maintain function, structures and feedback processes. Socio-ecological complex systems can exist in different states or regimes (Eakin and Luers., 2006), their resilience being measured by distance from a threshold, the closer to a threshold, the less it takes to be pushed over. Sustainability requires knowing if and where thresholds exist, and having the capacity to manage the system in relation to these thresholds (Walker et al. (2006). However, who has a say in this process is clearly an important matter: For an example, a non-governmental organization (NGO) in Kilombero District of Tanzania dug a well in the hope of providing water to the community members, however, its location was not ideal as it dried up. This meant water was no longer being available for the community to access, with its location having been chosen by a local committee that consisted mainly of men (Fischer and Lindenmayer, 2006). Women in the developing world remain the world's poorest, with Lambrou and Piana, (2006) emphasizing that they are vulnerable to the negative effects of climate change more than men. Women in the periphery become vulnerable to the effects of climate change due to the unequal gender roles in society (IPCC 2007).

A number of researchers have placed much focus on understanding the processes of power relations and how they cultivate risk vulnerability and the coping strategies adopted by vulnerable households (Brooks et al., 2005; Adger et al., 2009). Perceptions of risk, can include climate risks which can be gendered (IPCC 2007), with women's risk perceptions

being given less attention than those of men. For an example there are a number of adaptation programmes and strategies such as the Livelihood Empowerment Against Poverty (LEAP) programme adopted in Ghana in order to assist the vulnerable, however such programmes remain with many challenges and inefficiencies especially when the needs of the people and their multidimensional poverty is not clearly understood by policy makers (Appendini and Liverman 1994); this makes it more difficult to target poverty in the hope of addressing its impacts (OECD, 2007). Campbell (1999) indicates that change over time can contribute to risks and vulnerabilities over time. This is made witness in a combination of environmental, social and economic changes which modifies the manner in which labourers such agricultural farmers in Southern Africa cope and adapt to climate change susceptibility (Leichenko and O'Brien, 2002).

According to Mitchell et al. (2007), women have been experiencing climate change effects and develop effective coping strategies to cope during extended periods of drought, specifically in their farming practices. According to Eakin (2003), the farmer's adoption of adaptation measures towards garden produce tailored for the market, at first glance often seems to reduce the vulnerability of farmers towards shortage of rainfall, however the farmers adoption of irrigation farming may leave them vulnerable to various costs and risks resulting to the extension of their susceptibility to other lingering challenges. Accordingly Paavola (2008) notes that shifting away from traditional labour activities may at times lead to more diversified labour activities in the market place and often diversifying into market based strategies can reinforce effective and conducive drought coping strategies, however may result to the challenges of the vulnerable groups to now cope with new and various risks (Tarhule 2005). Furthermore, Silva et al. (2010) notes that not all cases of diversification helps reduce the risks of vulnerability, some diversification measures intensifies the risks or brings new challenges that require solutions. For example, Bryan et al. (2009) notes that there are risks in income diversification as they may erode social cohesion that have been built in social systems through particular activities where groups of people have had to work together, women often have to find other means of generating income which often forces them to cut their social ties resulting to them being more individualistic in their diversification approach. Diversifying livelihoods into fishing in Kahendero, Uganda may have a positive effect on the increase in income returns; however there could be hidden costs and risks of changeable and unstable fish stocks which means more money will end up being used for stocking the products, renewing stock equipment can also come as a challenge when adapting new

strategies. Bryan et al. (2009) further notes that effective diversification and new adaptation measures often prove more difficult and challenging when vulnerable groups are not involved in economic activities and saving strategies that assist them with viable capital.

Women as a collective have gathered to find means to generate income opportunities out of the agriculture sector due to the effects of drought, which has empowered woman, giving them power and freedom away from men (IPPC, 2007). A farming community in Turkana, Kenya experienced a change in their environment and opted to diversify their livelihoods (Omolo, 2010). The Turkana community chose to adopt a flexible social system, where individuals and collective bodies base their survival strategies on diversifying livestock to enable both individuals and groups to cope with any challenging season or period of the year. They created a social security network through kinship and friendship to barter goods among themselves rather than to use cash. They relied on relief food, and resorted to gathering wild fruit to survive. According to Omolo (2010), different coping mechanisms have been adopted by various communities, such as receiving remittances from relatives who live elsewhere, praying, finding employment, and selling items like firewood, charcoal and woven baskets (usually casual and informal). The Katilu community live in an agro-pastoralists area located next to a Turkwell River, both men and women derive income them selling agricultural products to the community of which, women sell 37% and men sell 42%. In Kapau, community members relied on copying mechanism of selling livestock. However agricultural is not thriving in Kapau due to an intense drought, which has resulted in people selling charcoal, of which women sell approximately 37.6% and men 41.1%. Thirdly, in the Namoruputh community, women and men sold their livestock as a survival strategy during times of environmental stress. Many of the women sold firewood (20.4%) while the men were more involved with business ventures (14.6%). According to Omolo (2010), the charcoal business is more prominent in dry areas where there are few alternative sustainable livelihoods.

According to Mitchell et al. (2007), women use various climate change adaptation strategies to secure their livelihoods, including drought resistant crops. As women described various adaptation strategies, one said that *“As we never know when the rain will come, we had to change. I started to change the way I prepare the seedbed so that we don’t lose all our crops. I am also using different crops, depending on the situation”* (Mitchell et al., 2007: 6). As there are many women who have not been able to form groups and adapt to climate change,

Mitchel et al. (2007) highlights that more research is needed on understanding adaptation strategies at a household level. With the assistance of project extension officers (PEOs), self-help groups and/ or cooperatives are set up as a way of establishing sources of livelihood among the unemployed (Mitchel et al., 2007).

The rainfall patterns in Turkana indicate that there have been fluctuations from 1960 to 2009, with interchangeable seasons of high rainfall to dry seasons without rainfall (Omolo, 2010). A number of drought impacts in Turkana have resulted in food insecurity, migration and conflicts. According to Glazebrook (2011), the women were accustomed to the change in weather from the time they began farming. Women who had only been farming for only five years also highlighted the concern in the diminishing yields, while others were concerned about the poor quality of the soil that they were ploughing. Women indicated that they relied on the rain to water their crops, with drier seasons creating a difficult scenario of having little water available. Owing to the dry winds women had to face over the years they have come to learn which crops to grow in their fields. In a study conducted by Glazebrook, (2011) a participant said she no longer planted rice alongside her grown groundnuts as it no longer grows. While some women are experimenting with planting different crops, one participant implemented a strategy of crop rotation. According to Glazebrook (2011), the women interviewed in the study were experts in maneuvering ways to maintain soil integrity. During the study, a participant highlighted that she learned the knowledge she had acquired over the years from previous generations, seeing what they were doing and by putting it into practice. The knowledge that was acquired by women from just observing agricultural conditions strengthened their adaptation efforts. Women have seen and understood weather changes, and designed practical ways to adapt and cope with the changing weather patterns. Chant (2010) further noted that feminization of poverty practices and concept has been implemented to gather resources for women, although it has not addressed the complex issues of poverty and gender. O'Brien et al (2007) gives examples of South African farmers who earn higher yet also remain vulnerable to climate change as they have not diversified their livelihoods.

2.10 Women Participation

In the developing world, women are generally excluded from decision making platforms, which are normally occupied by men. As a result, women become excluded from making decisions and become vulnerable to climate change (Arora Jonson, 2010). According to Oldrup Breengaard (2009), in the developing world women's needs are often overlooked and their concerns not taken into consideration, with their participation in climate change discussions not being considered a priority. Women's involvement in climate change decision making processes is therefore inadequate at the national level. Leach (2007) argues that due to the lack of community engagement of women, programs run the risk of giving them the responsibility of having to 'save the environment' or take care of it while neglecting concerns of whether they have the resources or capacity to do so. According to Omolo (2010), despite the increase in female-headed households, women are still not included in decision-making platforms. Women's participation at the household level is still relatively low, as they do not influence discussions on resource use and allocation, investment and planning, despite their being users of these resources. Women have no influence in discussions of where they may move or settle to as a way of coping with drought impacts. They are largely excluded from discussion about decisions, or when they do participate are silenced, as the husbands or elders have the final say.

2.11 Women Inclusion (Decision Making)

Mandara et al. (2017) highlights that in climate change dialogues, women remain absent in decision making platforms, with several cases where they have been excluded from decision making and planning water and agricultural initiatives. Women are normally not involved, as this would require them to leave their traditional roles as housewives and enter public domains, for which they are considered not suited or unqualified. Denton (2002) highlights that women have not been present in most decision-making processes at all levels of engagement (international, regional, national, local). Women's voices have been undermined or side-lined, as they are regarded as incapable of engaging with men to find solutions. However, Brown, (2011) indicates that there have been some changes with regards to women participating in making decisions. Furthermore, while the inclusion of women is important in decision making, it should however not be applauded unless women see the benefit of their participation and involvement (Cornwal, 2008). Women's participation is effective only when

they are able to influence the outcome. According to Biermann et al. (2008), women's participation should challenge and influence issues of power, knowledge and norms. The increase in the number of women participating in decision making does not always result in favorable policies that are gender sensitive (Cornwall and Goetz., 2005). Several reports on the climate change discourse emphasize the need to integrate issues of gender by means of involving women in the negotiation processes. Rural women understand their household needs, being the planners and managers of that environment, their knowledge being a valuable tool in decision-making processes, with their participation having the potential to enhance their confidence (Nelleman et al., 2011).

However, the women who should be part of discussions but they remain under-represented, especially in developing countries (Nelleman et al., 2011). For example, women in rural areas are most vulnerable due to their lower status in their communities, which inhibits them from planning ahead. Women have minimal access to resources and are usually alienated from decision-making processes (Nellemann et al., 2011). Reyes (2002) states that the severity of El Niño's impact on poor women's livelihoods in the Piura region of Peru in 1997–1999 was due to their 'political invisibility' in national social and political processes, not just the damage caused by this phenomenon. Reyes (2002) points out those rural communities had been consistently side-lined in Peru's development plans in favour of more developed areas. Women tend to be located in areas that are secluded and alienated from development opportunities, which increase their disadvantage. Thus, women involved in platforms that make decisions might be ignorant of different circumstances in which rural women find themselves, and therefore make decisions for them that might be biased and insensitive to their varying experiences. Agarwal (2009) argues that women are not a homogeneous group, in the same way that men and women are not the same, and that their experiences and perspectives will differ according to their culture, race, ethnicity and class. Thus, adaptation techniques need to ensure that they are aligned with the needs of the most vulnerable. In rural areas, female inclusion is very important, as women have indigenous knowledge that differs from men which makes their contribution important for sound and inclusive decision making.

Anderson (2002, 32) notes that during a drought on the island of Yap, local women who knew about hydrology as a result of working the land found potable water by digging a new well that reached fresh water. Gendered divisions of labour in non-disaster or normal times inform the way and extent to which communities can adapt to extreme climatic events. Much

of the early adaptation modelling and planning was top-down, but this is beginning to change, with greater emphasis now on participatory planning and action (Nelson et al., 2008).

Despite the above, rural women are excluded from decision-making platforms, irrespective of the fact that they produce between 60-80% of the food in developing countries (FAO 2008). In many rural societies, women are side-lined from making decisions regarding agriculture, even when the male household heads are absent, and often lack access to important inputs, such as water for irrigation, credit, tools and fertilizer (Terry, 2009). Adaptation strategies in traditional rural communities are normally established to benefit the group who perceives themselves to know best the strategies and approaches often being chosen by male household heads, which then reflected their gender interests (Carr, 2008). According to Anderson, (2002), women experience challenges daily as a result of being excluded from making decisions that concern them, while the men may benefit, or make incorrect decisions. Rural women are mainly dependent on natural resources for their livelihoods, as they do most of the agricultural work, and are responsible for collecting water and fuel. Hence, when all these resources are depleted due to drought, women are the first to be affected, as they maintain responsibility for providing for their families. Mandara et al. (2017) further indicates that women are not being given the platform to voice their opinions at a community level about their experiences or challenges, which could negatively affect the initiatives designed to reduce the impact of climate change, and undermine the viability of effective local projects. According to Dennison (2003), women and girls participation in decision making is important, as it helps to address gender imbalances by acknowledging their status and profile in local communities, and the traditional assumption about women's capabilities.

Wangui (2014) noted Maasai women who were mostly affected by climate change were those with limited power and agency to take action and make decisions about their circumstances. According to Terry (2009), the most effective way to adapt is through gender-equitable and gender-sensitive sustainable development, which would empower women and men with the skills, education and health care they need to respond to climate change challenges. In a study using focus group discussions.

Some equity analysis is emerging in the climate-change research field (Adger et al., 2006), but rarely is gender a central focus. The aim should be to develop more integrated and participatory multi-tiered approaches in adaptation planning, providing space for less

powerful voices (Paavola, in Adger et al., 2006, 217). This has not been implemented despite research showing that climate change impacts heavily on women, children and the poor. Despite various initiatives assuming to have an answer to address vulnerability and promote resilience, none of the models have yielded desirable results insofar as benefiting women (Rodrigues and Russel, 2006). According to Glazebrook (2011), women are key players in the nation's economy, and that excluding them has practical consequences for the food supply of the country, hence there are overall benefits of women inclusion

2.12 Summary

The literature has discussed the challenges faced by women, particularly exploring what contributes to their vulnerability in drought situations that are a result of climate change. Factors such as the lack in the ability to participate in decision making platforms influenced most participants' vulnerability. Some of major concerns of drought impacts result in challenges in agricultural production, which affects women's ability to support their households. Women's participation in decision making has the potential to increase their effective adaptation to the negative experiences of drought impacts. However, concerns raised should be addressed in order to ensure that women can adapt and mitigate climate change. The literature shows that the challenges and factors that intensify vulnerability are similar across the studies, which indicates the need to focus on ensuring that these issues highlighted are addressed. Furthermore, there has been little research done on women's experiences on drought issues in the Kwa-Ngwanase District of South Africa. This study bridges that gap, it assesses whether social adaptation measures impacts on the women's ability to cope and adapt to drought impacts.

Chapter 3

Methodology

3.1 Introduction

The aim of this study was to shed insight into the impact of drought on women in Kwa-Ngwanase in KwaZulu-Natal. This chapter starts by providing a brief overview of the study area and target population, the sampling technique and study sample. It outlines the research method used to collect and analyse the data, and concludes with the limitations and challenges faced during the data collection period.

3.2 Study Site and Target Population

This study was conducted in the Kwa-Ngwanase District, which is located within the Umhlabuyalingana Local Municipality, this being one of the five local municipalities that comprise uMkhanyakude District Municipality (DC27). It is located in north-eastern KwaZulu-Natal along the border with Mozambique to the north, the Indian Ocean to the east, Jozini Municipality to the west and the Big Five False Bay Municipality to the south (Figure 3.1) (Gumede 2001; Annual Report, 2017). This municipality is predominantly rural, with the population spread amongst 17 municipal wards and four traditional council areas (Tembe, Mashabane Mabaso and Zikhali) (Umhlabuyalingana Municipality Annual Report 16/17: Stats SA, 2011).

The Umhlabuyalingana Municipality consists of a predominantly African population (99%+), with the White, Coloured and Indian/Asian population contributing less than one percent. Only three percent of the economically active population within the municipality earns more than R1 600 per month, while 47% of the economically active population (out of a total of 52%) receives either no income or less than R1 600 per month (Umhlabuyalingana Municipality Annual Report 16/17: Statistics SA, 2011).

Out of the total population, 18% have no formal education, 57% did not complete Grade 12, and only 8% obtained a Grade 12 or higher education, of whom 2% obtained a tertiary education (Umhlabuyalingana Municipality Annual Report 16/17: Stats SA, 2011). The Umhlabuyalingana Municipality’s economic base is mainly tertiary services, such as shops and other outlets. Agricultural production contributes 20%, while the secondary sector, which consists of manufacturing, and electricity/gas/water supply, contributes 10% to its GDP (Umhlabuyalingana Municipality Annual Report 16/17: Statistics SA, 2011).

The gender profile of Umhlabuyalingana is typical of the demographics in most other local municipalities in KwaZulu-Natal i.e. there are generally a greater number of females residing in the area than males, although the difference is not significant, with approximately 10% more females than males (Umhlabuyalingana Municipality Annual Report 16/17: Stats SA, 2011).



Figure 3.1 Location of the Kwa-Ngwanase District within the Umhlabuyalingana Local Municipality. Source: (Umhlabuyalingana Municipality Annual Report 16/17)

Table 3.1 Households access to piped tap water for 1996, 2001 and 2011

Municipality	Piped (tap) Water inside Dwelling/Yard			Piped (tap) Water on a Communal Stand			No Access to Piped (tap) Water		
	1996	2001	2011	1996	2001	2011	1996	2001	2011
Umhlabuyalingana	1 149	3 394	10107	1633	4974	9278	16382	17955	14472

Source: Statistic SA Census (2011) and Umhlabuyalingana Municipality Annual Report, 2017

Table 3.1 above indicates how water through pipe connections has been distributed from 1996, 2001 and 2011 in the Umhlabuyalingana Municipality, with households that receive tap water having increased, although a number still rely on natural resources for their water. Only 10% of household’s access piped water inside their dwellings, while those with piped water to their yard are able to have a garden.

Figure 3.2 Most common and used water sources in Umhlabuyalingana Municipality

Source of water: 2011 census

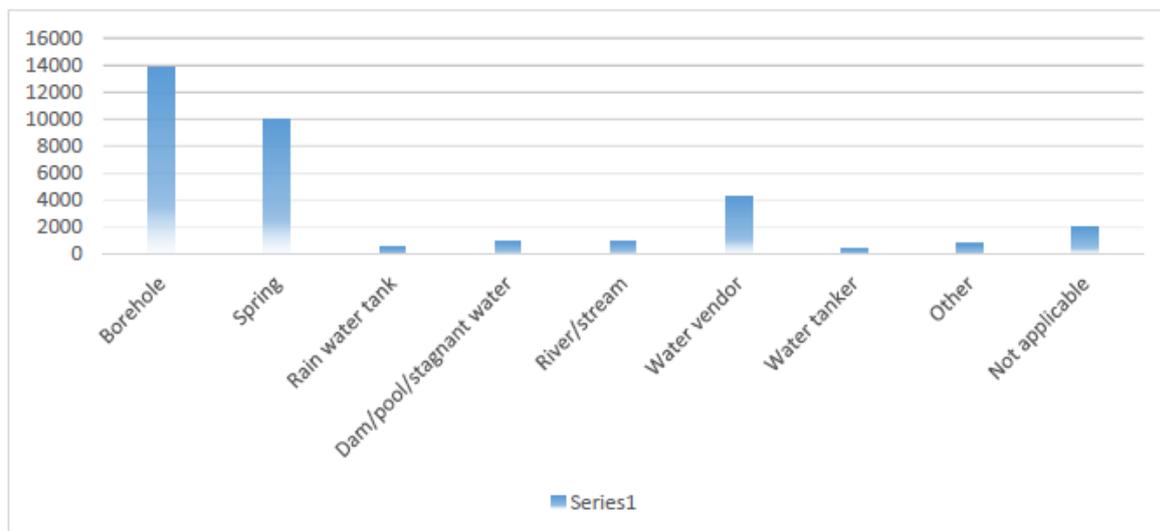


Figure 3.2: 2011 Census

Figure 3.2 above indicates that the majority of citizens rely on boreholes and springs (Stats SA Census, 2011). Boreholes are normally in communal spaces that are shared among community members. Spring water is also available, but often far from their place of residence. While other households use tanks to collection rain water, others buy water from retail stores while a few receive water from municipal truck tanks.

The larger population in Mhlabuyalingana is economically inactive (Gumede, 2013), with most depending on the low income received by household heads. There is a high level of unemployment within the municipality, with approximately 13% the economically active citizens being unemployed. The unemployment levels are estimated around 22%, with 65% of the total labour force not being economically (Umhlabuyalingana Municipality Annual Report 16/17: Stats SA, 2011). The majority of those who are unemployed stay at home, while many of those employed work at the local government departments such as in hospitals, clinics, municipality and forestry (Gumede, 2013). The self-employed constitute of only 1% of the employed population, which highlights the lack of enterprise business skills in the municipality (Annual Report, 2017). The majority of citizens employed are generally either semi- or un-skilled, with a minority holding employment positions for skilled employment (Gumede, 2013). This indicates that there is a larger population dependent on incomes received by the few who are employed.

Two rural study sites were selected, Thengani and Endlondlweni, both of which have experienced drought conditions. The women who were interviewed in Thengani live far away from the main tarred road where the municipal truck tanks usually distribute water from, which they were therefore unable to access. The women in Endlondlweni live close to a main road, but seldom get water truck services as they are far from the main town, which results in service delivery being limited. .

3.3 Sampling

For the purpose of this study, the target population was rural women living in Kwa-Ngwanase District. The study was unable to include the entire population of Kwa-Ngwanase, and therefore selected sample of the targeted population to obtain information that generally speaks to the experiences faced by women of that area. The sample consisted of 15 women

between the ages of 18 years and above who were divided into two groups due to their locality, the first group having eight participants and the second seven.

According to Babbie (1998:92), there is no limit to what or who can be researched, or the units of analysis in social research. Experiences of women with reference to issues of drought has been researched extensively in the context of climate change, however, considering the magnitude of the problem it is impossible to conduct a study of the entire population to obtain rich and concise data. As a result, a manageable sample size was selected from the population to research the study regarding the experiences of women regarding drought. The manageability of the sample size was determined by the availability of women which were willing to participate in the study and manageable to form a group that could keep the discussion moving forward at a rate that the facilitator could manage. Marshall et al (2013) notes that for a single qualitative case study 15 to 30 participants are adequate for a study, they further note the subjective nature in which sample size determinations is made by authors.

Judgmental or purposive convenience sampling was used for this study, as the researcher is from Kwa-Ngwanase and identified women who would be willing to share their experiences. Purposive sample was selected to ensure that the data obtained would be reliable due to the competence of the informant to meet the criteria of being affected by drought (Tongco, 2007).

The research took place in the rural area of Kwa-Ngwanase, with two locations being the focal points for this study, these being Endlondlweni, and Thengani, being located approximately 15 kilometres apart. The study was thus delimited in accordance to the practical investigation that was conducted, and the selection of the women was based on the following inclusion criteria:

- Residing in Thengani and Endlondlweni
- aged 18 years and above
- Female
- Small scale farmers

3.4 Qualitative Methodology

The study used qualitative methodology to understand the meaning people have constructed, how people make sense of their world and the experiences they have in it (Merriam, 2009). Strauss and Corbin (2008) stated that the term qualitative research is about producing information that has not been brought to light through statistical analysis. It can refer to research about persons' lives, lived experiences, behaviors and feelings, as well as about organizational functioning, social movements and cultural phenomena. Flick (2018) observed that qualitative research is interested in analyzing subjective meaning or the social production of issues, events or practices by collecting non-standardized data, and analyzing texts and images rather than number and statistics.

Qualitative research allows for a better understanding of people's inner voices, experiences and attitudes, and to uncover the manner in which meanings are created and shaped in a particular event or culture (Corbin & Strauss, 2008). It is able to decode the meaning of various events experienced by different people in different ways (Richardson, 2012). Qualitative approaches seek to provide new meaning to existing knowledge through meaning and experiences instead of through statistical analysis (Richardson, 2012). The main disadvantage of qualitative methods is that its findings cannot be generalized throughout the entire population group. Qualitative research is often cheaper than quantitative research, as it entails using fewer participants. There is no better way than qualitative research to understand in-depth lived experiences and feelings of the studied participants (Richardson, 2012). Qualitative research can improve the efficiency and effectiveness of quantitative research by using an organizing framework to understand the messiness of real life (Braun & Clarke, 2013). To obtain qualitative data, focus group discussions were used.

A focus group is appropriate for obtaining data from a select group of people who experience the same challenges or have a specific interest or understanding of a specific topic (Onwuegbuzie et al., 2009). The aim of the group discussion is to provide a platform where participants are able to share their experiences on a similar issue. The focus group discussion is made up of interview discussions as well as general observations of the participant's body language towards the topic. Frechtling (2002) indicates that the importance of a focus group discussion is to highlight certain dynamics of the research that would otherwise be silenced in a quantitative based research.

The focus group interview is a qualitative research technique that involves conducting intensive interviews with a small number of respondents to explore their perspectives on a particular idea, program or situation. Battacherjee (2012) indicates that a focus group is a first-hand encounter or primary data collection method that requires a fixed number of participants to interact in a group discussion, and should consist of six to ten participants at a given location deliberating on the issue of interest for a time frame of about 1.5 to 2 hours maximum. A focus group discussion is an approach to data collection that obtains the different opinions of the participants and their understanding of the topic (Hopkins, 2007).

Frels et al. (2013) highlight that the advantage of a focus group discussion (FGD) is that it provides opportunities for the researcher to collect rich and meaningful data. It helps the researcher understand the depth of the situation by establishing the opinions of the participants and allowing for further probing. The FGD exposes the researcher to new terminologies used by the participants, and provides a more lively aspect of new knowledge (Ogunbameru, 2003). The researcher can use the general observation technique to confirm whether what the participants says links with their realities (Tongco, 2007). Observations during the FGD can be noted and jotted down for report purposes. FGDs require a trained moderator who knows how to control the group discussion (Hopkins, 2007), as the quality of the discussion and usefulness depends on the moderator's skill. It is often difficult to analyze the collected data, especially when it comes to separating an individual's opinion from the groups opinion (Koch, 2013). According to Hopkins (2007), the sample may not be representative of the population, which might affect the validity of the collected data.

According to King and Horrocks (2010), the success of FGD relies on the extent to which the respondent's responses and opinions are reflected truly, to have an almost accurate construction of other people's realities. FGD interviews ask probing questions that allow for the respondent to respond in their own terms rather than have the questions imposed on them. The focused groups interview schedule consisted of open-ended questions to enable the participant to speak freely. The FGDs took the form of informal conversations and occurred when it was convenient for most of the women once they had completed their daily activities. the researcher tried to minimize potential hierarchies by locating herself as a student seeking to better understand a phenomenon, and indicated that she was doing research in this area because she does not have the answers and wanted to learn from their experiences.

At times, the researchers proposed interpretation or insight that resonated with the research participants, while at other times they clarified or refined their idea to better capture their perspectives. Through such interactions, the co-construction of reality was made explicit. A general field note observation guide was developed that structured the researchers initial and more focused observations. These observation guides contained a series of questions about the event observed, who was involved, and the key activities and interactions.

3.5 Ethical Considerations

According to Neuman (2000), a gatekeeper is someone with the formal or informal authority to control access to a site. In terms of getting site access, the researcher was given permission to conduct research by the chief of Kwa-Ngwanase, and received a letter of confirmation from the Tembe Tribal Hall that gave permission for the interviews to proceed. Personal visits by the researcher and the gatekeeper (someone well accustomed to the area) followed to selected areas to make preliminary arrangements with the women of Thengani and Endlondlweni. The researcher asked permission from the women prior to collecting data.

Babbie (2001) describes research ethics as subscribing and conforming to the standardized conduct of a particular profession or group. Blaxter, Hughes and Tight (2001) states that when human behavior is subjected to scientific investigation, it involves ethical issues. Blaxter et al. (2001) referred to them as common ethical issues, namely: confidentiality, anonymity, legality, and professionalism. Babbie (2001:469) referred to these issues as the four pillars that ensure ethical considerations are in place, especially in social sciences: voluntary participation (pillar 1), no harm to the respondents (pillar 2), anonymity and confidentiality (pillar 3), and transparency (pillar 4).

According to Babbie (1998:286), no harm to research respondents is an important ethical rule within the social sciences when conducting field research. While the investigators do not deliberately harm the research subjects, they may hurt them if they are not careful. In this research, the participants were in no way exposed to situations where they felt their confidentiality or privacy was being infringed, nor did they think their rights were being violated in anyway. There were no sensitive group discussions that were raised that could

have emotionally or physically harmed any member of the group. The participants were treated with respect and human dignity.

The participants' anonymity was fully guaranteed and upheld, with confidentiality and anonymity being applied throughout the course of collecting and analyzing the data. Participants were assured that their real names would not be used for the sake of confidentiality, with pseudonyms being used to protect their identity.

The acknowledged co-construction of the researcher's interpretation in constructivist research demanded that the researcher conduct research in a reflective and transparent process (Mills, Bonner and Francis, 2006). Reflection entails "*thinking about the conditions for what one is doing and investigating the way in which the theoretical, cultural, and political context of individual and intellectual involvement affects interaction with whatever is being researched*" (Alvesson & Skoldberg, 2000: 245). The researchers' assumptions and experiences were articulated through reflective memo's that were written prior to and during data gathering and analysis, which helped to achieve this transparency (Mills, & Francis, 2006)

3.6 Limitations of the Study

The study was limited to the two areas of Endlondlweni, and Thengani in the rural Kwa-Ngwanase District with the number of participants and location possibly affecting the responses, as women across the region may have different experiences of dealing with the consequences of drought and climate change. In addition, a limitation during the data collection process was that even after probing, some participants within the group were not forthcoming with responses. Those who kept quiet appeared to agree with the person answering the question by nodding their heads, which at times meant some of them did not answer a particular question.

3.7 Validity, Reliability and Rigor

Within the qualitative research framework there are no statistical techniques to rely on to establish the validity of results (Terre Blanche and Kelly, 1999). Therefore, this research has utilized the four trustworthiness criteria by (Guba, 1981): 1. Credibility deals with congruent

of the findings with reality; 2. Transferability is concerned with the extent to which the findings of one study can be applied to other situations; 3. Dependability highlights that if the work were repeated, in the same context, with the same methods and participants the same results would be yielded and 4. The researcher met with the women to ensure that the collected information reflects their experiences and understandings. To ensure confirmability, the researcher applied the triangulation technique (Shenton, 2004: 64-71) by looking at the drought situation in the past, observing current weather changes and listening to the views of those directly affected.

3.8 Data Analysis

The qualitative data collected from the FGDs was categorized into key themes using thematic analysis, this being with respect to the study Objectives. Thematic analysis is a technique that can be used to construct a theory of meaning, and to identify, describe, organize and analyze findings collected during fieldwork (Braun and Clarke, 2006). Usually thematic analysis that is conducted in a thorough manner can yield new insightful and trustworthy knowledge (Braun and Clarke, 2006)

The thematic technique is flexible and interchangeable in its approach to best suit different studies, which contributes to the detail and richness of the analyzed data (King, 2004). The thematic approach is unique in the sense that it does not require in-depth theoretical and technological information of other approaches; hence it is an attractive way of analyzing data, especially for researchers who are in the early phase of their career (Braun and Clarke, 2006). The thematic technique within the qualitative methodology is often ideal for new researchers in the field, as it is easy to understand and use, with few procedures and prescriptions (King, 2004). The technique is useful in establishing trustworthiness, credibility, dependability and confirmability (Braun and Clarke, 2006; King 2004). Furthermore, according to Braun and Clarke (2006), thematic analysis is helpful in bringing into light the ideologies and perspectives of how research participants think about a particular topic by emphasizing differences and similarities, and generating meaningful knowledge. King (2004) indicates that thematic analysis is ideal for analyzing large data sets, as the researcher is required to take a structured stance, which results to a clear and organized final report.

The disadvantage of the thematic analysis is that, relative to other methods, it does not offer the researcher the opportunity to make assessments or analysis of the language used by the participants (Braun & Clarke, 2006). Regardless of the flexibility and interchangeableness of the approach, it can result to inconsistencies and lack coherency when developing themes derived from the research data (Holloway & Todres, 2003)

3.9 Summary

This chapter reviewed the study area and presented the methodology used to obtain the required data. It outlined the research design and the various procedures, processes and data collection methods that were followed during the study. It indicated the ethical issues, limitations and responses that were achieved from the conducted research. The outcomes are presented in the next chapter, with the findings of the thematic analysis being presented collectively and supported with quotes from the various participants.

Chapter 4

Results

4.1 Introduction

This chapter presents the results of the thematic analysis of the focus group discussions with the two groups of women who experience drought in Kwa-Ngwanase. This chapter seeks to provide explanations on potential factors facilitating and exacerbating the experiences of women on drought issues. The chapter starts with an overview of the sample characteristics of the women, after which the study outlines the major identified themes, such as water shortages and vulnerability; boreholes financial constraints and social networks; service delivery complaints; challenges in securing employment; natural use of resources and management.

4.2 Sample Characteristics

The study participants were all women who had experience of drought in different ways and were aged 18 years and above. They had low levels of education; with the majority having only completed primary schooling while a few had finished high school, while none had obtained a tertiary education. Of the 15 participants, only six were aged 18 – 40, while the majority (9) were older than 40 years of age. The majority of women older than 40 reported having at least one living child and were more likely to be living with their male partners even though they were not married. Those women aged 18-40 reported that they had children of their own but were not living with their male partners. All participants interviewed had lived through a drought in their area.

Table 4.1: Background characteristics of women

Participant	Age	Place of Residence	Level of Education	Marital Status	Number of Living Children
1.	21	Ndlondlweni	Matric	Single	0
2.	43	Ndlondlweni	Primary	Single	1
3.	46	Ndlondlweni	Primary	Traditionally married	2
4.	37	Ndlondlweni	secondary	Single	0
5.	51	Ndlondlweni	No schooling	Single	3
6.	40	Ndlondlweni	Primary	Single	5
7.	58	Ndlondlweni	Primary	Traditionally married	4
8.	55	Ndlondlweni	Secondary	Single	5
9.	33	Thengani	Secondary	Co-habiting	2
10.	59	Thengani	No schooling	Single	6
11.	52	Thengani	Primary		4
12.	22	Thengani	Matric	Single	0
13.	57	Thengani	Primary	Single	0
14.	60	Thengani	No schooling	Single	4
15.	25	Thengani	Matric	Single	1

Notes: The above information was extracted from the scribe's notes while the participants wrote down the information within categories.

Although the participants were all women, they experienced drought in varied ways. The older female generation was most likely to be highly affected by drought due to the fact that their livelihoods has always been dependent on subsistence agricultural activities, unlike the current generation that are more likely to be exposed to a range of opportunities. Differences could also be found in the place of residence of the women. In general, rural areas are usually perceived as lacking infrastructure and facilities, however, there are some locations that have better infrastructures and facilities then others in rural areas. Those areas situated near the road side or closer to town have slightly better access to services while those who live in remote areas are likely to have different experiences than participants who live near areas that have easier access to infrastructure.

4.3 Thematic Analysis

The focus group discussion questions were devised to address the study objectives, with ten themes emerging from the transcripts, these being (1) Understanding drought causes; (2) Water challenges; (3) Adaptation measures and challenges; (4) Boreholes and financial constraints; (5) Social networks as an adaptation measure; (6) Social grants; (7) Reeds as a source of income; (8) Challenges in securing employment; (9) Service delivery challenges; (10) Women raising environmental awareness.

4.3.1 Understanding Drought Causes

Drought is caused by different factors as indicated in Chapter one, for the benefit of this study it was therefore important to determine whether women from Kwa-Ngwanase communities understood the meaning of drought as well their understanding of whether they felt human activities resulted or influenced drought impacts. Women were asked if they thought the misuse of natural resources has a negative effect on the current weather conditions and the subsequent drought. From the interviews it became clear that not only were the women aware of the various nuances of drought but also associated drought with a shortage of water. Some of the women also have a more advanced awareness of drought and they seemed to recognise the negative influence of human activities on the environment. Women indicated awareness of how the weather patterns had changed over the years. Women indicated the many ways in which they have understood climate change and this has been elaborated in their experiences in the below themes. What was more interesting to note was that women were learning about climate change and its causes from their own family members, there seems to be subtle awareness being shared by individuals in the households.

One of the women interestingly indicated that she had been told by her son what causes climate change furthermore, she was advised what not to do in order to minimize the risks of climate change:

“There is something I hear regarding “layers”. My son mentions the ozone layer in the skies and tells me that the drought is caused by me burning waste material. That is what I have knowledge about as they warn me about it most of the time.”(FGD#1)

4.3.2 Water Challenges

The first theme was water challenges, which exacerbate women's vulnerability to drought. Water shortages affect not only household consumption, but livelihoods, as crops cannot be planted as the ground is too hard, or crops cannot be watered because of inadequate access to water, thereby affecting food security. The lack of rainfall, dry riverbeds and dry mushy areas negatively impact the land, making it not possible to plough in Kwa-Ngwanase.

The participants were asked if they were aware of climate change or change in the weather patterns. The women indicated a lack of consistency in the weather, with patterns having changed and affected them adversely, as one of the participants noted,

"The way things are at the moment, is very frightening. It is very frightening, because in the past you knew that during spring, it would begin to rain. It was during this period that planting of crops would begin. After planting, you knew it would continue raining, until the plants had fully grown. There would be enough water that shallow areas around the plants would be filled with water and you would be able to irrigate plants. This is the first time I am experiencing these kinds of conditions since I was born " (FGD #1)

Most of the participants indicated that this was a new phenomenon and a contrast to their lived past experiences, where there used to be an abundance of water. The women did not have past experience of preparing for such drought conditions, and therefore they had no alternative means to deal with the uncertainty of this new phenomena. While knowledge about ploughing the land had been passed on from previous generation, it had not included how do deal with preparing for or dealing with such drought conditions. Therefore, there has been no clear model for them to follow in terms of what they needed to do. They indicated that when the rivers were full they would catch fish in the river to feed their families. One woman said:

"There used to be plenty of areas with water, we were able to plant and catch fish. Now we have to buy fish from the butchery. The issue of climate change is terrible, as when there is no rainfall, food is also very expensive from retailers. Unlike in the

past it was much better, the rainfall was enough to plant thus we were able to consume food from our gardens. Now it is worse than ever before, there are even no jobs; with no rainfall it is just bad." (FGD #2)

The statement highlights the intensity of the situation, with the women indicating that they now had to find money to buy food that was previously free. From being self-reliant in terms of being able to provide food for their families, they could no longer rely on the natural resources in their area for their survival. For those with limited income, it meant that the money they had needed to be stretched to now also buy food. They indicated that feeding their families had become a daily struggle, as the failure of crops meant they had to buy goods that they would otherwise have produced themselves in their own gardens. Under such extreme conditions, they have to dig deep trenches to reach the ground water to plant their crops, which involved very hard physical work, which they often did not have the strength to do. The male family members were often away or at school during the day, which made it difficult to dig the trenches when required.

The pressing issues the participant alluded to was that even when they plant crops that are able to withstand the drought, they take a long time to grow and this does not help them meet the immediate needs of their families. Prior to the drought they were able survive with the available natural resources, and did not have to buy food to sustain their families. However, due to the change in weather patterns this has resulted in the drying of the land, creating a push and pull reaction where women are forced to look for work, in order to earn money to buy food. They observed that the lack of rainfall has resulted in very dry river beds, which were once filled to capacity with water. The marshy (muddy) areas in which they had their food gardens had dried up, making it very difficult to plant. Previously, women did not need to carry water for long distances to irrigate their plants, which were naturally watered due to their location in the marshy areas. However, with the drying of marshy areas water that was available had to be carried to where the plants were growing, which was a challenge without the appropriate means to do so.

The change in climate had substantially affected their ability to grow crops, for which they did not have coping mechanisms, as this was a new phenomenon that their traditional practices could not accommodate, even those geared towards addressing drought conditions. Women highlighted that,

“Even if we plant crops that are able to withstand the drought, they take a long time to grow and cannot help us meet the immediate needs to feed our families. Some of the plants get burnt by the sun, which helps us in no way at all ” (FGD #1)

The participants also indicated that gumtrees are planted across the area they live in and they assume that the gumtrees consume large amounts of water, affecting the amount of water available to their crops. Thriving communities are now having difficulties sustaining their livelihoods due to the lack of rainfall and water available to sustain their livelihoods. The lack of rainfall or water availability has forced them to purchase goods and services with money generally used for other purposes. This deepens their levels of their vulnerability, as they are heavily reliant on agricultural produce, forcing them to look for ways to adapt. The analysis has indicated that there are similarities between the Thengani and the Endlondlweni communities, areas that are kilometers apart, both experiencing one of the worst droughts in their lifetime. Both communities highlighted their challenges with accessing water from riverbeds, rainfall or marshy areas, the land having dried up, leaving them with no alternatives to sustain their livelihoods.

4.3.3 Adaptation Measures and Challenges

The vulnerability theory notes that when individuals are in a vulnerable position they seek and adapt new measures for survival. When the participants were asked if there were any alternatives they were engaged in to create employment for themselves, they highlighted that they would go out to the forest and chop down trees to help create products that they can sell to generate income. They indicated that there are areas that have resources that could assist them with an alternative income. They are using the resources from the environment to sustain a living. In most cases, it involves cutting of trees and carving and this is not a sustainable measure.

While they have found some new ways to generate an income, they were aware that securing their livelihoods through cutting down trees had a negative effect and was not environmentally friendly. Nevertheless, they highlighted that they had no choice as this was the only way to make ends meet.

“We can chop leaves and roots for medicinal purposes, get crops, cook and cleanse ourselves from trees in order to sell. If trees are destroyed, we cannot get them back and benefit. ” (FGD#2)

The above study quotes suggest that more than ever before women were relying on selling tree roots for medical purposes, hence people who needed a remedy for the symptoms of flu buy roots from these women. This according to the women gave them money to survive. However, the destroying of trees due to the change in weather patterns poses a threat to the natural resource that women are currently surviving off.

This indicates that participants have been left with few alternatives to sustaining their livelihoods. Some of the younger women indicated that they often went to nearby schools to sell edible products they had made or bought to the learners in order to get an income:

"The only solution I have is to go out and sell outside schools to school children. I sell small items, such as snacks and make small amount of money to be able to provide for my children". (FGD #1)

The women indicated that selling to young children gave them hope, even when they did not reach their days goal, they did not give up.

“I sometimes get piss jobs for being a nanny, and I can say the money received there is not sustainable either, I often receive an income that can only pay my groceries and that’s all, luckily I eat from the household I am an assistance in” (FGD#1)

Sustainability of the Alternative Approaches:

Alternative approaches are often perceived as applicable and cater for the needs of those that use the approaches, furthermore alternative approaches are assumed as more sustainable. When women were asked if the alternative methods were effective in terms of sustaining their lives this is what they had to say,

“You cannot say you are sustained by money you receive as a nanny, in fact those people give you any amount they want, if they want to cheat you and give you below the average salary you will receive just that and they know you won’t complain because a bread is better than nothing” (FGD#1)

“Selling in schools is very helpful for me, although there is so much competition there, but at least I can have a couple of Rands at the end of the day, although I won’t say it is sustainable especially when schools are closed for vacation” (FGD#2)

“Being sustainable is hard, it is hard to say you are able to sustain yourself without any basic needs meet, the alternatives we have mentioned are just piece meal, they help us survive on a daily basis but do not help sustain our livelihoods” (FGD#2)

The above study quotes provide a conflicting view point in terms of indicating whether their adaptation measures are sustainable or not. The majority of the women however, indicated that their adaptation measures were not close to being sustainable, The nature of the strategies they adapt to does not provide a safety net. The strategies adopted are often risky in terms of whether they will provide a return or not. However, most of these women believe in the notion that half a bread is better than nothing.

The jobs they often take are seldom well paying, and do not cover the nutritional food needs they would have gained from producing their own food. Additionally, their willingness to opt for alternatives, such as selling snacks for school children, indicates their willing to ensure that they are able to provide for their children and family members. Women in Kwa-Ngwanase have concluded that they do engage themselves in alternative activities in order to raise income for their families; however they have confirmed that such alternative measures have not fully impacted their livelihoods, they do not foresee these current copying strategies sustaining them in the long run. Therefore, this calls for effective and efficient approaches that are tailored and relevant to the needs of the women. Government projects and programs should be rightfully targeted at women who are not only challenged by socio-economic issues but also environmental issues. Women who depend solely on agricultural produce for survival should be the first groups targeted because in the rise of drought they have nowhere else to rely or depend on.

4.3.4 Boreholes and Financial Constraints

The second main theme that the women faced was financial constraints on a daily basis, which exacerbates their vulnerability to drought. Having access to money is important for buying goods and services. However, if women do not access the means to generate an

income or have no other source of accessing it, they are most likely to find it hard to remove themselves from the vulnerability trap, which is exacerbated during drought. In this theme, the lack of finances hinders women from escaping their predicaments.

Approximately 80% of participants indicated that they had given up ploughing as there is no hope of them accessing water from river beds, rainfall or boreholes. The participants emphasized without the money to have a borehole drilled, it would be fruitless to plant the crops as they would not grow under the pressures of the climate. Participants repeatedly indicated that they could not survive without water

When river banks are dry the participants are compelled to find other alternatives to maintain their livelihoods, including installing a borehole, which is costly to install:

"It has really become difficult to collect water from the river, let alone install a pump to extract water from the ground, therefore you cannot access it" (FGD #1)

In the face of lack of financial resources to drill a borehole some women opt to making a hole in the ground to extract water but this becomes dangerous. The women said,

"When you end up digging your own water hole, you end up stopping, because there is the danger that the hole can cave in." (FGD #1)

Participants do not have the financial resources to support themselves to access coping technologies, such as boreholes. A Participant said,

"I do not have money to call people who drill boreholes, compared to the people who have the money to call these people to drill so they can have access to water. (FGD #1)

Participants indicated the high cost of installing boreholes, which they could not install themselves nor did they have the financial means to pay someone to do so.

Boreholes are the most viable option for accessing water, but are currently not easily accessible or affordable. As they are expensive to install, many families Kwa-Ngwanase are unable to afford them. While some neighbor's with boreholes assist those who have no other

means of accessing water, this is not a long-term solution to ensuring that they have water when needed. While the women do make use of their social networks, this is not a long-term solution. This highlights the need for rural communities to be provided with sustainable coping mechanisms that are beneficial and efficient, including for the women in Kwa-Ngwanase

4.3.5 Social Networks as an Adaptation Measure

Social networks seem to have played a crucial role in helping women adjust to drought issues. The women of Kwa-Ngwanase have resorted to coping with drought through asking for resources from their neighbours, and depending on their children. The women from Kwa-Ngwanase indicated that they had no sustainable means of adapting to the current situation, and relied on the goodwill of neighbors who were kind enough to give them water.

"There is nothing we are currently doing as we had previously said, the best aid is if we get a neighbor who will have a heart of gold, and will allow you to collect some water from their borehole so that you can be able to drink, do laundry and cook". (FGD#1)

"Neighbors play a crucial role in our lives, especially if you do not have water"
(FGD#2)

"My son often helps me a lot since he works in the city" (FGD#2)

While other women indicated that when they do not have water, they rely on their social networks, and sometimes beg from one of the neighbors who is willing to fill large containers, buckets and bottles to enable them to take care of their family. The participants were saying that they are expected to wash and cook with the water they receive from generous neighbors, being completely reliant on others for water. However, the water that they receive from the generous neighbors was not enough to accommodate other tasks, such as irrigating the plants.

4.3.6 Social Grants

The women indicated the important role that government social grants play for children and the elderly during this time, as they helped many vulnerable women cope with drought impacts in their households. Social grants in rural areas have become an important lifeline for poor households. The theme has highlighted that without social grants most rural household members would starve to death especially in the event of drought impacts. The women note that the social grant provides them with a means of survival in tough times. They recognise that the grant is minor but it is still seen as a means of bailing them out of a difficult situation.

“I could say that the social grants have come a long way in helping us close gaps, without social grants many of us would be in deep trouble, what would we be eating?” (FGD #1)

“Although the money is low, we have however managed to survive using social grants, it becomes better when there is an old age pensioner and children receiving the grant because that money is then pulled together to buy groceries and other necessities” (FGD # 2)

“Personally, I don’t know what my situation could’ve turned out into without the grant assistance of government, in fact I don’t know what my children would be surviving on” (FGD # 1)

The social grants theme has highlighted that many women and their households depend largely on social grants in their households for their survival. It seems that most of the households where the women come from have been sustained by social grants, which is not a new phenomenon. Many households and communities across South African and in Kwa-Zulu Natal specifically rely on the social grants system as a protection against vulnerability. It is interesting to note in this case that many women seem to agree that social grants have helped to prolong and sustain their livelihoods to some degree.

4.3.7. Reeds as Source of Income

The women from Kwa-Ngwanase have shown that they have relied on weaving reeds on many occasions in the past, however due to drought most of the reeds have dried out, which means collecting reeds has become difficult for them. The women relied on the reeds for the purposes of weaving and they made baskets and other crafts from these reeds and in this way they were able to earn an income.

“In the past we could weave reeds and make items such as mats to sell but now we cannot. There are no easily accessible reeds now, we are unable to even weave reeds for our household’s consumption, the weeds have become scarce due to drought” (FGD#2)

“In the past you could easily find healthy reeds growing on the riverbeds, you would collect them and come back to do the work of weaving in order to later sell your handwork” (FGD#1)

Women are no longer able to rely on natural resources in order to make a living. They indicated repeatedly that they often used to collect reeds to weaves in order to sell, however this is no longer an option due to the terrible weather conditions in Kwa-Ngwanase that has impacted their livelihoods negatively, especially in the financial sense.

4.3.8 Challenges Securing Employment

The majority of participants were elderly, and described the climate change situation as a terrible phenomenon. They indicated that climate change has substantially affected their way of life due to the lack of rainfall. The older participants indicated that coping with the drought was difficult considering that they have no education and skills training. Most of the elderly women looked helpless when talking about finding a job, with a number having stopped looking for employment. The elderly women mentioned that throughout their lives they have maintained their livelihoods through subsistence farming, which is their main economic activity.

When participants were asked if they were able to secure employment opportunities, many indicated that this was a struggle, especially for those who had very low educational

attainment. As a result of their low level of education there were limited opportunities available for women to secure employment. According to the women, bribes are common in South Africa within the different parts of government departments. While bribes are illegal and are not condoned by the government, the women of Kwa-Ngwanase had been discouraged to even look for employment as they knew that they would be required to pay a bribe.

Some participants indicated that they had tried to obtain employment in a nearby timber company, but that this had not happened due to lack of finances to pay the bribe. The participants noted that it was a well-known thing, that if you go and ‘apply’ for a job you must have a bribe ready to secure your employment. One of the respondent noted,

"A problem I face when I go out and look for work is that when you get to the place where the job is being offered, you are told you have to pay a bribe. In most cases, I do not have cash and I come back and sit at home." (FGD #2)

The participants highlighted that when they do secure employment they usually have to walk long distances by foot to reach their work destination:

"One of the problems I face is that you hardly find work close to your area of residence. The other problem is that you have to travel long distances that are physically demanding, when you get to work you are tired, because of the distance you have travelled by foot. When you finally get home, you are exhausted. You need to cook and it is very difficult." (FGD #1)

It is clear that women walk to work because they do not earn enough money to afford transport, and that despite being tired after work; they still had to come back home and fulfill their household responsibilities. Due to the poor state of the South Africa economy, many people have been retrenched, with the participants indicating that their husbands had become their responsibility when they returned home due to retrenchments and this has added to the burden they face in the household. Women indicated that as their husbands were no longer working and providing an income, and as they were not able to harvest any crops due to the drought, they are having a difficult time supporting their children. Most of the male partners used to be able to contribute to their family’s needs, which was now no longer the case.

“Most of our partners used to work at the cashew nut factory, some of us women also used to work there as well. It was even better because we had transport from work, unlike the jobs we are receiving now. Life was better, but ever since we were retrenched things have been tough. We could feed our children, now our husbands are not working, they are sitting with us as we are also not working.”
(FGD #1)

The women were no longer able to use their knowledge and skills to plough and harvest, and sell the produce to support their children’s nutritional and other needs. The participants, who were younger in age also complained about the drought, but due to the age gap, could not relate any past experiences that the elderly women highlighted. Despite the younger participants also describing the drought as affecting their daily lives, they reported that they had to find means to cope with it. This age group had more formal education, although some indicated that their education was not helpful as there were no job opportunities in the area. Some therefore resorted to engaging in small scale businesses by selling snacks to school children, or looking after someone’s child in order to raise an income. Looking after children during the day is a lucrative business in Kwa-Ngwanase and most poor young people often opt for taking care of other people’s children in order to sustain their livelihoods and that of their households. While others looked for jobs but were asked for a bribe, which because of their social status of not having the money they end up unemployed. Although the elderly and young participants have different experiences they were however challenged with adapting coping strategies that have been unsustainable under such severe drought conditions.

4.3.9 Service Delivery Challenges

The third main theme that emerged was the issue of service delivery challenges that the participants face in their communities. The municipality has the responsibility for providing appropriate services for its residents, including during times of vulnerability, such as floods and droughts. During data collection, the participants were asked to what extent they have benefitted from the local government initiatives in terms of helping women adapt to the ongoing drought. It is important to look at service delivery through the lens of the participants, as this indicates the interventions needed. The municipality provides services for rural communities, and needs to establish what services are required to ensure that livelihoods are not compromised, specifically for those who rely on subsistence agriculture to sustain

themselves. In drought conditions, additional water services are needed to ensure that communities have access to potable water.

Some participants indicated a lack of service delivery in their communities. However in terms of environmental or agricultural service delivery the women noted that they had received seedlings from their municipality but argued that this was not helpful as they were not able to plant them without water, while others indicated that they had not received the seeds. This indicated that there was a need for seeds and water to be provided simultaneously as it is difficult to grow crops without water. Overall, the women perceived government interventions to be minimal, and were also frustrated by the endless government promises to provide water services, and while pipes had been installed in some areas, there was no running water. The women were overall dissatisfied with their situation in the Kwa-Ngwanase area.

Participants felt that the local government was not doing enough to ensure that women adapt to the issues of climate change, and that more could be done instead of leaving them to their own devices. The participants acknowledged however that the local government has in the past provided crucial services, such as water. The women observed

"Back in 2009, there used to be running taps in the community, even though they were far, we were still happy. If you could find the strength on a certain day, you could connect a pipe and be able to get water directly in your home and be able to help your family and provide for their basic needs. The pipes are now decaying underground. The taps that were installed were only functional for one month and after that, they stopped running - till this day. At present there is no assistance and the taps are dry.." (FGD #2)

The participants were asked what local interventions were being provided to assist with the drought conditions, and indicated that nothing was being done to help them at the moment. The participants indicated that the maintenance of basic infrastructure, such as underground pipes were not well-maintained, which results in problems in accessing water. In addition, the taps that were installed were only functioned for one month after which they stopped working, and had not been repaired. The participants indicated that there they could not say the government had helped them, as they did not have running water. In terms of service delivery, they indicated that they relied on the government for service delivery, but their

needs were not being met, and they could not say what was the reason for these services not being provided to them.

They indicated that they were aware of internal corruption within the local government, which could be the reason for them not receiving the required services. Due to the bureaucracy that exist in government, and their lack of participation in decision making processes, the participants did not even know who was to blame or call to account. This speaks to the issue of government entities and the need for accountability. The women of Kwa-Ngwanase had many more complaints and challenges to express than they had good stories to tell. They felt that they were disadvantaged in remote areas compared to those living closer to the tarred roads. One of the participants said,

"You can see they have received water when you pass by and see containers and the water tanker standing by. Those staying away from the road will not receive any assistance." (FGD #2)

The participants indicated other services they thought were important to them that were ignored by government interventions other than being given seeds such as, taking care of the garden. Their experiences showed that they needed a broad approach to address their issues. They indicated that those who had received seedlings should have had their garden fenced by the local government to avoid animals eating the crops:

"They fenced some areas, but did not fence our gardening area. We try to plant crops, but they do not grow, because cows come and eat them as they grow."
(FGD #1)

This indicates that government initiatives have not taken the needs of the participants into account. The participants wanted tools to be able to meet their needs and adapt to the drought conditions. They wanted initiatives that gave them greater independence. The participants wanted to be assisted with resources to help keep them afloat, and indicated that they wanted to plough to feed their children, but this was only possible if the government provided water not only to those that are nearest to the Kwa-Ngwanase town, but those living in distant areas.

4.3.10 Women Raising Environmental Awareness

Women in Kwa-Ngwanase seemed to have first-hand knowledge of droughts and the impact of drought on their local communities. In light of their consciousness of the causes of drought and impacts, women were asked if by any chance they were spreading environmental awareness in their local communities. Environmental awareness is an important component that seeks to inform those who seek to use natural resources to take care of it in a manner that maintains sustainability of those natural resources or environment. In order to help answer this question, women from Kwa-Ngwanase communities were asked about the role they have played in motivating the community in the responsible use of natural resources. Most women said that there were not motivating others to use natural resources sparingly. They observed that the difficult economic conditions that they are facing have forced men and women in the community to disregard the negative environmental impacts of their actions. They also felt that it was not possible to advocate for socially responsible behaviour in the face of hunger.

“It is difficult for me to comment on that, as I had just previously stated, to be able to survive under these current conditions, there are times when one is required to go out and chop trees or plants to be able to create objects to sell. For example, one can go into the veld and collect some reeds they can weave to create a basket and sell. Some people chop tree roots, which is not okay, because if you chop the roots of the tree, then the tree will surely die.” (FGD#1)

“I haven't been motivational, because some people chop these roots to make herbal medication that they sell and make a living from. If you were to tell someone they were destroying the tree by chopping its roots, they would respond by asking you what do you expect them to do since there is no rainfall, and if they plant crops, they don't grow, but the roots don't require rainfall to be useful and they can be sold to bring in cash and help take care of their family.” (FGD#2)

Some women pointed out that it was easier to change the behaviour of the youth and they encouraged them not to cut down trees as it was going to have long-term negative effects.

“I motivate the youth to avoid carrying and lighting matches while they are walking or in the areas they are playing at, to prevent them from burning natural resources as we need those trees.” FGD#2)

Women seemed to be active citizens who have conscientised their younger community members to take care of the environment. Although providing environmental awareness may seem positive it is not positive in the sense that women noted that their need to protect the environment was not so much for the sake of protecting the nature, but rather for ensuring that the nature is protected so that they can use the natural resources for activities they think are important to them. The need to protect the environment is not necessarily for sustainability purposes. The women needed the natural resources to be protected as they understand to be the users of these resources.

4.4 Summary

The women showed considerable initiative to ensuring that they were able to provide for their families, and were aware of the negative consequences of their actions, such as chopping down trees. While access to water was their main concern, they understood that food security did not rely on this alone, and the having seeds and fencing were important to enable the plants to grown and be eaten. Some had made use of their social networks, but did not see this as long-term solution, given that the traditional drought cycles were no longer predictable, and that alternative solutions now needed to be found to the unpredictability of the effects of climate change. They were aware that their long-practiced methods of providing for such times were no longer suitable, and that they not only needed new solutions, but the assistance of their local government departments to provide water and support mechanisms that would last and enable them to ensure their own food security.

Chapter 5

Conclusion and Recommendations

5.1 Introduction

Similar to other developing countries, Kwa-Ngwanase is faced with the challenges of changing weather patterns due to climate change that have resulted in the current drought, with coping and adaptation mechanisms being important in decreasing the vulnerability of poor communities. As noted in this study, unemployment, water shortages and a lack of government interventions impact negatively on the effectiveness and capability of vulnerable women to climate change. It is apparent that novel approaches need to be adopted for women to be able to help themselves adapt to the impacts of climate change. In this chapter study findings are compared with findings from other studies. The chapter also, draws on the theoretical framework in order to provide recommendations and conclude on the findings. The results from this study shed light on the experiences of women in Kwa-Ngwanase District where very little research has been done. Acknowledging that there is a need to have additional coping strategies is important, as it necessitates an increase in strategies geared towards reducing drought vulnerability and increasing sustainable coping mechanisms for vulnerable groups, especially women. This chapter presents a summary of findings and outlines the study limitations and suggests recommendations for further research.

5.2 Summary of Main Findings

Susceptibility is characterized by the socio-economic and environmental dimensions influenced by individual's socio-economic statuses, such as gender, age, education, social networks, social class, income diversification, ethnicity, access to resources, type of irrigation, access to land, and poor technology (Paavola, 2008). It was clear in the study that the drought was having a significant impact on communities in the area and particularly women. The women found that their livelihoods were negatively impacted by the drought. The lack of water availability has implications for various activities, as it is the basis of their survival. In the study women reported a number of challenges they experienced such as having challenges in diversifying their incomes; the women were often confined to diversifying their livelihoods within the informal economy. The formal economy was out of

reach to them due to their low education status as a result they were struggling to cope with the consequences of drought.

Water Challenges

Women in developing countries are often the key care givers of their family members, and are the primary users and managers of the water they collect from the rivers (Hausmann, 2009). In this study, many of the participants indicated that water was their major loss due to the drought conditions. Hanjra and Qureshi (2010), noted that the global water crisis has not only affected animals and trees it has also affected livelihoods, especially women who travel long distances to collect the water in the hope to meet their household needs. Previously women never used to get worried about watering their gardens because they often had an abundant supply of rainfall, as a result the gardens were often marshy or muddy due to frequent rainfall. They indicated that when water was easily available they had time to fulfil their household responsibilities without having to worry about looking for water in distant areas. The participants indicated that they often went to the field to plough, remove weeds or harvest, but they would not water the plants due to the mushiness of the area. Easy access to water made it very convenient for them to engage in other time consuming activities, such as extending their gardens. Bond (2008) highlights that when wetlands are deprived of constant or continuous floods or rainfall they eventually run dry which is concurrent with the findings in the Kwa-Ngwanase area case study. Furthermore, the women in Kwa-Ngwanase further highlighted that due to the lack of water they could no longer go to rivers and look for fish as the rivers have dried up. Accordingly, in their study Matthews and Marsh-Matthews (2003) also found that when drought intensifies rivers run dry and aboriginals are no longer able to practise fishing in order to feed their families.

One of the concerns raised by the participants was that they were possibly not receiving water as they could not afford to pay the service fee. However, contrary to the latter (RSA, 1996; Presidency, 1997), supports the notion that water services need to be rendered to the people of South Africa, especially the poor and vulnerable. The Constitution guarantees that every citizen of the country has the right to access enough water to ensure their survival. Butler and Adamowski (2015) notes that there remains deep challenges in local government transformation towards the needs of the poor, (ibid) eludes that despite the role of service delivery in the past years, many South Africans have still not received basic services such as

housing, water and electricity in this case Khayelitsha township is yet to have these needs met. Furthermore, women of Kwa-Ngwanase noted that there were imbalances in service rendered to the communities. The women in the study indicated that often water was received by people living in close proximity to the Manguzi town and households living near the main road side.

Roth and Avraamidou (2016) notes that often times the community or villages receive development in ways that are often unequal, hence most communities end up being left out. In most cases water vulnerable groups come to protest on what is known as water wars, water war protests erupt because of communities not being able to receive water services. According to Bakker (2008) in Cochabamba, Bolivia, a water war protests emerged because water services were being provided unevenly. The case study of Cochabamba reveals that well off consumers and businesses were provided with subsidised water services whereas the majority of the poor vulnerable groups had to resort to water delivered in tanker trucks, private wells, or small rivers that had running water. This speaks to the fact that some communities are given priority while others are side-lined. Similar to the literature review, women in Kwa-Ngwanase noted that due to drought impacts river beds and wells that women once depended on were now drying out, they no longer had marshy areas to plough on due to the dryness of the land. They also noted that the government provided them with tap water (boreholes) in past years but the pipes underground have rusted and they can no longer receive the water, furthermore the only alternative they could rely on for water which is water tankers does not reach them instead often communities living in close proximity to the Manguzi town receive the water.

According to Berman et al. (2015), drought has the tendency to affect various areas and people within the same geographical area in different ways. In the case of Kwa-Ngwanase, this study has revealed that although communities are in the same locality and experience almost the same drought impacts they however experience feel that drought is felt differently by those who are able to receive water services from tanker trucks. Wilhite, (2016) argue that, given the varying state of vulnerability within a population, the magnitude of drought vulnerability can be changed from location to location, from household to household and from individual to individual. Again, from the women's responses it was clear that women felt that households who could afford boreholes were better off than themselves, hence they felt their ability to cope with climate change or droughts was weaker due to not being able to

receive assistance from the local government or being able to have the physical and personal financial muscle to install boreholes in their own homes.

The Regulations Relating to Compulsory National Standards and Measures to Conserve Water (Compulsory National Standards, 2001) were published in terms of Section 9 of the Water Services Act. Regulation 3 provides that the minimum standard for basic water supply services is: a) the provision of appropriate education; and b) a minimum quantity of potable water of 25 litres per person per day or six kilolitres per household per month; (c) at a minimum flow rate of not less than 10 litres per minute; (d) within 200 metres of a household; and e) with an effectiveness such that no consumer is without a supply for more than seven full days in any year. The literature verifies that women need to be provided with basic services from local government. Similarly, results from the Kwa-Ngwanase study indicate that participants would like to receive water services, as other community members are afforded the privilege.

When trying to understand the local geographic of the study location, the IDP states that the Umkhanyakude District has good weather conditions in Kwa-Zulu Natal, the environment is said to have good renewable energy systems which has a positive influence on agricultural produce. The IDP further states that the geography is one of a limited few locations that can produce and harvest crops throughout the course of the year (uMhlabuyalingana IDP 16/17.113). The (ibid) further notes that the district has good soil conditions and water is easily available and the weather patterns is constant. However, contrary to the latter evidence from a qualitative study undertaken in rural Kwa-Ngwanase within the District of Umkhanyakude does not support such an analysis. The study was conducted in the Kwa-Ngwanase region, in northern KZN with a small group of women who undertake agricultural activities mainly for subsistence. The case study provides evidence of the nature of livelihoods impacts of drought on rural women in the Kwa-Ngwanase and also brings to the fore insights of their experiences, such as unemployment, financial constraints, inability to install boreholes, challenges with service delivery, especially water services, it was conclusively noted that there was a relationship between drought and vulnerability in the communities, the challenges experienced by women are exacerbated by drought impacts. Women indicated that unlike before they could no longer plough and that once fertile wetlands were dry. Riverbeds were also reported as dry implying that women found it hard to get water as there is more demand and less supply. Most of the women noted that they now

relied on their neighbors who were kind enough to assist them with filling up their containers with water. Women could no longer plant crops as they wither due to the drought scourge.

Boreholes and Financial Constraints

In the focus group discussions, participants emphasized that the lack of rainfall and water in their river beds has resulted in increased vulnerability. This has increased as they could not afford to pay for private access to water, especially the installation of boreholes. According to Florides and Kalogirou (2008), boreholes are complex to install as one must know the geopolitics of installing the kit on the ground, hence this has somehow influenced the price tag of the boreholes, however there are boreholes that can be less pricey depending on the material used for the borehole. Women from Kwa-Ngwanase indicated that the boreholes or taps installed by the local government was no longer working. In line with the latter, MacDonald (2009) notes that the borehole kit needed to have a good security during the adoption process to avoid using kits that would quickly need maintenance. According to Cloutier and Rowley (2011) boreholes are by design created to provide enough water services to those who need it, however costs to operate a generator to pump up the underground water can come at a heavy cost, which is often a burden to vulnerable groups such as women. All participants indicated the high cost of installing boreholes, which they could not install themselves nor did they have the financial means to pay someone to do so, restricted access to water.

As ways to help women adapt and cope with climate change Mongare and Chege (2011) suggested the need for households living in rural areas to the local government constructing dams and efficient boreholes on their behalf, due to women's financial challenge in securing boreholes for their households. The need to build dams and boreholes is imperative for the sustainable livelihoods of those who do not have the means to support themselves. As it stands in South Africa, the majority of the poor groups require capital to afford basic resources such as boreholes; hence women's financial challenges intensify their inability to achieve their emancipation through economic development (Tufuor et al., 2015).

Water taps and community boreholes installed by the local government have not been maintained for years and are no longer working. Many of the participants said they could not depend on the government to aid them, it made promises but does not deliver. The local

government should ensure that for all the service operations installed, a plan for borehole maintenance is written down for the period of five years, the borehole pumps and pipes should also be maintained in case the pumps rust or break (MacDonald, 2009)

According to Cloutier and Rowley (2011) a case study for Central Nigeria including the states of Plateau, Bauchi, and Kaduna highlighted that when local governments feel that the normal boreholes are pricey. There are other alternatives that are powered not by fossil-fuel powered pumping but by sufficient solar resource to minimise costs of boreholes, as well as a potentially installing effective wind resource boreholes dependent on the location of where the borehole is to be installed. (*ibid*) conclusively notes that if the population that requires water exceeds the capabilities of the available hand pump boreholes than other measures that have a renewable energy-powered pumping system need to be applied in order to ensure the efficiency and effectiveness of the service delivery.

Challenges Securing Employment

Vulnerability is a situation where individuals have food shortages, which lead to starvation; insecurity caused by being unable to secure employment (Azkia, 2014). As in other parts of the world, in Thengani and Endlondlweni women are faced with high levels of unemployment, which results in some being trapped in poverty, which is a threat to their sustainable livelihoods. Justesen and Bjørnskov (2014); Polese (2008); Lane, (2017) highlight that paying a bribe price for a job opportunity is prominent around the world, and usually the most exploited groups are poor women. Women in Thengani and Endlondlweni indicated that getting employment opportunities had become very challenging, more often they were required to provide a bribe payment upfront before being given the job opportunities. Such practices can exacerbate the chances of the women acquiring a job, this specifically applies to women living in rural areas, who are often less educated than their urban counterparts. Johari and Ibrahim (2017) note that bribery is present in every sector and organizational sector, they note that once bribery has been well entrenched it is normally hard to limit or root out more times than not when the perpetrator is caught the corrupter often forgoes the punishment of having to pay his bribe payment which makes it difficult to monitor bribes.

Women from Kwa-Ngwanase highlighted a concern that they could no longer plough the land in order to receive produce from their labor due to drought impacts. This speaks to the growing challenges women are experiencing. Women are currently finding it difficult to maintain their work in the informal economy. Nagler and Naudé (2017) emphasize the dangers of the decline of the informal economy, especially since it is within the small-scale informal sectors that the majority of the poor participate. As indicated by the growing body of literature, women find it difficult to access employment within the formal sector due to their lack of education, which results in them taking jobs that pay very little, specifically in the agricultural sector, which may be the only option in rural areas. Women are increasingly entering the labor market in a number of countries globally (Kabeer, 2008), but in some instances they continue to suffer the consequences of being restricted to mostly low status and poorly paid jobs, and often having to earn a living in the informal employment sector. Additionally, Pearson (2007) notes that women are most visible in the informal sector than they are in the formal.

Chitiga-Mabugu et al. (2014) indicated that the approaches devised by the government, such as the National Development Plan (NDP) Vision 2030, maintain that public employment opportunities should be expanded to cater for vulnerable groups, with women and the youth as the main focus. However, the NDP is a non-inclusive policy strategy; this means that the plan has failed to outline how it seeks to ensure that women are included especially in effective drought adaptation measures. For an example, there is a clear correlation between the NDP and the Expanded Public Works Programme (EPWP), however the NDP does not outline clearly how the EPWP should go about being gender inclusive, or how its aim and objectives should be met, there is also no follow-up plan to ensure that disadvantaged women benefit from programs such as the EPWP. The NDP does not make specific reference to women, or how human capital should be supported or empowered, despite the fact that focusing on human capital and growth can have a positive effect on mitigating poverty in poor women and their immediate households (Chitiga-Mabugu et al. 2014). There is little data available on how the NDP is intended to be implemented towards supporting women's needs. According to Glazebrook (2011), women are key players in the nation's economy, therefore excluding them from employment opportunities and effective adaptation measures has practical consequences for the food basket of the country, therefore there is an overall benefits to their inclusion.

Service Delivery Challenges

In advancing effective water services during disasters such as drought impacts, the district municipality is tasked with providing emergency and drought relief programmes of the municipality which includes installing new boreholes (UKDM-2016-2017,78) repairing and maintaining hand pumps, and providing water services through water trucks. According to the (UKDM, 2017) a number of service deliveries have been rolled out, between 2011 till 2016, most of the boreholes installed were in other communities despite the urgent need of functional boreholes in Thengani and Endlondlweni area. Furthermore, 3 water tankers were responsible for providing water services in the Umhlabuyalingana Municipality. However contrary to the latter, women from the study indicated that the water services did not reach them, the water tanker services is not all inclusive, often times only people living by the road side are able to receive those services others excluded. Electricity and water supply is unreliable while bulk sewer is only limited to the area around the hospital area (Umhlabuyalingana IDP, 2015/2016). Furthermore, the duty of the district municipality is to assess and monitor water shortages and backlogs (UKDM, 2017). In which women from the study noted that they felt like the government was not reaching them, they felt as though the government was not doing enough in order to meet their immediate needs.

The study highlighted that women were not satisfied with their local governments' intervention approaches, as they felt that they were not aligned with the needs of the affected women. Sustainability requires knowing whether the problems exist and what the problem is, and having the ability to manage the problems (Walker et al. 2006). However, who has a say in this process is clearly an important matter: For example, a non-governmental organization (NGO) in Kilombero District of Tanzania dug a well in the hope of providing water to the community members; however, its location was not ideal as it dried up. This meant water was no longer being available for the community to access, with its location having been chosen by a local committee that consisted mainly of men (Fisher 2006). In the case of Kwa-Ngwanase, women were indicating that the adaptation measures such as seedlings are not useful as they do not seek to address their immediate needs. Women in Kwa-Ngwanase, indicated that growing these seedlings was not helpful as they do not grow in times of drought. Similarly, in a study conducted by Glazebrook, (2011) a participant said she no longer planted rice alongside her grown groundnuts during drought as it no longer grows.

This raises the importance of programs and projects that are aligned with women's specific needs.

All but one of the women feared that their lives would remain the same, stagnant and poverty ridden, due to no meaningful government interventions that were tailored towards empowering and uplifting them out of poverty, especially drought induced. One participant indicated that she did not know who was to blame for lack of effective interventions. Barr et al (2009) concur with the findings of this study that in South Africa poor service management from top to local government has influenced and affected the manner in which communities receive water, especially women. The participants were uncertain whether it was the national or local government that was doing them an injustice. They were concerned about the lack of sensitivity the local government was showing to women of this study. One of the women participants said, "uhulumeni akasikhathalele" meaning the government is not worried about us. All but one of the participants were also concerned that the water pipes that were installed by the local government were no longer working. There are many concerns that governments fail communities in terms of service delivery, hence a number of authors call for government to revisit their approach to service delivery (Rose-Ackerman and Palifka 2016). Women and girls make up the highest category of people living in poverty; this is due to their exposure to diverse poverty related disadvantages that are amplified by socio-economic dynamics and gender inequalities. The results of this study indicate that women are most vulnerable in the course of and after a natural disaster, as they do not have the means to support themselves, a finding consistent with other studies. Women are vulnerable to climate change due to the various circumstances of deprivation they encounter, and are often poor because they have lived and survived conditions that have been depriving them of their own socio-economic development.

Social Networks and Diversification Strategies

The findings also suggest that participants appreciate the assistance they receiving from their neighbours, who had allowed them to share their water resources. The literature provided a case study of a farming community in Turkana, Kenya that experienced a change in their environment and opted to diversify their livelihoods (Omolo, 2010). The participants indicated that they could not use the water to water their gardens due to the small amount they received, but used it for cooking and bathing children. However, the help they received from their neighbours could only be used to fulfil a few household responsibilities which were

proven unsustainable. One of the major barriers for sustaining livelihoods using unsustainable measures is that it creates a dependency, and requires people to rely on other systems to maintain their livelihoods. Of the 15 participants, many indicated that they were engaged in unsustainable approaches to adopt and cope with drought. They expressed concern about their ability to cope with drought impacts in the future.

Social Grants

The women reported that very little has been done to assist them to adapt to the drought impacts. While the Thengani and Endlondlweni communities are several kilometres apart, they experience the same challenges, which highlight the intensity of the problems faced by women in the area, and calls for solutions that address their specific needs. The women indicated the important role played by government social grants during this time, as they helped many vulnerable women cope with drought impacts in their households. According to a number of studies in South Africa elderly women are often compelled to use their pension grant to benefit or support a large number of household members (Burns et al., 2004; Pauw and Mncube, 2007; Gutura and Tanga, 2014), as is the case in Kwa-Ngwanase the majority of the women rely on old age and social grants as a protection net from drought impacts among many other risks. The only stable assistance both the elderly and young participants depended on were social grants they received from the government. The old age pensions and child support grants play a significant role in the lives of the vulnerable women as ways to maintain household livelihoods. In terms of drought adaptation measures, it was also apparent that had the social grant allowances not been available, many disadvantaged women would be finding it extremely hard to cope with drought impacts.

5.4 Study Limitations

The study had a number of limitations; including women interviewed being known by the researcher. The number of women who participated was less than desired, with some not being able to attend the focus group discussions as that meant time away from their households, where they are the only adults that fulfil household responsibility.

5.5 Study Implications

The main aim in this study was to understand the impact of drought on the lives of women in rural areas. The study has directly gained the information from women living in Kwa-Ngwanase who have previously been involved in agricultural production.

Accordingly, the first major practical contribution of the present research is that it provides much needed empirical data on the actual and lived experiences of women in a drought situation. Recounting in depth the activities of women faced by drought vulnerabilities will allow policy-makers, and local government to design initiatives, tools and actions based on what women have highlighted as important issues to them. This research provides decision-makers with the information and they get to evaluate what they have done in terms of programmes and where they are now in terms of their practice rather than what they think they should be doing. A second important implication of the study derives from the finding of the uniqueness of the work carried out by women of Thengani and Endlondlweni. A third implication stems from the reframing of the issue of how to nurture and support drought vulnerable women in developmental, rather than instrumental, ways. The findings suggest that government interventions should understand the utmost needs of the women before implementing programmes that exclude women. Continuous and evolving knowledge of women in rural areas is a personal and organisational capability that can and needs to be learned and refined as one's perceived context and tasks change over time. Accordingly, the research suggests that there is a need to abandon the simplistic instrumental view that asks 'what projects are suited for the community?' or 'what technology should we give to the community?' Instead, the issues of asking questions of how programmes seek to support women that are affected by drought impacts. Issues of how to nurture and support women should be fully explored and understood. The experiences of women may need to be understood and addressed in terms of how programs can be designed to best suit women's capabilities and enhance their skills. Such programmes can be developed and improved through a reflective and continual monitoring of women's experiences with drought impacts. How women construct their perspective around drought needs to be understood in order to introduce programmes that aim to empower women to be self-sufficient in what they are capable of as ways to help reinforce self-sustenance of women.

5.6 Recommendations

Local government needs to acknowledge drought as one of the fundamental factors affecting women's development, and to refrain from advancing programmes that are gender insensitive. The Umhlabuyalingana local municipality should improve their strategic involvement by introducing intervention programmes that are designed by women for women. Women should be involved in these intervention programmes to enhance their participation and empowerment in decision-making platforms, especially in programmes and policies that seek to maintain their sustainable livelihoods.

Consistent with findings from other studies, there is a need for more research on the challenges women experience due to drought or climate change in South Africa. For planning purposes and to implement effective programmes, policy makers need to have adequate information before devising programs and strategies that might in fact not be useful to those it intends to benefit. Therefore, interventions need to be tailored towards meeting the needs of the women, as per the study findings that women need local government assistance in order to help them cope with the adverse impacts of drought. Some of the participants reported that they were only somewhat resilient due to social grants they received. The findings in this study suggest that most participants welcomed the idea of effective programmes and projects that seek to empower them and lift them out of poverty.

There is a need to increase accessibility of boreholes for the poor and make it easy for them to at least access water to fulfil their household duties. Boreholes are one of the most sustainable measures in assisting women adapt and cope with climate change, however due to the price hike in installing boreholes women are unable to make borehole installations, therefore local government should continue to invest in borehole installation in Kwa-Ngwanase and not just Endlondlweni or Thengani communities, there should at least be boreholes in every 1-2 km distance, especially when there are households around that area, women should not walk long distances to collect water either as this may affect their health and physical well-being. Furthermore, of the installed boreholes, women indicate that the taps were no longer working, indicating that there has been no maintenance of these boreholes or taps. Therefore, there is a strong recommendation for local government to not only redirect funds to installing new boreholes, but to fix and maintain the broken boreholes that have been installed previously.

There is an urgent need to also teach women through awareness campaigns of how to conserve and preserve water. Members of the community need to be involved when installing boreholes so that when the borehole breaks active women can participate in ensuring that the borehole is fixed. Women in Kwa-Ngwanase should become active citizens in ensuring that they cope and adapt to climate change. The local government could assist in providing tools that will help community members maintain and fix their boreholes should it no longer be functional, as this also helps local government to not use too much of its funds in maintenance projects. There is also a need for research studies to examine how many households in Kwa-Ngwanase communities need boreholes in their communities and to determine how many boreholes currently exist in these communities, if any. This analysis could further assist the local government to make informed decisions when it comes to the importance of borehole installations in these communities, considering that it is a need in many of the households as outlined in this study.

South African policies should be amended to protect and support the needs of vulnerable women, giving them special attention in agricultural production. Numerous studies have confirmed that women depend on agricultural produce to sustain their livelihoods. Currently, government programmes or projects are not assisting the needy, therefore effective and efficient measures need to be used to select vulnerable groups for the projects or programmes. Regulating implantation processes would enable the inclusivity of disadvantaged women into the development platform giving them the opportunity to adapt and cope against drought vulnerabilities.

There is therefore a need for strategies that increase women's resilience against drought impacts, and to include preparedness processes to avoid extreme vulnerabilities, especially for disadvantaged groups, such as women. Social safety nets and systems need to be implemented to avoid unwanted casualties that could have had been avoided through promoting financial liberty (Twigg, 2007). Deere and León (2001) noted that the reason there are socio-economic inequalities is due to the lack of government policies that seek to support women as land owners and farmers. In addition, Barrientos and Hulme (2009) reported that there is a need for urgent social protection for vulnerable groups to reduce poverty and vulnerability by promoting efficient labor markets, diminishing people's exposure to risks, and enhancing their capacity to protect themselves against hazards and interruption/loss of income.

In conclusion, the study therefore recommends local government to acknowledge drought as one of the fundamental factors affecting women's development. The mission and aim of the Umhlabuyalingana municipality (Umhlabuyalinga IDP, 35, 2015/16) which is to provide a sustainable living environment to promote quality livelihoods for its citizens can be achieved, if the local municipality can improve their strategic involvement of women through means of introducing intervention programmes that are designed by women for women for its effectiveness in targeting vulnerable women. The study recommends that the Umhlabuyalinga IDP (2015/16) needs to open up and talk about climate change and drought impacts, instead of dismissing the real pressing issues of drought impacts, officials need to engage themselves with vulnerable groups, especially women in order to clearly understand what is happening on the ground and how their experiences can be reflected on policies and programs that are viable. Dismissing the drought only further intensifies women's susceptibility to not only drought but other external issues. The IDP or local municipality needs to provide a plan of action on how to assist women adapt and cope with climate change. Specific priority should be placed on programs or projects set to target women that are affected by climate change. Finally, considering the number of people living in Umhlabuyalingana only having 3 water tankers to provide services is less than enough, the municipality needs to invest in at least 20 water tankers that will provide water services in communities at least every 3 days in a week.

5.7 Conclusion

The conclusion of this study rests on the fact that women are affected by climate change in more ways than one. The study also highlighted that women from other parts of the world have experienced the same drought predicament similar to the challenges experienced by Kwa-Ngwanase communities. Furthermore, there are other drought areas in rural KwaZulu-Natal and South Africa that are affected by drought which gives an overall conclusion that in order for women to adapt and cope with climate change, plans and policies need to ensure that women are included. Climate change needs to be taken seriously and planned for, especially in rural areas where vulnerable populations who live there rely on rivers and rainfall. Some areas of the country will get more rainfall than normal, but others will get less, and the rainfall patterns may change. All of which the government needs to anticipate at national, provincial and local levels, to ensure that the policies and guidelines are in place for local initiatives to be implemented that consider community level needs, which could vary across the country. The quality of life of people living in rural areas need to be prioritised,

particularly women as they often take care of more than one person in the household. The standard of living of women from Kwa-Ngwanase should not be at stake due to drought impacts, there should be effective measures put in place to ensure that lives of rural households are sustained, these policies should encourage self-sustenance and refrain from promoting policies that create dependency. Lastly, there is a need to ensure that the set plans and policies are monitored and evaluated over time to ensure they are implemented effectively and that they benefit those it sets to target, in this case women.

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Appendix 1: Informed Consent Sheet (Isizulu)

**UKZN HUMANITIES AND SOCIAL SCIENCES RESEARCH ETHICS
COMMITTEE (HSSREC)**

**APPLICATION FOR ETHICS APPROVAL
For research with human participants**

INFORMED CONSENT

Information Sheet and Consent to Participate in Research

Date: 2016/03/30

Sawubona

Igama ngingu Fanele Masinga, ngifunda eNyuvesi yaKwa-Zulu Natali, eHoward College. Ngingumfundi ophothulela iziqu zakhe ezifundweni zokuthuthukisa. Eskoleni seBuilt Environment and Development Studies (SOBEDS). Kuleluhlelo, uyamenywa ukuba ubeyingxenywe yalolucwaningo olumayelana nokuqonda izimo abantu besifazane ababhekana nazo ngenxa yokushintsha kwesimo sezulu kanye nesomiso endaweni yaKwa-Ngwanase. Isizathu sokwenza lolucwaningo ukuthola ukuthi yiziphi izinkinga nezinxinamba abantu besifazane abaphila ngaphansi kwazo ngenxa yesomiso. Lolucwaningo lizothatha abantu abayishumi nanhlanu ukuthi bazame ukuphendula lemibuzo. Kuzosetshenziswa i-recorder ukuqopha imibono yabantu. Abazoba yingxenywe yalolucwaningo bayacelwa ukuba babekezele ukuhlala imizuzu engango 45min

Lolucwaningo alinayo imithelela emibi. Kuphela nje siyethemba ukuthi nanoma ungeke uthole isinxephezelo ngokwezimali kodwa kube ukuthi emnyakeni ezayo kube ukuthi abanye bathole ukusizakala ngolwazi ozobe usinikeze lona. Ulwazi oluzoqoqwa kulolucwaningo

luzosiza kakhulu kumzimba wolwazi kulabo abango soSayensi. Ukuzimbandakanya kulolucwaningo kuzoba kumuntu ukuthi azinikele. Ngalokho-ke umuntu ozinikelayo unelungelo lokuzihoxisa ukuba angasazi mbandakanyi naloluhlelo uma engasathandi. Futhi angeke lokho kumfake kwi ncindezi lowo muntu. Ama recordi azobe qoshiwe azogcinwa eNyuvesi yaKwa-Zulu Natali. Kanti futhi amagama bantu angeke asetshenziswe kulolucwaningo kuyoba nje imibono eqoshwayo kuphela nje.

UKUVUMA/CONSENT

Mina _____ngitsheliwe mayelana nalolucwaningo
_____ oluka

Ngियाqondisisa isizathu salolucwaningo kanye nemigomo nemilandelo yalo
_____.

Nginikeziwe ithuva lokuba ngiphendule imibuzo mayelana nocwaningo futhi ngiphendule ngokugculisekile

Ngiyavuma ukuthi ukuba yingxenywe yalolucwaningo kungukuzinikela kwami, futhi ke uma ngithanda ngingayeka nonoma ngayinini lapho ngithanda khona

Ngitsheliwe ukuthi sikhona isingxephezelo esikhona esihambisana nalolucwaningo

Uma nginemibuzo noma ukungathokozi kahle ngalolucwaningo ngingakwazi ukuxhumana ne researcher:

Ukubuzwa imibuzo ngerecorder/ Focus Group Discussion
Ukubuzwa imibuzo ngevideo / Focus Group Discussion.
Ukusetshenziswa kwezithombe/ Focus Group Discussion

YEBO/CHA
YEBO/CHA
YEBO/CHA

Isignesha yeParticipant

Usuku

Appendix 2: Informed Consent Sheet (English).....

UKZN HUMANITIES AND SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE (HSSREC)

APPLICATION FOR ETHICS APPROVAL For research with human participants

INFORMED CONSENT

Information Sheet and Consent to Participate in Research

Date: 2016/03/30

Greetings

My name is Fanelesibonge Masinga from the University of Kwa-Zulu Natal, Howard College. I am a student currently studying towards a Master's degree in Development Studies within the School of Built environment & Development Studies (SOBEDS). As per this survey, you are being invited to consider participating in a study that involves understanding *women's perspectives and experiences of climate change with specific focus on drought in Kwa-Ngwanase*. The aim and purpose of this research is to describe the challenges and impacts faced by women in particular due to climate change. The study is expected to enrol 15 participants in total, within the area of Kwa-Ngwanase. It will be required of you to answer some questions that may link you to previous experiences of drought. A recording device will be used to record your responses. You should expect to be asked questions that may be personal and some may require you to recall past incidents. The duration of your participation if you choose to enrol and remain in the study is expected to be 45 min.

The study may involve the following risks and/or discomforts of having to express your personal experiences that you might not be comfortable in exposing. We hope that the study even though the participants may not benefit directly through monetary means, however in the near future others may benefit from the information the researcher finds from this study. The information gathered will also contribute to the body of knowledge thus this is a huge gain for other academics that might have a

similar interest in this topic further expanding knowledge found from this study. This research topic is by no means risky; therefore there will not be any need to take up risk measures for this project. Participating in this survey is voluntary. As a voluntary participant you hold the right to refuse to participate or withdraw from the project at any time with no negative consequence. Under the circumstances that the participant does not feel comfortable the researcher can terminate the participant from the study. Confidentiality and anonymity of records identifying you as a participant will be maintained by the, UKZN.

Signing below finalizes the agreement that the participant has thoroughly read and understood the above information, and would be interested in participating in the study.

CONSENT

I _____ have been informed about the study entitled _____ by _____

I understand the purpose and procedures of the study _____.

I have been given an opportunity to answer questions about the study and have had answers to my satisfaction.

I declare that my participation in this study is entirely voluntary and that I may withdraw at any time without affecting any of the benefits that I usually am entitled to.

I have been informed about any available compensation or medical treatment if injury occurs to me as a result of study-related procedures.

If I have any further questions/concerns or queries related to the study I understand that I may contact the researcher at _____

If I have any questions or concerns about my rights as a study participant, or if I am concerned about an aspect of the study or the researchers then I may contact:

Audio-record my interview / focus group discussion YES / NO

Video-record my interview / focus group discussion YES / NO

Use of my photographs for research purposes YES / NO

Signature of Participant

Date

Appendix 3: Focus Group Discussion Questionnaire.....

Interview Schedule

Section A: Biographical Data

1. What is your age

18-30	31-40	41-50	51-64	65+

2. Have you been affected by climate change?

Occasionally affected	Sometimes Affected	Frequently Affected

3. What is your highest level of educational qualification?

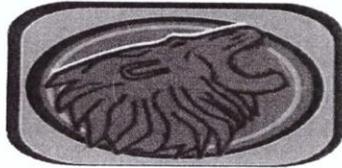
No schooling	Primary edu	Secondary edu	Tertiary edu

Section B: Interview questions

1. Are you currently facing climate change challenges?
2. How has climate change affected or changed your life? How has the changes in your life affected you as a person?
3. How do you feel about the restrictions imposed on natural resources?
4. As a woman what role do you play in influencing young people or the community at large in the preservation and proper usage of natural resources?
5. Do you think the excessive usage of natural resources has any negative impacts on climate change?
6. Describe the decision making process of natural resource usage between males and females
7. What do you think are the factors inhibiting women from overcoming the effects of drought?
8. Do you think local government is doing enough in terms of helping the community adapt to

climate change?

9. Are you familiar with climate change adaptation methods? Yes or No
If yes what methods are you familiar with?
10. How did you come to know about climate change adaptation methods?
11. How do you feel about using a method yourself?
12. What is the main purpose for using this method?
13. How does this method work in your favor?
14. What do you think other women think about this type of method?
15. What are some of the problems you face with the method you are using?



TEMBE

Traditional Council

Nyomfi Wandrawu Abaklomeli
P.O. Box 05, KwaNgwanase 3973. TEL/fax 035 5929 484

Date..... 05/04/2016

TO WHOM IT MAY CONCERN

This letter confirms that FANELESIBONGE NDSIHO MASINGA.....

Id No..... 9105030655086..... is a bona fide citizen of
KwaNgwanase Area,

under Inkosi M I. Tembe He/She resides at the sub-ward of ENBLOND LWENI.....

Under Induna, whose name is MSONGI TEMBE..... He is therefore
known by this Traditional Council.

It is also confirmed that the Tembe Traditional Council has known the above person for many
years for his/ her loyalty ,commitment and respect to the Tembe Tribe.

It is therefore, recommended that he/she is assisted with any help that he/she requires.

Yours truly


.....

EXECUTIVE SECRETARY



For use by the Bank or other institution

Appendix 5: Ethical Clearance.....



9 May 2016

Ms Fanele Masinga 211537168
School of Built Environment and Development Studies
Howard College Campus

Dear Ms Masinga

Protocol reference number: HSS/0479/016M
Project Title: Women's perspectives and experiences of climate change with specific focus on drought in KwaNgwanase in KwaZulu-Natal, South Africa

Full Approval – Expedited Application

In response to your application received 28 April 2016, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted FULL APPROVAL.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number.

PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

.....
Dr Shenuka Singh (Chair)
Humanities & Social Sciences Research Ethics Committee

/pm

Cc Supervisor: Prof Pranitha Maharaj
Cc. Academic Leader: Dr Cathy Sutherland
Cc School Administrator: Ms Nolundi Mzolo

Humanities & Social Sciences Research Ethics Committee

Dr Shenuka Singh (Chair)

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Website: www.ukzn.ac.za



Founding Campuses: Edgewood Howard College Medical School Pietermaritzburg Westville